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First Complete Edition
of

UNICEF GUIDE LIST EVE

Equipment and Supplies for:

- Primary Schools
- Secondary Schools
- Teacher Training Institutions
- Production Units

(This edition of EVE supersedes OSU-4360 of 6 February 1964 and the attachment to DIR/CON/WK/June 1964/8.)

64-43449

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FOREWORD

This is the first complete edition of UNICEF Guide List EVE. It entirely supersedes document OSU-4360 of 6 February 1964, entitled "Educational Guide Lists, First Draft", and the attachment to DIR/CON/WK/June 1964/8, "Second Draft of Narrative Portion, Guide List EVE".

Certain items have been dropped or combined with others. New items have been added. New item numbers have been assigned, starting with number 2001, to avoid confusion with earlier numbering. Item specifications have been expanded. Warehouse stock numbers have been assigned to those items which will be warehoused. Two new lists (Health/Hygiene for Primary and Secondary Schools) have been added. Notes and cross-references have been provided for greater convenience and clarity.

The guide-lines have been extensively revised on the basis of research and discussion. An Annex has been added for guidance on budgeting.

French and Spanish translations are being arranged; in these, measurements will be expressed in metric equivalents.

Like all our other Guide Lists, EVE will change and grow with our experience, and to this end we welcome constructive comments, criticisms and suggestions from all quarters.

Additional copies of EVE (SUNO-20) are available from the Operational Services Unit, UNICEF HQ, upon request.

UNICEF Guide List EVE

Equipment and Supplies for:

- Primary Schools
- Secondary Schools
- Teacher-Training Institutions
- Production Units

- GENERAL INTRODUCTION -

General Purpose of the Guide List

1) This is the first approach to a group of lists for use in the planning and execution of UNICEF programmes of assistance to educational institutions in developing countries. The purpose of these lists, as of lists already established, is to assist and simplify the drawing up of requests at the initiating end and to facilitate efficient and economic procurement and issue at the supply end.

2) At first sight it might appear that the field of education in the many developing countries, spread all over the world, is so variegated that, even at the same nominal levels, no one set of lists could possibly be applicable to all countries. To some extent this is true; educational aims may differ in different countries, as also may the forms of approach to the same knowledge, which, particularly in the earlier stages of education, should properly be related to the environment of the pupils. There are, however, certain items of equipment which are commonly needed, whatever the form of approach, and it is the object of this guide list to set out, as far as is possible, this basic core.

3) It is emphasized at the outset - and it cannot be too strongly stressed - that the production of these lists is in no way an attempt to lay down curricula or syllabi or to impose on any country a complexion or form of education which it may feel to be foreign to it; and it will be noted, in this connection, that some subjects, which call particularly for a local approach, are omitted from the lists for this reason.

4) The object of UNICEF aid, in the field of education, is to co-operate with the Governments of developing countries in the execution of their own plans, drawn up in consultation with UNESCO, for improving their educational systems.

5) As is indicated in the heading, the present paper is concerned with assistance in terms of supplies and equipment. It is recalled at this point that requests could also be considered for non-supply assistance, particularly in the form of stipends, honoraria and related costs. This type of aid is often an important part of support that may be required for education projects in which teacher training, whether by regular or refresher courses, is a major element.

Main Objectives of UNICEF Aid in the Field of Education

6) The deficiencies in these systems are usually of three kinds. There may be an educational system which is of a sufficiently high standard but which is inadequately spread throughout the country; there may be a system which is widely spread but needs raising to a more satisfactory standard; or there may be a system which is inadequate both in standard and extent. In brief, the deficiencies may be in quantity or quality or both.

7) One of the main contributing causes of all these deficiencies is a shortage of trained teachers of adequate standard. Without such teachers in the primary and secondary schools, levels cannot but be expected to remain comparatively low, while expansion means a further spreading of the low standards. It is at this point therefore that UNICEF feels that its help can most usefully be applied and be most widespread in its effect, both in improving quality and making possible a sound increase in quantity.

Institutions and Courses Covered in the Guide List

8) The institutions on which UNICEF aid, in the educational field, is therefore mainly concentrated and equipment for which is dealt with in this guide list are the following:

Primary Schools. (Assistance may normally be expected to be confined to primary schools which are used for demonstration purposes and in which teachers-in-training practise. Widespread assistance to other primary schools, except in very special cases, could mean that there might not be sufficient funds for the major objective of improvement in teacher training.)

Secondary Schools. By assistance to secondary schools improvement can be made in the standard and quantity not only of those who will subsequently become teachers but also of those who may contribute towards the development of the country in other directions. It is a part of the educational system for which assistance is frequently a special request, whether in the name of secondary school education or of "normal" schools (see paragraph 16 below).

Teacher-Training Institutions and Courses forthe training of teachers for primary and secondary schools.

Production Units, of a simple type, on a national or regional basis, for the production of locally-oriented printed or audio-visual teaching material for use in schools in the area.

9) The guide list is divided into separate sections dealing with each of the above categories of institution.

Definition of Terms "Primary" and "Secondary"

10) These divisions of the list will, however, have comparatively little meaning without some definition of the terms "primary" and "secondary" as used in this connection, because these terms have widely differing connotations in different parts of the world. The term "primary" is used in some parts for the first four years of schooling only; in other parts it covers the first five, six, seven or eight years of schooling. The pattern, however, at which most developing countries, which have not already established it, seem to be aiming is a six-year primary course followed by a six- (or, in some cases, seven- or eight-) year secondary course.

11) (This is clearly indicated in the report of the UNESCO-sponsored conference of African States on education in Addis-Ababa and Tananarive in 1961 and 1962. The UNESCO-convened Inter-Governmental Advisory Committee for the Major Project on the Extension and Improvement of Primary Education in Latin America drew attention, at its meeting in Santiago in 1962, to the need "to ensure that....all children....will be able to complete a primary school study cycle lasting not less than six years". The comparable conference of Asian States in Tokyo in 1962 presented a rather more open picture, its recommendation being that "the total duration of school education should preferably be twelve years and that it may be divided into primary, junior secondary and senior secondary in a number of ways such as 5 + 3 + 4 or 6 + 3 + 3 or 4 + 3 + 5 in accordance with local tradition and needs".)

12) For convenience of arrangement, therefore, the "Primary" Section of this list will be used to apply to the first six years of formal school education (i.e., exclusive of kindergarten) and the "Secondary" Section to the subsequent six (or seven or eight) years. It is however emphasized that this division is made for administrative convenience only, that education is, and should be regarded as, a continuous process and that the use of the above definitions in this list is not to be interpreted as an argument either for or against a division of the school course accordingly.

Variants Separately Considered

13) In recognition of the fact that other divisions than the six-year primary and six-year secondary systems exist and operate successfully, the requirements of 4-year, 5-year and 6-year primary schools are shown separately in the "Primary" School Section. The requirements of 7-year and 8-year primary schools will similarly be found shown separately in the "Secondary" School Section (Section 2).

14) It is further recognized that schools in different countries work to different curricula and that the pace of advance in the various subjects is not uniform. Some 5-year primary schools, for example, may therefore require, in some subjects, equipment indicated for 6-year schools, while some

6-year primary schools may not require all the equipment indicated for them. Similar situations may arise in the case of secondary schools. The division into years is therefore to be taken as a rough guide of average requirements and is not intended to be rigidly enforced. At the same time any very wide deviation from it would require explanation.

Teacher-Training Courses - Varieties

15) The variety of teacher-training courses for primary and secondary school teachers in developing countries is no less wide than the divisions of the school system. Apart from emergency schemes at a still lower level, the standards of entry to regular courses which provide, for the time being, satisfactory training for the levels at which they aim vary from the completion of the eighth year of schooling to university graduation.

16) For the training of teachers for primary and lower secondary classes the most common courses are perhaps the two-year courses, for students who have successfully completed the eighth, tenth and twelth years of schooling, and the three- or four-year courses, such as are provided in the "écoles normales", after successful completion of the ninth or tenth years of schooling. For the training of teachers capable of teaching up to the end of the secondary school course the most common patterns are a one-year Education Diploma course, taken after university graduation, or a university degree course in Education or comparable courses of approximately four years, taken after successful completion of the Secondary school course, such as are provided in the "Écoles Normales Supérieures".

Teacher-Training Courses - "Academic" Content

17) With the exception of the one-year Education Diploma course, taken after university graduation, the normal procedure in almost all, if not all, these courses is for the students to continue with their academic studies, sometimes specializing in the subject or subjects of their choice, in addition to their theoretical pedagogic work and teaching practice. The equipping of a teacher-training institution therefore has to take into account both of these sides of the course, which can usually be taken as being more or less equal in length.

18) To provide a separate guide list to cover the "academic" (or continued general education) requirements of all the varieties of teacher-training courses referred to in paragraph 16 above would be an extremely cumbersome and lengthy procedure and should not be necessary. In the first place it is not considered that equipment for academic courses at post-secondary or university level is properly susceptible of being dealt with in guide lists. (Requirements at that level are ordinarily more specialized than general and are more satisfactorily dealt with individually.) As regards courses below that level, for practical purposes requirements can sufficiently be indicated by reference to the secondary school lists. This is explained in more detail in the "Teacher-Training" Section itself (Section 3).

Omissions From the Guide List

19) The guide list does not cover all the subjects normally included in the curricula of primary and secondary schools or teacher-training institutions. As indicated in paragraph 3, the reason is that the subjects omitted, such as Civics, Art, Music and History, are thought particularly to require treatment from a local viewpoint and background, as systems of government, cultures and ideologies can differ so widely from country to country. It is felt that UNICEF assistance in these fields can therefore perhaps best be channelled through the provision of audio-visual appliances and equipment for the production of local teaching material.

20) The lists do not include such quickly consumable or expendable articles as pens, pencils and exercise books. The reason for this is that most developing countries already have arrangements for the regular supply of such articles, of types suited to their particular needs. These articles are in constant demand by almost all schools of whatever level; and it would be more satisfactory, from all points of view, that the existing supply arrangements should gradually be expanded to meet growing requirements than that they should be overlaid by a temporary extraneous supply from UNICEF to such schools as are in receipt of UNICEF aid. Furthermore it is thought to be more in the interest of the countries themselves that UNICEF aid should be devoted to articles of a less impermanent nature, which it would perhaps be less easy and probably more expensive for them than for UNICEF to obtain.

21) When locally-organised sources of supply of the more quickly consumable articles do not already exist, it is desirable that they should be started as early as possible. In cases where neither expansion of existing local supply systems nor initiation of new ones is possible, consideration may be given to a temporary provision of such articles by UNICEF, but this should be the exception rather than the rule.

22) The lists are not intended to provide a comprehensive catalogue of all the articles that are needed or can be used in the teaching of the subjects to which they refer but to indicate basic requirements, of a more or less universal nature, which UNICEF can supply. The main lists will not therefore include items which, for linguistic or similar reasons, would be restricted in their use to certain limited areas, though in some cases the possibility of supply of such items may be indicated in "optional" lists.

Requests for Items Outside the Lists

23) The lists are not to be regarded as being exclusive. Requests may be made outside the limits of the lists but such requests would have to be accompanied by further and more detailed descriptions and reasons than requests for items within the lists.

Explanation of Terms Used in the Guide List

24) To prevent possible misunderstanding the following explanations are given of two terms which are used fairly frequently in connection with the lists:

a) "Years of Schooling" refer to the successive years in the course of school education counting from the beginning (after kindergarten) and disregarding divisions of the course into primary, secondary, etc. (They are referred to as "grades" in some countries, but, as this term is used for other purposes in the educational systems of other countries, the phrase "years of schooling" has been used as the least likely to cause confusion.)

b) "Streams" refer to the number of classes, provided by a school, for each year of schooling. Thus a "single-stream" school means a school with one class only for each year of schooling; a "double-stream" school would mean a school with two classes for each year of schooling, and so on.

The quantities suggested for the various items in the lists that follow are based on the requirements of "single-stream" schools and teacher-training institutions as being the simplest basic units. These quantities should not necessarily be increased in the case of schools and institutions with more than one stream. They should be increased only if the number of classes in a school becomes such that two or more classes need to use the same equipment at the same time and this cannot be avoided by a re-arrangement of the time-table.

Points of General Guidance

25) The following points are put forward for general guidance in regard to requests based on these lists.

26) Only such equipment should be asked for as is essential to the effective carrying-out of the work to be performed, due consideration being given not only to modern developments but also to the conditions in which the equipment is to be used. Requests should not be made for articles that it would just be rather nice to have. The funds at the disposal of UNICEF are not unlimited, and extravagance in requests for one scheme may mean that assistance for another has to be deferred.

27) In the case of schools in which teachers-in-training are to practise only such equipment should be asked for, in general, as the Government or responsible Authority is prepared and likely to be able to provide in the schools in which the teachers are eventually to work. It is disheartening for teachers to find, in the schools to which they are posted, that they have to work without equipment on which they have been led to rely while in training. (This does not necessarily apply to demonstration schools attached to teacher-training institutions where the teachers-in-training can be made acquainted with a wider range of equipment if thought desirable.)

28) Similarly, schemes for the improvement of teacher-training should contain valid assurances that the supervisors, inspectors and heads, under whom the teachers will work when trained, are kept abreast of the improvements, so that the teachers are not frustrated when they try to put the new ideas into practice. This can be done by refresher courses and conferences.

29) Equipment which can satisfactorily be made by the schools themselves with local materials and without undue waste of time should not be requested. Emphasis should be laid on "do-it-yourself" devices in the teacher-training institutions.

30) It is most important that requests should indicate clearly, by reference to the years of schooling, the level of education for which the equipment requested is required. As has been explained in these notes, the terms "primary", "elementary", "middle", "secondary", etc. have such varying connotations as to be insufficient indications of level to persons outside the countries concerned. In the case of primary schools, therefore, the requests should indicate the length of the primary school course. In the case of courses above the primary level, whether general or teacher-training, the requests should contain an indication of the length of the courses and the year of schooling after the end of which the courses begin.

31) Requests in connection with schemes covering more than one year should indicate as clearly as possible the approximate dates at which instalments of materials are required to arrive. If equipment is provided before it is needed, it means not only that funds are tied up unnecessarily in advance, but also that problems of local storage and possible deterioration may arise. If, therefore, for example, a scheme comprises assistance to six new six-year primary schools, to be built at the rate of two per year, the equipment required for the first year of the scheme will be equipment for the first year of two primary schools only. In the second year further equipment will be required for the second year of the two original schools plus equipment for the first year of the two new schools, and so on.

32) In connection with "staggered" programmes of supply, such as indicated in (31) above, and in other cases in which a number of schools of the same type is involved, it will probably be found convenient to put forward final detailed supply requests in the form of "sets" of materials derived from the lists which follow. Thus, in the example given in paragraph 31 above, the requests could indicate, as a set, the articles required for the first year of a primary school in the particular scheme and, also as separate sets, the additional articles required for the second, third and up to the sixth years of a primary school. The request then would be for two sets of first-year materials in the first year; two sets of first-year plus two sets of second-year materials in the second year; two sets of first-year plus two sets of second-year plus two sets of third-year materials in the third year; and so on until the scheme finishes with the supply of two sets of sixth-year materials only.

33) The lists which follow show the total quantities of each item which may be required for single-stream schools of the various levels specified. The amounts needed in each successive year in the building up of a new school would have to be worked out from within these totals in consultation with the school authorities.

Codes of Reference and Procedure for Indicating Requirements

34) It will be noted that each list has a reference letter (A, B, C, etc.) and that each item has its own number (2001, 2, 3, etc). (This number is not duplicated elsewhere in the lists, though the item itself may appear with a different number, in a different connection, in different lists.) The lists contain basic items and optional items. Total costs for basic items, in the quantities suggested in the various columns, are given at the end of each list, and are summarized in the Annex. Costs for the optional items are not totaled since these items would be selected sparingly.

35) The total quantities of items suggested, in each list, for the various levels of institutions specified are shown in columns headed by a two-letter code (AA, AB, AC, etc.). The total costs indicated for the various columns may be used in roughly estimating costs for purposes of Basic Supply Lists. However, in view of the many factors, expressed above, which will influence departures from the suggested selections, the selections given in the columns are not to be construed as constituting "ready-made sets", since the individual needs will remain rather particular.

36) Items listed in EVE should therefore be requested individually by citing the underlined portion of the item description, plus:

- the applicable warehouse stock number, if present;
- the EVE item number, if no warehouse stock number is present.

In the latter case, the reason why the item is not stocked is, occasionally, that the item requires further specification (e.g. indication of language, title of publication etc.) from the requisitioning office. The requirement for these additional specifications is indicated either in the existing item description or in the "Notes" column. Where the term "of choice" is used, the particular choice should of course be specified.

37) For convenience at the point of end-use, the items selected from EVE can be packed in sets, per school and/or per class. The PR should indicate the desired type of pack and give an indication of the desired components per set.

38) The prices and specifications given for items stocked in the UNICEF warehouse are valid at the time this guide list is published. As time goes on, these will be subject to change, and the Warehouse Catalogue becomes the authority for up-to-date pricing and specifications for the items listed in EVE.

SECTION 1

PRIMARY SCHOOLS

PRIMARY SCHOOLS - INTRODUCTORY NOTES

39) This section of the guide list deals with the requirements of schools providing education for the first six years of schooling, exclusive of Kindergarten (see paragraph 12 of the General Introduction). It is, however, recognized that the primary course in some countries is less than six years. The requirements of primary schools which provide for the first four, five and six years are accordingly shown separately in the lists which follow. For schools which provide a primary course of seven or eight years, reference would be made to Section 2 (Secondary Schools).

40) The lists contained in this Section are arranged in the following order, prefaced by brief indroductory notes where thought necessary:

List A: General Equipment

List B: General Science and Mathematics

List C: Geography

List D: Manual Arts

List E: Home Economics or Domestic Science

List F: Audio-Visual Aids

List G: Games Equipment (Physical Education)

List H: Health (Hygiene).

41) As regards minimum standards of accommodation and staffing that should be assured before schools are assisted with equipment, it is virtually impossible to lay down hard and fast criteria for universal application, except that the school buildings should as far as possible fulfill the requirements, where these exist, of the Health authorities in the area and that the teachers should be trained and able to make proper use of the equipment to be supplied. As explained in paragraph 8 of the General Introduction, assistance to Primary schools will normally be given mainly to demonstration schools or schools in which teachers-in-training practise. It is desirable that these should be staffed by experienced trained teachers, and that there should be not more than 40, preferably less, in a class.

42) The following lists are accordingly based on the assumption that there will be a maximum number of 40 pupils in each class. For a variety of reasons, numbers in the top classes tend to be rather less than those in the bottom; but this is not always the case, and it is safer to estimate on the basis of a uniform figure. The lists are also based on the requirements of a single-stream school, as defined and explained in paragraph 24b of the General Introduction.

PRIMARY SCHOOLS: GENERAL EQUIPMENT

43) This list contains a few miscellaneous items which are not properly or exclusively classifiable under the other lists.

44) The purpose of the items in the main part of the list are self-explanatory. Explanations of the items in the "optional" list are as follows:

Chalkboard Panel: This is a panel of fibreboard with a black surface on both sides, suitable for writing on with chalk. It can be used, as a chalkboard, as it is or can be framed to protect the edges and improve its appearance or it can be affixed to a wall.

Clocks: Two alternatives are listed: either an electric clock, where reliable electric current is available, or an 8-day coiled-spring type clock.

School Bell - Hand: In schools where there is no electric bell system, time signals can usually be given very adequately by the beating of a suspended iron bar or triangle. Where these devices are, for any reason, impracticable, requests may be made for hand-bells.

List A: GENERAL EQUIPMENT (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. AA	4-year schools Cost $	5-year schools Qty. AB	5-year schools Cost $	6-year schools Qty. AC	6-year schools Cost $	Notes
		BASIC									
2001)	44-184	COMPASS, Chalkboard: length approx. 16" (40 cm); with adjustable chalk holder and hard rubber foot.	each	1.25	1	1.25	2	2.50	2	2.50	
2002)	26-645	PUNCH, Paper: hand, single hole.	each	1.21	1	1.21	1	1.21	1	1.21	
2003)	44-670	RULER, Chalkboard: calibrated in inches and centimetres; with handle.	each	.75	4	3.00	5	3.75	6	4.50	One per classroom.
2004)	44-740	SHARPENER, Pencil, Desk Type: adjustable to fit various sizes of pencils.	each	2.05	4	8.20	5	10.25	6	12.30	One per classroom.
		TOTALS, List A, Basic Items				14.00		18.00		21.00	
		OPTIONAL									
2021)	44-052	BELL, Hand: 5" (13 cm) diameter at mouth; polished brass; with handle.	each	2.50	1	2.50	1	2.50	1	2.50	
2022)	44-165	CHALKBOARD PANEL: thickness 1/4" or 3/16" (6.35 or 4.76 mm), 4 ft. x 6 ft. (120 x 180 cm); fibreboard, hardboard, blockboard, or Masonite; black, silicate coated both sides.	each	9.00	4	36.00	5	45.00	6	54.00	One per classroom. To be requested only if chalkboards cannot be supplied as part of the furniture provided locally. See explanatory notes preceeding this list. These panels can be used immediately as movable blackboards, resting on easels; they can also be affixed to walls.
2023)	44-657	- RENOVATOR, Silicate, Black: for resurfacing chalkboards; 1-pint (1/2 litre) tin.	tin	1.38	.	.	.	.	.	.	Requisition as needed. This is for resurfacing the silicate-coated Chalkboard Panel, Item 2022, the original surface of which will normally withstand 2 to 4 years of use before it requires re-coating. May also be used as finish coat over other smooth surfaces (e.g. good quality plywood) when applied over sealer and primer. One pint (1/2 litre) covers approx. 90 square feet (8 square metres), or 3 to 4 panels of the size of Item 2022.

List A: GENERAL EQUIPEMENT (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. AA	4-year schools Cost $	5-year schools Qty. AB	5-year schools Cost $	6-year schools Qty. AC	6-year schools Cost $	Notes
		OPTIONAL (cont'd)									
2024)	44-173	CLOCK, Wall, Electric: 15" diameter (Ø 38 cm); metal or high impact plastic case. For operation on 110 volts, 60 cycles.	each	11.00	1	11.00	1	11.00	1	11.00	Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
		or				or		or		or	
2025)	44-175	CLOCK, Wall, Electric: 15" diameter (Ø 38 cm); metal or high impact plastic case. For operation on 220 volts, 50 cycles.	each	11.00	1	11.00	1	11.00	1	11.00	
		or				or		or		or	
2026)	44-177	CLOCK, Wall, Spring Wound, Eight Day: 15" diameter (Ø 38 cm); metal or high impact plastic case.	each	15.00	1	15.00	1	15.00	1	15.00	

PRIMARY SCHOOLS: GENERAL SCIENCE AND MATHEMATICS

45) The requirements of General Science and Mathematics are combined in this list, instead of being shown separately, because the few items of equipment needed for the teaching of Mathematics at this stage may also be used in the teaching of General Science.

46) In General Science, perhaps more than in any other subject, there is a very wide variety in the levels aimed at during the Primary school course. In some countries, and particularly in their rural areas, a simple introduction to a closer understanding of natural phenomena in the environment of the school, with very little apparatus, is considered sufficient at this stage. In others, and particularly in their urban areas, a start is made with more formal elementary laboratory work by the end of the sixth year.

47) In the listing that follows, the main part of the list contains items required for the more simple forms of approach. The "optional" part of the list contains a few additional items required for rather more intensive approaches, and, for the reasons given in the foregoing paragraph, greater latitude than usual has to be allowed in selections from this list to accord with the requirements of the syllabi of the schools concerned.

48) Attention is drawn to the fact that, especially in schools supplied with tools for Manual Arts, much of the equipment required can be made or improvised with locally obtainable materials. Ways in which this can be done are clearly and fully explained in such publications as the UNESCO handbooks entitled "The Teaching of Science in Tropical Primary Schools" (published by the Oxford University Press) and "Source Book for Science Teaching" (published by UNESCO Headquarters in Paris).

49) In the case of schools wishing to give a practical "rural" background to General Science, through school gardens, the necessary items should be applied for under guide list "MOIRA".

50) It will be noted that the list does not contain such expendable articles as chemicals, candles, litmus paper and filter-papers. As in the case of the more general quickly-expendable articles referred to in paragraph 20 of the General Introduction, and for similar reasons, supplies of these should be arranged by the countries themselves. Where, for any reason, this should be impracticable, consideration may be given to an initial supply, but this should be the exception rather than the rule.

List B: GENERAL SCIENCE AND MATHEMATICS (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. BA	4-year schools Cost $	5-year schools Qty. BB	5-year schools Cost $	6-year schools Qty. BC	6-year schools Cost $	Notes
		BASIC									
2041)	09-155	BEAKER, Laboratory, 150-ml: low form (Griffin), with lip and pouring spout; borosilicate glass. (as AHT cat.61 p.89 #2110)	each	.18	-	-	2	.36	2	.36	
2042)	09-235	BRUSH, Test Tube, Small: bristled diameter 1/2" (13 mm), length 2" (50 mm); nylon bristles on twisted galvanized wire, tufted end; overall length 9" (22.5 cm).	each	.09	-	-	6	.54	6	.54	
2043)	09-300	CLAMP, Test Tube, Stoddard: 5" (125 mm); max. jaw opening 1-1/2" (38 mm); nickel-plated spring wire. (Test Tube Holder) (as AHT cat. 61 p.254 #3246)	each	.07	-	-	2	.14	2	.14	
2044)	46-215	CLOCK FACE, Blackboard: diameter 10" (Ø 25 cm), without numerals, but with 5-minute markers; wood; movable wooden hands; detachable base. (as ESA cat.64 p.59 #8821)	each	1.75	1	1.75	1	1.75	1	1.75	
2045)	46-218	COMPASS, Mariner's Type: simple, diameter 8-1/2" (Ø 21 cm). (as ESA cat.64 p.98 #9286)	each	6.00	-	-	-	-	1	6.00	
2046)	09-362	CYLINDER, Graduated, Laboratory, 250-ml: graduated in 2-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance 1.4 ml; borosilicate glass. (as AHT cat.61 p.370 #4409-1)	each	1.45	-	-	1	1.45	1	1.45	
		or						or		or	
2047)	09-373	CYLINDER, Graduated, Laboratory, Polypropylene, 250-ml: graduated in 2-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance 0.65 ml. (as Nalgene cat.K-961 #3662)	each	2.55	-	-	1	2.55	1	2.55	
2048)	40-454-4	FILE, Triangular, 5" (125 mm): single cut, extra slim taper. (as AHT cat.61 p.455 #5083)	each	.30	-	-	1	.30	1	.30	
2049)	09-378	FLASK, Boiling, 500-ml: flat bottom, vial mouth; borosilicate glass. (Florence Flask) (as AHT cat.61 p.476 #5324)	each	.77	-	-	2	1.54	2	1.54	
2050)	09-379-14	FLASK, Boiling, 500-ml: round bottom, vial mouth; short narrow neck; borosilicate glass. (as AHT cat.61 p.478 #5332)	each	.80	-	-	-	-	4	3.20	
2051)	09-379-16	FLASK, Boiling, 1000-ml: round bottom, vial mouth; short narrow neck; borosilicate glass. (as AHT cat.61 p.478 #5332)	each	.90	-	-	-	-	2	1.80	

List B: GENERAL SCIENCE AND MATHEMATICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. BA	4-year schools Cost $	5-year schools Qty. BB	5-year schools Cost $	6-year schools Qty. BC	6-year schools Cost $	Notes
		BASIC (cont'd)									
2052)	07-210	FORCEPS, Dressing: 6" (15 cm); spring type; serrated rounded tips; stainless steel. (Thumb Forceps; Dissecting Forceps) (as ALOE cat.189 p.465 #B1231D)	each	.35	-	-	1	.35	1	.35	Pincers. For holding small objects.
2053)	09-455	FUNNEL, Laboratory, Glass, Plain, 100 mm diameter x 100 mm stem; beaded rim; capacity approx. 230 ml: borosilicate glass. (as AHT cat.61 p.515 #5573-B2)	each	.40	-	-	3	1.20	3	1.20	
2054)	09-458	FUNNEL, Laboratory, Polypropylene, Plain, 65 mm diameter: stem 10 mm diameter x 60 mm long; reinforced rim; capacity approx. 60 ml; autoclavable. (as AHT cat.61 p.517 #5587-E)	each	.26	2	.52	2	.52	2	.52	
2055)	09-460-5	FUNNEL, Laboratory, Thistle Head: stem 25 cm long, polyethylene head with separable straight polypropylene stem. (AHT #5645-P)	each	.20	-	-	-	-	3	.60	
2056)	09-467	GAUZE, Wire, With Asbestos Centre, 6" x 6" (15 x 15 cm): tinned iron wire, with burned edges; asbestos disc approx. 4" diameter (Ø 100 mm). (as AHT cat.61 p.1029 #9995)	each	.14	-	-	-	-	6	.84	
2057)	50-210	JAR, Glass: 1/2 pint (240 cc); with metal screw cap. (Mason Jar)	doz.	1.30	-	-	*	1.30	1	1.30	For use as Gas Jar, Specimen Jar and Storage Jar.
2058)	50-205	JAR, Glass: 1 pint (475 cc); with metal screw cap. (Mason Jar)	doz.	1.40	-	-	1	1.40	1	1.40	
2059)	50-200	JAR, Glass: 1 quart (945 cc); with metal screw cap. (Mason Jar)	doz.	1.57	1	1.57	1	1.57	1	1.57	
2060)	50-201	- COVER, Gas Jar, Ground Glass: diameter 7.5 cm (Ø 3"); circular; ground on one side. (as PH Chemistry cat.12 p.84 #C1344)	doz.	.57	-	-	1	.57	1	.57	
2061)	09-551	LAMP, Alcohol, Brass, 5-oz. (150 ml): with ratchet feed, wick and extinguishing cap; leakproof, approx. 3-1/2" bottom diameter x 3-1/2" high (Ø 88 x 88 mm). Supplied with six spare 6-mm diameter wicks. (as Fisher cat.63 p.139 #4-235)	each	1.15	-	-	-	-	2	2.30	
2062)	46-440	LAMP GLASS: small. (Lamp Chimney)	each	.10	-	-	2	.20	2	.20	
2063)	09-554	MAGNIFIER, Double, Folding: 5X to 10X; two lenses 25 mm and 20 mm diameter combined in bakelite mounting. (as C-A cat.107 p.88 #A-1333)	each	.70	-	-	-	-	40	28.00	
2064)	46-467	MAGNET, Set of Three: one each of the following: bar, rod and horseshoe; with iron filings.	set	1.00	-	-	-	-	2	2.00	

List B: GENERAL SCIENCE AND MATHEMATICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. BA	4-year schools Cost $	5-year schools Qty. BB	5-year schools Cost $	6-year schools Qty. BC	6-year schools Cost $	Notes
		BASIC (cont'd)									
2065)	20-675	MEASURE, Graduated, 16-oz (500 ml): graduated in liquid ozs., cups and fractions of a cup, and metric equivalents; heat-resistant glass. (Measuring Cup) (as Corning Pyrex #518)	each	.33	2	.66	2	.66	2	.66	
2066)	09-780	RACK, Test Tube, Wood, 12 Tubes: single deck, two rows of 22mm diameter holes. (as AHT cat.61 p.950 #9503)	each	.43	-	-	1	.43	2	.86	
2067)	46-300	RAIN GAUGE: graduated glass measure, 5" diameter (Ø 13 cm) funnel; plastic receiver, plastic outer case. (similar to ESA cat.64 p.105 #9321, but with English and metric calibrations)	each	6.00	1	6.00	1	6.00	1	6.00	
2068)	46-720	ROD, Electrical, Ebonite (Hard Rubber or Vulcanite): 12" long x diameter 3/8" (30 cm x Ø 9 mm).	each	.50	-	-	-	-	2	1.00	
2069)	09-686	RODS, Stirring, Flint Glass, Assorted: fire-polished ends; six each of the following sizes: - 3 mm diameter x 125 mm long - 5 mm diameter x 140 mm long - 5 mm diameter x 200 mm long - 6 mm diameter x 250 mm long (Total: 24 rods)	pkg.	.42	-	-	1	.42	1	.42	
2070)	46-760	SCALE, Even Arm: weighs up to 7 lbs. (3 kg); with pans. (Balance) (similar to ESA cat.64 p.56 # 6411/03)	each	3.50	1	3.50	1	3.50	1	3.50	
2071)	46-761	- WEIGHTS, Avoirdupois, Set of Nine: including 1/4 oz, 1/2 oz, 1 oz, 2 oz, 4 oz, 8 oz, 1 lb, 2 lbs, 4 lbs; in open block.	set	2.00	1	2.00	1	2.00	1	2.00	These weights, Items 2071 or 2072, are for use with the scale, Item 2070.
		or									
2072)	46-762	- WEIGHTS, Metric, Set of Nine: including 5 gm, 10 gm, 20 gm, 50 gm, 100 gm, 200 gm, 500 gm, 1 kg, 2 kg; in open block.	set	2.00							
2073)	07-699	SCALPEL, Belly Blade, 1-1/2" (38 mm) Blade, size 3: stainless steel. (as Thackray G.278)	each	1.43	-	-	1	1.43	1	1.43	

List B: GENERAL SCIENCE AND MATHEMATICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. BA	4-year schools Cost $	5-year schools Qty. BB	5-year schools Cost $	6-year schools Qty. BC	6-year schools Cost $	Notes
		B A S I C (cont'd)									
2074)	09-722	STOPPERS, Cork, XXX Quality, Assorted: regular lengths 7 each sizes 3 to 15 and 9 each of size 16; bag of 100.	bag	1.50	-	-	1	1.50	1	1.50	
2075)	09-725	STOPPERS, Rubber, Solid, Assorted: including - 6 each sizes 00, 0, 1 - 4 each sizes 2, 3, 4, 5, 5-1/2 - 2 each sizes 6, 6-1/2, 7, 8, 9 (48 stoppers; approx. 1-1/2 lb. or 680 gm)	pkg.	1.76	-	-	1	1.76	1	1.76	
2076)	09-743	STOPPERS, Rubber, Two-Holed, Assorted: bore diameter 5 mm; 4 each sizes 4, 5, 6, and 7. (16 stoppers; approx. 9 oz. or 270 gm)	pkg.	1.00	-	-	1	1.00	1	1.00	
2077)	09-710	SUPPORT STAND, Laboratory Apparatus, Medium, with 3 Ring Supports: enamelled cast iron base approx. 6 " x 9" x 1" (150 x 225 x 25 mm); plated steel support rod 18" high x 1/2" diameter (45 cm x Ø 13 mm) with threaded end with lock nut; complete with 3 enamelled cast iron support rings with screw clamps; diameters of rings, 2", 3" and 4" (50, 75, 100 mm). Supplied knocked down. (Ring Stand; Retort Stand)	each	2.78	-	-	1	2.78	1	2.78	
2078)	09-290	- CLAMP, Extension, Laboratory, Large: cork-lined, forked non-swivel jaws, grip capacity 1/16" to 3-3/4" (1.5 - 93 mm); with extension arm; die cast aluminium alloy. (Retort Stand Clamp) (as Gallenkamp p.791 #SM-600)	each	1.08	-	-	1	1.08	1	1.08	
2079)	40-902	TAPE, Measuring, Surveyor's: length 30 metres (100 ft.); calibrated in inches and centimetres; reinforced synthetic material, plastic covered; in wind-up case.	each	4.00	1	4.00	1	4.00	1	4.00	

Size	Top Diameter	/	Bottom Diameter		Length
3	14 mm	/	11 mm	x	19 mm
4	16 mm	/	12 mm	x	20 mm
5	17 mm	/	13 mm	x	22 mm
6	19 mm	/	15 mm	x	24 mm
7	21 mm	/	16 mm	x	25 mm
8	22 mm	/	17 mm	x	27 mm
9	24 mm	/	18 mm	x	29 mm
10	25 mm	/	20 mm	x	31 mm
11	27 mm	/	21 mm	x	31 mm
12	29 mm	/	22 mm	x	31 mm
13	30 mm	/	24 mm	x	31 mm
14	32 mm	/	25 mm	x	31 mm
15	33 mm	/	27 mm	x	31 mm
16	35 mm	/	27 mm	x	38 mm

List B: GENERAL SCIENCE AND MATHEMATICS (Primary Schools)(cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. BA	4-year schools Cost $	5-year schools Qty. BB	5-year schools Cost $	6-year schools Qty. BC	6-year schools Cost $	Notes
		BASIC (cont'd)									
2080)	99-140	TEST TUBES, Assorted, Set of 12: borosilicate glass; set of four each of the following sizes: - 75 x 12 mm O.D., without lip (09-793) -150 x 16 mm O.D., without lip (09-800) -150 x 25 mm O.D., with lip (09-790)	set	.78	-	-	1	.78	2	1.56	
2081)	46-874	THERMOMETER, Maximum/Minimum, Six's: length 8" (20 cm); mounted on graduated, bent side, zinc frame; complete with horseshoe magnet. (as B&T cat.62 p.205 #B68/0660)	each	2.80	-	-	-	-	1	2.80	
2082)	46-878	THERMOMETER, Spirit: length 8-1/2" (21 cm); engraved dual scale from 20° to 120°F and from -1° to +50°C; brass scale fixed to wooden mount. (as ESA cat.64 p.105 #9326)	each	1.10	1	1.10	1	1.10	1	1.10	
2083)	46-882	THERMOMETER, Wet and Dry Bulb: dual scale from 20° to 120°F and from -10° to +50°C; in plastic case. (Hygrometer) (as ESA cat. 64 p.105 #9328)	each	3.50	-	-	-	-	1	3.50	
2084)	09-837	TONGS, Crucible, Laboratory, 9" (225 mm): double bent; black oxidized steel; riveted joint.	each	.29	-	-	1	.29	1	.29	
2085)	09-845	TRIANGLE, Pipeclay: side length 5 cm (2"); tinned iron wire, smooth clay. (as USBECK cat.#2211)	doz.	.54	-	-	1	.54	1	.54	
2086)	09-875	TUBING, Flint Glass, Assorted: approx. 5 lbs. (2.25 kg); package consisting of: a) 10 to 12 ft. (3 to 3.5 m) in each diameter: 3mm, 4mm, 5mm, 9mm, 10mm, 11mm, 12mm b) 20 ft. (6m) in each diameter: 6mm, 7mm, 8mm.	pkg.	1.20	-	-	1	1.20	1	1.20	
2087)	09-878	TUBING, Latex Rubber, 3/16" I.D. x 1/16" wall (4.8 x 1.6 mm). (as AHT cat.61 p.836 #8831)	foot	.04	-	-	12	.48	12	.48	
		TOTALS, Basic Items, List B.....				21.00		45.00 to 47.00		98.00 to 99.00	

List B: GENERAL SCIENCE AND MATHEMATICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. BA	4-year schools Cost $	5-year schools Qty. BB	5-year schools Cost $	6-year schools Qty. BC	6-year schools Cost $	Notes
		OPTIONAL									
2101)	46-037	AQUARIUM: capacity 10 gallons (38 litres); 20" x 10" x 12" (50 x 25 x 30 cm); stainless steel frame. (as Aquariums, Inc.)	each	8.00	-	-	-	-	1	8.00	
2102)	46-063	BAROMETER, Aneroid: diameter approx. 5-1/2" (14 cm).	each	5.00	-	-	-	-	1	5.00	
2103)	09-527-40	BELL JAR: diameter 12.5 cm x 25 cm high (Ø 5" x 10"); open top, ground bottom flange; borosilicate glass. (as PH Chemistry cat.12 p.30 #C302)	each	2.60	-	-	-	-	2	5.20	
2104)	46-072	BELL PUSH: diameter 2-3/8" (Ø 60 mm): bakelite. (as PH Physics cat.12 p.62 #P6996)	each	.40	-	-	-	-	2	.80	
2105)	09-191	BOTTLE, Dropping: 4 oz. (120 ml); polyethylene; fitted with elongated nozzle. (Indicator Bottle) (as B&T cat.62 p.55 #B15/0650)	each	.15	-	-	-	-	1	.15	
2106)	09-195	BOTTLE, Reagent, Narrow Mouth, 250-ml: clear flint glass; with ground-in flat glass stopper; unlabelled. (as AHT cat.61 p.99 #2220)	each	.24	-	-	-	-	2	.48	
2107)	09-214	BOTTLE, Wide Mouth, Round, Screw Top, Polypropylene, 8 oz. (250 ml): with polypropylene screw cap. (as Nalgene cat.K-961 #2105)	each	.33	-	-	-	-	2	.66	
2108)	09-374-65	DISH, Crystallizing: diameter 10 cm x 5 cm (Ø 4" x 2"); flat bottom, straight sides, with spout; borosilicate glass. (as B&T cat.62 p.38 #B7/0240)	each	.46	-	-	-	-	2	.92	
2109)	09-374-73	DISH, Evaporating: size 1, capacity 125 ml, diameter 9 cm (Ø 3-5/8"); shallow form, with lip; porcelain, glazed inside and outside. (as B&T cat.62 p.40 #B7/0730)	each	.46	-	-	-	-	2	.92	
2110)	50-280	LANTERN, Hurricane: non-pressure, parafin burning; capacity 1/2 pint (1/2 litre); tin finish, clear globe; complete with one spare globe and 3 spare wicks. (Bush Lamp; Kerosene Lantern)	each	1.95	-	-	1	1.95	1	1.95	
2111)	40-624	LEVEL, Plumb and Spirit: approx. 12" x 1" x 3" (30 x 2.5 x 7.5 cm).	each	1.50	-	-	-	-	1	1.50	

List B: GENERAL SCIENCE AND MATHEMATICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. BA	4-year schools Cost $	5-year schools Qty. BB	5-year schools Cost $	6-year schools Qty. BC	6-year schools Cost $	Notes
		OPTIONAL (cont'd)									
2112)	46-477	MIRROR, Small, Set of Three: one each of the following shapes and dimensions: - circular, concave, diameter 2" (Ø 50 mm) - circular, convex, diameter 2" (Ø 50 mm) - rectangular, plane, 3" x 2" (75 x 50 mm) (similar to ESA cat.64 p.96 #9300/01, 9300/02, 9300/03)	set	1.00	-	-	-	-	4	4.00	
2113)	46-490	NEEDLE, KNITTING, Steel: length 10" (25 cm); English size 8 (5 mm).	pair	.25	-	-	-	-	1	.25	For demonstration of magnetism; also for various uses such as for axles, etc.
2114)	46-636	PRISM, Equilateral: length 2" (5 cm); optical glass.	each	.74	-	-	-	-	1	.74	
2115)	46-645	PULLEY, Single Sheaf: diameter 2" (Ø 50 mm); plain bearing, wide grooves; in aluminium frame with hooks top and bottom. (as PH Physics cat.12 p.260 #P10138)	set	.84	-	-	-	-	1	.84	
2116)	46-647	PULLEY, Double Sheaf: diameter 2" (Ø 50 mm); plain bearing, wide grooves; in aluminium frame with hooks top and bottom. (as PH Physics cat. 12 p.260 #P10138)	set	1.61	-	-	-	-	1	1.61	
2117)	46-649	PULLEY, Triple Sheaf: diameter 2" (Ø 50 mm); plain bearing, wide grooves; in aluminium frame with hooks top and bottom. (as PH Physics cat. 12 p.260 #P10138)	set	2.10	-	-	-	-	1	2.10	
2118)	05-570	SCALE, Spring: 15 lbs. (7 kg), dual scale; pocket size; all metal, chrome-plated.	each	.51	-	-	-	-	1	.51	
2119)	46-810	SOCKET, Lamp, Screw Type: for flashlight bulb; with 3 bulbs.	set	.25	-	-	-	-	4	1.00	
2120)	46-820	SPOON, Deflagrating, With Brass Shield: complete with steel cup and iron rod. (as PH Chemistry cat.12 p.61 #C852)	each	.35	-	-	-	-	1	.35	
2121)	46-840	SWITCH, Plug: one-way, two lacquered glass blocks fitted with terminals; tapered brass key; bakelite base. (as PH Physics cat.12 p.116 #P7628)	each	2.85	-	-	-	-	1	2.85	

List B: GENERAL SCIENCE AND MATHEMATICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. BA	4-year schools Cost $	5-year schools Qty. BB	5-year schools Cost $	6-year schools Qty.- BC	6-year schools Cost $	Notes
		OPTIONAL (cont'd)									
2122)	09-830	THERMOMETER, Laboratory, -10° to +110°C in 1° divisions: mercury in glass; engraved stem 6 - 7 mm O.D., length approx. 30 cm; calibrated for partial immersion. Tolerance ±1° over total range. (as AHT cat.61 p.957 #9525)	each	.85							
		or									
2123)	09-831	THERMOMETER, Laboratory, 0° to 220°F in 2° divisions: mercury in glass; engraved stem 6 - 7 mm O.D., length approx. 12"; calibrated for partial immersion. Tolerance ±1° to 32°F, ±2° to 220°F. (as AHT cat.61 p.957 #9526)	each	.85	-	-	-	-	2	1.70	
2124)	46-886	TUNING FORK, Set: length approx. 10 cm (4"); blued steel; set of the following frequencies: C^1, E, G, C^2, (256, 320, 384, 512 cps). (as PH Physics cat.12 p.243 #P9940)	set	5.45	-	-	-	-	1	5.45	
2125)	09-888	WATCH GLASS: diameter 3" (Ø 75 mm); thin clear round bottom. (as B&T cat.62 p.220 #B76/0010)	doz.	.98	-	-	-	-	1	.98	
2126)	46-905	WIRE, Bell, Copper: 22 s.w.g., twin, for low voltage only; with plastic insulation; coil of 12 yards (11 m).	coil	.50	-	-	-	-	1	.50	

PRIMARY SCHOOLS: GEOGRAPHY

51) The study of geography normally begins with the locality in which the school is situated and radiates outwards. It is clearly beyond the purview of this list to itemize maps of all the localities or even of all the countries which are required for this purpose. In any case sources of supply, especially as regards maps with titles in the local language, are usually most easily ascertainable locally, and these items should generally be left to local purchase.

52) As regards globes and maps of wider areas the difficulties of language in which the place-names and legends are written still apply. In the main part of the list, therefore, the maps and globes listed are without names but show political boundaries and rivers and, in the case of some of the maps, the locations of main towns. They are of slated surface so that they can be written on (and the writing can be rubbed off) in chalk or crayon.

53) Reliable colored physical-political globes and maps, covering the same areas as the "blank" maps and globes contained in the basic list, are obtainable with names and legends in the languages of a number of developing countries. Many schools may prefer to have such maps and globes or they may prefer to have them, covering the same areas, with the names and legends in a foreign language intelligible to the pupils. The "optional" part of the list therefore indicates such maps and globes as possible alternatives to the blank maps and globes contained in the main part of the list. When requests for these alternatives are made, a detailed description of each map or globe should be given, together with the source of supply and cost.

54) As aids to the teaching of an elementary knowledge of the solar system three charts are included in the optional part of the list. They are put in the optional part because, while they are considered by some to be essential, others are of the opinion that these aspects of geography can be taught satisfactorily, at the primary stage, with the help of the chalkboard, flannelgraph materials and the globe. Where it exists and operates successfully, this latter view should not be discouraged by requests for these charts. They are not ordinarily obtainable in "blank" form and, where they are required, the language and other details should be specified, as in the case of maps referred to in the foregoing paragraph.

55) It will be noted that this list does not include illustrative materials, in the form of filmstrips or slides, for which requests are often received. The reasons for this are mainly two. In the first place the range is extremely wide, and individual requirements are quite varied. These very reasonably include, among other things, pictures of ordinary life in other countries, industry, commerce, transport, fauna, flora, other natural phenomena and so on. Some countries prefer, very naturally, to have filmstrips with titles in their own languages, when they are available. In these circumstances it

is not thought practicable, at least at this stage, to draw up a satisfactory guide list for these items. In the second place, it is not economical to supply individual schools, especially smaller ones, with libraries of filmstrips. A more satisfactory arrangement is the centralized filmstrip and slide library, or series of libraries, for which selections are made by the local education authorities as being the most suitable for the schools in the area. This point is dealt with more fully in the notes on Audio-Visual Aids, both in this section and in Section 2 (Secondary Schools).

56) A further point is that many schools do not have projectors and that, though projectors and filmstrips or slides may be desirable aids to the teaching of geography, they are not considered to be essential. Most educational headquarters can obtain from national tourist bureaux, international agencies, travel agencies and other sources, supplies of posters and disused magazines containing pictures of places of natural interest and life in other countries for distribution to outlying schools. Schools in larger centres can usually obtain them for themselves. Affixed to the classroom walls and changed from time to time, these pictures can have a more lasting impression on the pupils than occasionally-shown filmstrips and slides; they also help to brighten the classrooms. Descriptive titles, in the language of the pupils, can be added. (These pictures can also be used in connection with language teaching.)

57) For the study of local weather conditions, rain-gauges and thermometers of various types are contained in the General Science list, List B. Surveyors' tapes and compasses, which can be used in making plans within the school area, are also included in the General Science list, List B.

58) For reproduction of small maps and charts, for test and other purposes, equipment is contained in the list of audio-visual aids, List F.

List C: GEOGRAPHY (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. CA	4-year schools Cost $	5-year schools Qty. CB	5-year schools Cost $	6-year schools Qty. CC	6-year schools Cost $	Notes
		BASIC									
2141)	47-360	GLOBE, Slated: 16" diameter (Ø 40 cm); continents in outline; blank, without titles and legends; mounted on semi-meridian stand. (Similar to IVAC p.43 #390)	each	25.00	1	25.00	1	25.00	1	25.00	The slated surface can be written on with chalk or crayon.
....		MAP, Wall, Slated: approx. 50" (125 cm) wide x 50" - 63" (125 - 158 cm) long; continents, political boundaries and rivers clearly indicated; blank, without titles and legends; roller mounted. (as IVAC p.33 or RAND McNALLY p.26) As follows;									When requisitioning Items 2142 through 2148, introduce with this full description.
2142)	47-484	... The World	each	12.00	-	-	1	12.00	1	12.00	
2143)	47-478	... Africa	each	10.00							
2144)	47-479	... America, North	each	10.00	1 (Their own continent)	10.00 or 12.00	1 (Their own continent)	10.00 or 12.00	3 (Their own continent and 2 others)	30.00 or 32.00	
2145)	47-480	... America, South	each	10.00							
2146)	47-481	... Asia	each	12.00							
2147)	47-482	... Europe	each	10.00							
2148)	47-483	... Oceania	each	10.00							
		TOTALS, List C, Basic Items				35.00 to 37.00		47.00 to 49.00		67.00 to 69.00	
		OPTIONAL									
2161)	*47-354	GLOBE, Physical-Political: 16" diameter (Ø 40 cm); titles and legends in language of choice; mounted on semi-meridian stand.	each	25.00	1	25.00	1	25.00	1	25.00	Optional to Item 2141.
....		**MAP, Wall, Physical-Political: approx. 50" (125 cm) wide x 50" - 63" (125 - 158 cm) long; titles and legends in language of choice; roller mounted. As follows:									**Requests for Items 2162 through 2168 must include detailed specifications as to the type, size, language, source of supply, and cost.
2162)	*47-475	... The World	each	12.00	-	-	1	12.00	1	12.00	Optional to Item 2142.
2163)	*47-469	... Africa	each	10.00							Optional to Item 2143.
2164)	*47-470	... America, North	each	10.00	1 (Their own continent)	10.00 or 12.00	1 (Their own continent)	10.00 or 12.00	3 (Their own continent and 2 others)	30.00 or 32.00	Optional to Item 2144.
2165)	*47-471	... America, South	each	10.00							Optional to Item 2145.
2166)	*47-472	... Asia	each	12.00							Optional to Item 2146.
2167)	*47-473	... Europe	each	10.00							Optional to Item 2147.
2168)	*47-474	... Oceania	each	10.00							Optional to Item 2148.

* The warehouse numbers listed are for English versions only, since at this stage only these are carried in stock. When other languages are desired, do not cite the warehouse numbers given here.

List C: GEOGRAPHY (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. CA	4-year schools Cost $	5-year schools Qty. CB	5-year schools Cost $	6-year schools Qty. CC	6-year schools Cost $	Notes
		OPTIONAL (cont'd)									
....		**CHART, Wall: approx. 40" x 30" (100 cm x 75 cm); titles and legends in language of choice; roller mounted. As follows:									
2169)	*47-170	... Solar System	each	4.50	-	-	-	-	1	4.50	** Requests for Items 2169 through 2171 must include detailed specifications as to the type, size, language, source of supply, and cost. See paragraph 54.
2170)	*47-168	... Phases of the Moon	each	4.50	-	-	-	-	1	4.50	
2171)	*47-166	... Eclipses of the Sun and Moon	each	4.50	-	-	-	-	1	4.50	

* The warehouse numbers listed are for English versions only, since at this stage only these are carried in stock. When other languages are desired, do not cite the warehouse numbers given here.

PRIMARY SCHOOLS: MANUAL ARTS

59) In many developing countries there is an increasing appreciation of the need for children to get the feel of tools and to use their hands in practical work before they leave the primary school stage, especially in cases where, for one reason or another, they do not go on to further schooling.

60) In agricultural areas this need is often met through work in school gardens, in which some of the basic principles of good husbandry are taught and demonstrated. Tools for this purpose can be supplied under guide list "MOIRA". In others, where there is an appropriate local craft, such as basket-work or leather-work or pottery, the need is sometimes met through the introduction of elementary instruction in these crafts. Tools for this purpose are usually obtainable locally. In areas where none of these conditions exists - and sometimes where they do - training in a simple general school workshop often supplies the need. In some cases simple general workshop training is introduced in addition to school garden work and local crafts, as a valuable adjunct.

61) The main part of the list that follows contains items of equipment for a primary school workshop, which, with these ends in view, provides an introductory course in the use and care of basic tools in work with wood and metal, including the use of wrenches with nuts and bolts and pipes. Apart from teaching the pupils to use their hands, furnishing practical applications of what they may have learned in Mathematics and General Science and providing a useful introduction to subsequent courses in carpentry, metal work and similar subjects, such a "mixed" introductory course can be of value in enabling the pupil who leaves school after this stage to decide, a little more knowledgeably, which, if any, craft he might wish to pursue, whether through pre-vocational training, apprenticeship or otherwise.

62) The quantities suggested for each item are based on the assumption that not more than 20 pupils, preferably less, will be engaged in practical work in any one aspect of the subject at one time and that for practical work a class of more than 20 pupils will be divided into groups for different aspects.

63) It will be seen that no quantities are shown for 4-year and 5-year schools. The reason is that many developing countries will not be able to afford the cost of workshop accommodation and the provision of an instructor for schools of this level - except perhaps in the case of larger schools with a comparatively high average age of entry and a comparatively high rate of school-leavers at the end of the school course. In cases where it is desired to include workshop training in 4-year and 5-year schools and the necessary accommodation and instruction can be provided, requests may be made as for 6-year schools or selections may be made from that list. Attention is drawn to the fact that the tools in the following list have been selected with a view of their use by pupils above the age of 8 years, <u>not</u> below.

64) The "optional" part of the list contains a few items for consideration in the case of schools which may begin their workshop training early and may wish to proceed to slightly more advanced work before the end of the primary school course.

65) Pre-requisites for the supply of items under this list are, of course, that adequate accommodation, with sufficient work-benches or strong tables, is provided, that the necessary supplies of wood and metal can be made available and that each school supplied has a competent instructor on the staff who will ensure, among other things, that every possible precaution is taken against accidents arising from the use of the tools. (Though not a pre-requisite in the same sense, attention might perhaps not inappropriately be drawn to the fact that, in a workshop where sharp-edged tools are used, a first-aid box is virtually a necessity.)

List D: MANUAL ARTS (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. DA	4-year schools Cost $	5-year schools Qty. DB	5-year schools Cost $	6-year schools Qty. DC	6-year schools Cost $	Notes
		BASIC									
2181)	40-162	BRACE, Hand: 8" (20 cm) sweep; with ratchet.	each	3.94					4	15.76	
2182)	99-200	- BIT, Auger, Woodworking: set of the following: 1/4" (6.35 mm) (#40-090) 3/8" (9.5 mm) (40-091) 1/2" (12.7 mm) (40-092) 5/8" (15.9 mm) (40-093) 3/4" (19. mm) (40-094) 7/8" (22.23 mm) (40-095) 1" (25.4 mm) (40-096)	set	4.71					2	9.42	
2183)	40-098	- BIT, Countersink, Woodworking: 1/2" (12.7 mm) cutting edge; length 4" (10 cm).	each	.46					2	.92	
2184)	40-130	- BIT, Screwdriver: set of the following: 7/32" (5.56 mm) 1/4" (6.35 mm) 9/32" (7.1 mm)	set	.68					2	1.36	
2185)	40-240	CHISEL, Metal: 1/2" (12.7 mm) cut; length 6" (15 cm). (Cold Chisel)	each	.20					6	1.20	
2186)	99-215	CHISEL, Wood: set of the following: 1/4" (6.35 mm) (#40-251) 1/2" (12.7 mm) (40-253) 3/4" (19 mm) (40-255)	set	3.21					6	19.26	
2187)	40-290	COMPASS, Pencil: length 5" (13 cm).	each	.98					6	5.88	
2188)	40-380	DRILL, Hand: capacity 1/4" (6.35 mm); double pinion.	each	3.11					4	12.44	
2189)	40-105	- BIT, Drill, Hand: set of 10 drills, to 1/4" (6.35 mm).	set	1.93					4	7.72	
2190)	40-429	FILE, Mill: length 10" (25 cm); medium cut.	each	.38					10	3.80	
2191)	40-461	- HANDLE, File: length 5" (13 cm).	each	.13					10	1.30	
2192)	40-530	GRINDER, Bench, Hand: grinding wheel diameter 6" x 1" wide (Ø 15 cm x 25 mm).	each	5.68					1	5.68	
2193)	40-575	HAMMER, Nail: 10 oz. (280 gm); bell face, with curved claw. (Carpenter's Hammer; Claw Hammer)	each	.60					10	6.00	
2194)	40-600	HATCHET, Lath: 3-5/8" (92 mm) cut. (Half Hatchet)	each	2.93					4	11.72	
2195)	40-620	KNIFE, Putty: blade 4-1/2" x 1-1/2" (11 x 4 cm); chisel edge.	each	.39					4	1.56	

For 4-year and 5-year schools see the introductory notes to this list.

List D: MANUAL ARTS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. DA	4-year schools Cost $	5-year schools Qty. DB	5-year schools Cost $	6-year schools Qty. DC	6-year schools Cost $	Notes
		BASIC (cont'd)									
2196)	40-625	LEVEL, Carpenter's: plumb and spirit level; length 24" x 2-5/8" x 1-1/8" (60 x 7 x 3 cm).	each	2.89					1	2.89	
2197)	40-660	MALLET, Carpenter's: 1 lb. (454 gm) head; seasoned beech.	each	.52					6	3.12	
2198)	40-705	PLANE, Block: length 6" (15 cm); with 1-3/8" (35 mm) cutter.	each	2.53					6	15.18	
2199)	40-765	PLIERS, Slip-Joint, Wire Cutting: 7-1/2" (19 cm) long; with 2 adjustments.	each	1.62					20	32.40	
2200)	40-787	RULE, Hardwood: length 12" (30 cm); graduated in inches and centimetres.	each	.59					20	11.80	
2201)	40-796	SAW, Coping: length 12" (30 cm); blade length 6-1/2" (16 cm).	each	.69					2	1.38	
2202)	40-140	- BLADE, Coping Saw: length 6-1/2" (16 cm); package of 12 blades.	pkg.	.15					2	.30	
2203)	40-800	SAW, Cross Cut: length 20" (50 cm); ten points per inch (20 points/5 cm).	each	3.39					6	20.34	
2204)	40-790	SAW, Hack: length 10" to 12" (25 - 30 cm); adjustable.	each	1.53					4	6.12	
2205)	40-151-2	- BLADE, Hack Saw: length 12" (30 cm); 32 teeth per inch (64 teeth/5 cm); package of 12 blades.	pkg.	.90					2	1.80	
2206)	40-822	SCREWDRIVER: length 6" (15 cm); 1/4" (6.35 mm) blade.	each	.64					20	12.80	
2207)	40-390	SHIELD, Face, Safety: non-inflammable. (Chipping Screen)	each	1.85					1	1.85	
2208)	40-890	SNIPS, Tinner's Straight: length 8" (20 cm); 3" (8 cm) cut.	each	1.51					10	15.10	
2209)	40-875	SQUARE, Carpenter's, Combination: 90° and 45° 9" (23 cm) adjustable blade.	each	1.58					4	6.32	
2210)	40-897	STONE, Oil, Sharpening, Combination: 6" x 2" x 1" (15 x 5 x 2.5 cm)	each	1.02					2	2.04	
2211)	51-050	STOVE BOLTS, with Nuts and Washers: assortment of 100.	box	1.15					1	1.15	
2212)	40-939	VISE, Hand: 2" (5 cm) jaw.	each	1.60					10	16.00	

For 4-year and 5-year schools see the introductory notes to this list.

List D: MANUAL ARTS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. DA	4-year schools Cost $	5-year schools Qty. DB	5-year schools Cost $	6-year schools Qty. DC	6-year schools Cost $	Notes
		BASIC (cont'd)									
2213)	40-945	WRENCH, Adjustable: length 6" (15 cm); 3/4" (19 mm) opening.	each	1.89					10	18.90	
2214)	40-952	WRENCH, Pipe, Stillson: length 8" (20 cm).	each	1.23					4	4.92	
		TOTAL, List D, Basic Items								278.00	
		OPTIONAL									
2231)	40-030	AWL, Marking: blade length 5" (13 cm). (Scratch Awl; Scriber)	each	.22					20	4.40	
2232)	99-230	FILE, Set of 4: length 10" (25 cm): - half-round, bastard cut (#40-422) - round, bastard cut (40-435) - shoe rasp (40-444) - wood rasp, half-round, bastard cut (40-456)	set	2.26					2	4.52	
2233)	40-461	- HANDLE, File: length 5" (13 cm).	each	.13					8	1.04	
2234)	40-500	GAUGE, Marking, Carpenter's: half-round polished head; hardwood, thumb screw.	each	.51					4	2.04	
2235)	40-676	MITRE BOX: complete with 16" (40 cm) backsaw.	each	10.00					1	10.00	
2236)	51-512	NAILS, Woodworking: large head, assorted sizes up to 2-1/2" (6 cm) long.	lb.	.22					5	1.10	Initial supply.
2237)	51-695	SCREWS, Wood: assorted sizes up to 1-1/2" (4 cm) long.	gross	.55					1	.55	Initial supply.

PRIMARY SCHOOLS: HOME ECONOMICS

66) The list which follows differs in form from the others contained in the Primary School Section because it is designed to meet two different types of requirements:

i) The requirements of small primary schools which do not yet have a room reserved for regular Home Economics teaching or a Home Economics teacher on the staff but which are served by a peripatetic Home Economics teacher, who brings her own kit with her for demonstration lessons to small groups of pupils at a time.

ii) The requirements of primary schools which have the necessary accommodation for practical Home Economics teaching and a trained Home Economics teacher on the staff.

The list therefore shows the suggested quantities of each item under two headings: "Mobile Unit", related to the requirements as in (i) above, and "Static Unit", related to the requirements as in (ii) above.

67) The provision, in this list, of equipment for a "Mobile Unit" is not to be taken to indicate that it is considered to be a fully satisfactory alternative arrangement for the teaching of Home Economics. Children of primary school age learn best by doing and handling, particularly when the proper use of equipment, some of which may be unfamiliar, is concerned. The "Mobile Unit" is therefore considered as a temporary expedient only. "Mobile Units" will not, of course, be required for each school, but one for each group of schools served by the peripatetic teacher.

68) The quantities suggested for "Static Units" are based on the assumption that not more than 20 pupils, doing most of the work in pairs, will be doing practical work in any one division of the subject (Cookery, Sewing, etc.) at the same time, and that for practical Home Economics periods, a class of more than 20 pupils will be divided into groups, each being engaged in a separate division of the subject or being otherwise occupied.

69) Almost all the items in the following list are included in the "ISIS" Guide List for Mothercraft/Homecraft Projects, where full details as to their purpose and use will be found.

70) Separate requirements for four-year, five-year and six-year schools are not shown because it is thought that, in general, the teaching of Home Economics is unlikely to be introduced in schools providing less than the sixth year of schooling. In cases where it is introduced earlier, the same requirements would be recommended.

71) Pre-requisites for the supply of articles under this list are that, in the case of both Units, the equipment will be used by and under the supervision of a trained Home Economics Teacher and, in the case of the "Static Unit", that suitable accommodation, including firm work-tables for the pupils is provided.

List E: HOME ECONOMICS (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: Mobile Unit Qty. EA	Mobile Unit Cost $	Static Unit Qty. EB	Static Unit Cost $	Notes
		COOKING							
		BASIC							
2251)	20-508	BOARD, Chopping: approx. 11" x 8" x 3/4"(28 x 20 x 2 cm), hardwood.	each	.50	1	.50	10	5.00	
2252)	20-510	BOARD, Pastry: approx. 24" x 18" (60 x 45 cm), smooth wood.	each	1.00	1	1.00	10	10.00	
2253)	20-200	BOWL, Mixing or Serving, Set of Four: heat-resistant glass; one each of the following sizes: 1 pint, 1-1/4 quart, 2-1/4 quart, 4 quart (50 cl, 120 cl, 215 cl, 375 cl).	set	2.17	1	2.17	7	15.19	
2254)	20-530	CUP AND SAUCER: capacity of cup 7-1/2 oz. (225 cc); unbreakable, Melamine; assorted pastel colours.	set	.35	6	2.10	12	4.20	
2255)	20-675	CUP, Measuring: capacity 16 oz. (500 cc); graduated in liquid ozs., cups, fractions of cups, and metric equivalents; heat-resistant glass.	each	.33	1	.33	5	1.65	
2256)	20-560	DISH, Serving: capacity 1-1/2 to 2 quarts (140-190 cl); with fitted cover approx. 8" diameter (Ø 20 cm); stainless steel. (Soup Tureen)	each	3.85	1	3.85	5	19.25	
2257)	20-570	FUNNEL, Set of Three: rigid, polyethylene; molded-in air vents; one each of the following capacities: 2 oz., 4 oz., 8 oz. (60 cc, 120 cc, 250cc).	set	.24	1	.24	3	.72	
2258)	20-620	KNIFE, Paring: 3" (8 cm) stainless steel blade, wavy edge; plastic handle. (Kitchen Knife)	each	.09	1	.09	10	.90	
2259)	20-605	KNIFE, Utility: 6" (15 cm) stainless steel blade, plain edge; plastic handle. (Cook's Knife; Kitchen Knife)	each	.17	1	.17	10	1.70	
2260)	20-655	LADLE: capacity 6 oz. (175 cc); stainless steel; long curved handle.	each	.35	1	.35	4	1.40	
2261)	20-750	MATERIAL, Plastic: 36" (90cm) wide; 5 guage (.125 mm); heavy duty vinyl; yellow. (Table Cover)	yard	.13	2	.26	10	1.30	
2262)	20-710	OPENER, Combination, can and bottle, with cork screw: nickel plated.	each	.14	1	.14	3	.42	
2263)	20-320	PAN, Dishwashing: capacity 12 quarts (11 litres), approx. 15" diameter x 6" deep (Ø 38 cm x 15 cm); strong rolled rims, with hole for hanging; polyethylene.	each	.74	1	.74	10	7.40	
2264)	20-260	PAN, Frying: approx. 8-3/4" diameter (Ø 22 cm); stainless steel, aluminium or copper clad bottom.	each	2.50	1	2.50	10	25.00	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

List E: HOME ECONOMICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price	Quantities suggested for: Mobile Unit Qty.	Mobile Unit Cost	Static Unit Qty.	Static Unit Cost	Notes
		COOKING (cont'd)							
		BASIC (cont'd)							
2265)	09-650	PITCHER, Water: capacity 3 quarts (285 cl), approx. 5-1/4" diameter x 8" deep (Ø 13 cm x 20 cm); straight-sided; stainless steel.	each	3.97	1	3.97	5	19.85	(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)
2266)	20-760	PLATE: 9" diameter (Ø 23 cm); unbreakable, Melamine; assorted pastel colours.	each	.33	1	.33	20	6.60	
2267)	20-365	POT, Cooking, 1-1/2 quart capacity (140 cl: stainless steel with aluminium or copper clad bottom; seamless construction; long, heat-resistant plastic or bakelite handle with hanging ring; fitted lid with knob.	each	1.82	1	1.82	10	18.20	
2268)	20-360	POT, Cooking, 2-1/2 quart capacity (235 cl): stainless steel with aluminium or copper clad bottom; seamless construction; long, heat-resistant plastic or bakelite handle with hanging ring: fitted lid with knob.	each	3.06	1	3.06	10	30.60	
2269)	20-350	POT, Cooking, 4 quart capacity (375 cl: stainless steel with aluminum or copper clad bottom; seamless construction; long, heat-resistant plastic or bakelite handle with hanging ring; fitted lid with knob.	each	4.68	1	4.68	3	14.04	
2270)	20-590	SHREDDER/GRATER, Semicircular: 3 to 4 cutting blades for cutting from very coarse to very fine, approx. 5" x 13" (13 x 33 cm); four sided; stainless steel.	set	.63	1	.63	5	3.15	
2271)	20-800	SPATULA, Kitchen: broad flat flexible blade of spring steel; blade length approx. 9" to 10" (23 - 25 cm); plastic or bakelite handle.	each	.44	1	.44	3	1.32	
2272)	20-860	SPOON, Mixing, Set of Three: wooden; one each of the following sizes: 8" long, 10" long, 12" long (20 cm, 25 cm, 30 cm).	set	.30	1	.30	4	1.20	
2273)	20-865	SPOON, Serving: stainless steel. (Tablespoon)	each	.11	1	.11	12	1.32	
2274)	01-700	STOVE, Vaporized Kerosene, Single Burner, Pressure Type: silent; complete with standard spare parts kit.	each	3.00	2	6.00	10	30.00	

List E: HOME ECONOMICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: Mobile Unit Qty. EA	Mobile Unit Cost $	Static Unit Qty. EB	Static Unit Cost $	Notes
		COOKING (cont'd)							
		BASIC (cont'd)							
2275)	20-890	STRAINER, Puree: approx. 7" to 8" diameter (Ø 18 - 20 cm); stainless steel mesh sieve and rim, reinforced bowl; plastic handle.	each	.77	1	.77	5	3.85	
2276)	20-540	TABLEWARE, Set of Four: stainless steel; one each of the following: table knife, table fork dessert spoon, teaspoon.	set	.34	1	.34	20	6.80	
2277)	20-950	TUMBLER, Drinking: capacity 10 oz. (300 cc); hardened and heat-resistant glass.	each	.04	2	.08	20	.80	
		SUBTOTAL, Cooking (Basic Items).....				37.00		232.00	
		LAUNDRY							
		BASIC							
2291)	21-050	BASIN, Utility: approx. 20" diameter x 8" deep (Ø 50 x 20 cm); polyethylene.	each	1.24	3	3.72	10	12.40	
2292)	21-100	BOILER: capacity 11 gallons (42 litres); galvanized steel or copper; leakproof, rust-resistant; straight sides, flat bottom, non-snag rolled rim, wooden or plastic handles; snug-fitting cover.	each	5.90	1	5.90	1	5.90	
2293)	21-530	IRON, Charcoal: flat, box type; wooden handle.	each	1.99	1	1.99	8	15.92	
2294)	21-520	IRON, Kerosene: Tilley pressure type. (Paraffin Iron)	each	7.32	1	7.32	2	14.64	
2295)	21-540	IRON REST: metal top; asbestos back.	each	.35	1	.35	10	3.50	
2296)	21-140	PAD: approx. 36" wide x 5 ft. long (90 x 150 cm); heavy felt or asbestos material.	piece	1.83	1	1.83	10	18.30	For covering tables when ironing.
		- Cover: see Item 2288.							
2297)	21-700	PAIL, Utility: capacity 11 quarts (10 litres) 10-5/8" diameter x 9-1/2" high (Ø 27 x 24 cm); seamless, polyethylene; plastic handle on rust-proof metal bail.	each	.53	2	1.06	5	2.65	
2298)	21-145	SHEETING: approx. 36" wide x 5 ft. long (90 x 150 cm); heavy cotton drill; white.	piece	.48	1	.48	10	4.80	For covering the table pad, Item 2296, when ironing.
		SUBTOTAL, Laundry (Basic Items).....				23.00		78.00	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

List E: HOME ECONOMICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: Mobile Units Qty. EA	Mobile Units Cost $	Static Units Qty. EB	Static Units Cost $	Notes
		LAUNDRY							
		OPTIONAL							
2311)	21-510	IRON, Electric, Dry, Automatic Control: aluminium sole plate with beveled edge; chrome plated body; 2-1/2 to 3 lbs. (1.13 - 1.36 kg); detachable cord; black plastic handle and rim. For operation on 220 volts, AC.	each	6.11	1	6.11	2	12.22	Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
		or							
2312)	21-515	IRON, Electric, Dry, Automatic Control: aluminium sole plate with beveled edge; chrome plated body; 2-1/2 to 3 lbs. (1.13 - 1.36 kg); detachable cord; black plastic handle and rim. For operation on 110 volts, AC.	each	6.11					If Item 2311 or Item 2312 is supplied, the number of charcoal irons, Item 2293 should be reduced accordingly.
2313)	21-650	LINE, Laundry: approx. 5/16" diameter (Ø 8 mm), length 50 ft. (15 m); heavy cord or plastic covered.	length	.80	1	.80	2	1.60	For request only if no suitable material for a line is obtainable locally.
2314)	21-120	RACK, Drying: wooden or aluminium or aluminized steel; rust-resistant; approx. 75 ft. (22 m) of plastic or nylon cord; completely folding; height approx. 6 ft. (2 m) when in use. (Clothes Horse)	each	6.60	1	6.60	2	13.20	To be requested only if, for climatic or other reasons, drying by other means is impracticable.
		SEWING							
		BASIC							
2331)	22-050	BOX: approx. 9" x 7" x 3" (23 x 18 x 8 cm); translucent plastic or metal; with close-fitting lid.	each	1.46	18	26.28	20	29.20	For needles, pins, etc.
2332)	22-100	CHALK, Tailor's: pencil-type holder; complete with 2 chalk refills.	each	.18	6	1.08	6	1.08	
2333)	22-281	FASTENER, Hook and Eye, Black: No. 1 (medium size); card of 12	card	.04	12	.48	12	.48	Initial supply.
2334)	22-280	FASTENER, Hook and Eye, White: No. 1 (medium size); card of 12.	card	.04	12	.48	12	.48	Initial supply.
2335)	22-276	FASTENER, Press-Stud or Snap, Black: size "0"; card of 36.	card	.04	12	.48	12	.48	Initial supply.
2336)	22-275	FASTENER, Press-Stud or Snap, White: size "0"; card of 36.	card	.04	12	.48	12	.48	Initial supply.
2337)	22-350	HOOK, Crochet, Set of 12: steel; three each of the following sizes: 3, 7, 8, 11.	box	.90	1	.90	1	.90	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

List E: HOME ECONOMICS (Primary Schools) (cont'd)

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: Mobile Unit Qty. EA	Mobile Unit Cost $	Static Unit Qty. EB	Static Unit Cost $	Notes
		SEWING (cont'd)							
		BASIC (cont'd)							
2338)	99-100	NEEDLE, Knitting, Set of 10 Pairs; one pair in each of the following lengths and sizes: 10" (25 cm) long: Eng.# 1, 2, 3, 4, 5 — Fr. # 7½, 7, 6½, 6, 5½ (22-400) 14" (35 cm) long: Eng.# 6, 7, 8, 9, 10 — Fr. # 5, 4½, 4, 3½, 3¼ (22-405)	set	2.56	6	15.36	6	15.36	
2339)	99-105	NEEDLE, Sewing: Set of 200 packets of 25 in each of the following types and sizes: a) sharps: 3, 7, 8, 11 (22-480) b) darning: 3, (22-450) c) darning: 7 (22-460) d) crewel: 7 (22-430) e) raffia: 7 (22-470)	set	.44	1	.44	1	.44	Initial supply.
2340)	22-500	PINS, Dressmaker: plated, 1/4 lb. (110 gm) box. - Rule: see Items 2346 and 2347	box	.25	6	1.50	6	1.50	Initial supply.
2341)	22-700	SCISSORS, Dressmaker: 7" (18 cm) long; straight handle, blunt/sharp; stainless steel.	each	.80	6	4.80	8	6.40	
2342)	22-710	SCISSORS, Embroidery: 3" (8 cm) long; straight blades, sharp/sharp; stainless steel.	each	.28	2	.56	6	1.68	
2343)	22-850	SEWING MACHINE, Hand Operated: complete with wooden base, cover, standard accessories, and spare parts.	set	25.00	2	50.00	2	50.00	
2344)	22-890	SHEARS, Pinking: 7" (18 cm) long; large finger loops; stainless steel.	each	3.47	2	6.94	2	6.94	
2345)	22-900	SKIRT-MARKER: pin-it type; to mark hems 7" to 20" (18 - 50 cm) from floor; heavy metal base; built-in pin cushion; hardwood ruler.	each	1.97	1	1.97	1	1.97	
2346)	05-670	TAPE MEASURE, Cloth: 60" (150 cm) long; calibrated in inches and centimetres.	each	.14	12	1.68	12	1.68	
2347)	06-900	TAPE MEASURE, Steel: 6 ft. (2 m) long; calibrated in inches and centimetres; spring rewind; nickel-led steel case.	each	.24	1	.24	1	.24	

List E: HOME ECONOMICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: Mobile Unit Qty. EA	Mobile Unit Cost $	Static Unit Qty. EB	Static Unit Cost $	Notes
		SEWING (cont'd)							
		BASIC (cont'd)							
2348)	99-110	THIMBLE, Set of 3: one each of the following sizes: a) small, size 5 (22-920) b) medium, size 6 (22-921) c) large, size 7 (22-922)	set	.09	10	.90	10	.90	
		SUBTOTAL, Sewing (Basic Items).....				115.00		120.00	
		CHILD CARE AND TRAINING							
		BASIC							
2361)	02-200	BATH, Baby: capacity 26 quarts (25 litres); oval, approx. 30" x 14" x 8" deep (75 x 35 x 20 cm); polyethylene.	each	1.11	1	1.11	1	1.11	
2362)	05-126	BLANKET, Baby: preferably fire-resistant, light-weight, cotton blend.	each	1.50	1	1.50	1	1.50	
2363)	20-522	CONTAINER: approx. 5" x 5" (13 x 13 cm), shallow, with fitted lid.	each	.99	1	.99	1	.99	
2364)	20-526	CUP, Baby: capacity 5 oz. (150 cc); safety rolled rim, easy grip handle; stainless steel.	each	.64	1	.64	1	.64	
2365)	03-375	PAIL, Diaper: capacity approx. 3 to 4 gallons (11 - 15 litres); polyethylene; bail handle, with cover.	each	1.73	1	1.73	1	1.73	
2366)	21-700	PAIL, Utility: capacity 11 quarts (10 litres), 10-5/8" diameter x 9-1/2" high (Ø 27 x 24 cm); seamless, polyethylene; plastic handle on rust-proof metal bail.	each	.53	1	.53	1	.53	
2367)	03-390	POT, Chamber, Baby: polyethylene, with cover.	each	.30	1	.30	1	.30	
2368)	03-610	SHEETING, Plastic: 36" wide x 2 yds. long (90 x 180 cm); 8 guage (0.2 mm); vinyl, boilable.	piece	.32	1	.32	1	.32	
2369)	20-890	STRAINER, Puree: approx. 7" to 8" diameter (Ø 18 - 20 cm); stainless steel mesh sieve and rim; reinforced bowl; plastic handle.	each	.77	1	.77	2	1.54	
2370)	20-897	STRAINER, Tea: 2-1/2" diameter (Ø 64 mm); fine tinned mesh and wire; black plastic handle.	each	.26	1	.26	2	.52	
		SUBTOTAL, Child Care (Basic Items).....				8.00		9.00	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

List E: HOME ECONOMICS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: Mobile Unit Qty. EA	Mobile Unit Cost $	Static Unit Qty. EB	Static Unit Cost $	Notes
		CHILD CARE AND TRAINING							
		OPTIONAL							
2371)	17-185	DOLL, Demonstration, Dark: newborn; without reservoirs.	each	9.24					
		or			1	9.24	1	9.24	
2372)	17-186	DOLL, Demonstration, Light: newborn; without reservoirs.	each	9.24					
		TOTALS, List E, Basic Items				183.00		439.00	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

PRIMARY SCHOOLS: AUDIO-VISUAL AIDS

72) The term "audio-visual" has been given such prominence of recent years that many people have come to think of audio-visual aids solely as new inventions of the machine-age. It is true that there have been new mechanical inventions in this field; but there has been a no less important advance in the greater use of simple, comparatively inexpensive and easily obtainable articles to make teaching more vivid and effective.

73) Almost all the items contained in the main list that follows are of this latter nature. Most of them, or satisfactory substitutes for them, will be locally obtainable in developing countries, and it might be thought that, in common with pens, pencils and similar articles (see General Introduction, paragraph 20), they should be left for local supply from the beginning. An exception is, however, made in this case, because these articles may not have been considered normal items of supply to schools in the past and we wish to stimulate their introduction. Furthermore, though the articles themselves may be quickly consumable, the aids that are made with them may remain in use in the schools for a number of years. Maintenance of the supplies in future years can certainly be left to local efforts.

74) As will be seen, most of the items listed are not for immediate use as teaching aids; they are materials with which the teachers can make their own aids. They should be requested therefore only for schools in which there are teachers trained, or to be trained, in their use.

75) Provision for one of the oldest, and probably the most effective, of visual aids, the chalkboard, is made under the "General Equipment" list.

76) As regards the items in the optional list, radio receivers should be requested only if:

a) there is a regular programme of school broadcasts, produced in collaboration with or approved by the education authorities responsible for the schools, which can be received clearly at appropriate times by the schools concerned.

b) the programme contains broadcast lessons designed for the level of the school for which the receivers are requested.

c) the teachers in the schools for which the receivers are requested have had, or are to have, training or instruction in the conduct of broadcast lessons. (Otherwise much of the value is liable to be lost.)

The argument has been put forward that the provision of a broadcast receiver in any case may enable a teacher in a remote school to broaden his mind and knowledge by listening to instructive broadcasts, but not all broadcasts are improving to the mind and there is no certainty that the teacher will concentrate on those that are. The provision of a receiver is not therefore thought justifiable on this ground alone.

77) Projectors, Screens, and Record Players. Requests for these items should, in general, be governed by the guidance given in Paragraph 27 of the introductory notes. For the reasons given there these items should not ordinarily be requested for the equipping of schools in which teachers-in-training are to practise unless the Government is prepared and likely to be able to provide them in the schools in which the teachers are eventually to work or, or course, unless these items are already normal items of supply to such schools.

78) As regards primary schools other than those in which teachers-in-training are to practice it is not expected that these will normally be subjects for UNICEF aid (see General Introduction, paragraph 8). Where they are subjects for UNICEF aid, it would probably be as a part of a Government's development scheme, and the range of equipment provided in UNICEF's part of the programme may be expected to accord with that provided in the rest of the scheme. It may be, for example, that in the general Government programme, projectors and record players are provided for all the schools, or for the larger schools but not the smaller, or for none. Requests in connection with UNICEF's part in the scheme would be considered accordingly.

79) In brief, requests for projectors and record players for primary schools should normally be made only in the case of schools in countries where these articles are already, or are likely to be, items of regular supply to primary schools. A further reason, in addition to those given or referred to in the foregoing paragraph, is that projectors are of comparatively little value without a large stock of filmstrips or slides. A few are soon shown, and the machine then becomes idle. In these circumstances the provision of a projector is hardly a justifiable use of UNICEF funds. (This remark applies to machines supplied to separate schools only; it obviously does not apply to machines supplied to mobile teams covering a number of schools.) To supply each individual primary school, especially small ones, with an adequate separate stock is an uneconomic procedure. A more economic arrangement is the building-up of filmstrip libraries to serve a number of schools, and it may be expected that countries in which projectors are regularly supplied to primary schools have a system of filmstrip or slide distribution. In these circumstances a request for a projector becomes more justifiable.

List F: AUDIO-VISUAL AIDS (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. FA	4-year schools Cost $	5-year schools Qty. FB	5-year schools Cost $	6-year schools Qty. FC	6-year schools Cost $	Notes
		BASIC									
2391)	25-840	CRAYONS: approx. 4-1/4" long x 7/16" diameter (11 cm x Ø 11 mm); non-smudge, non-toxic, wrapped; box of 8 in the following colours: red, orange, yellow, green, blue, purple, brown, black. (as "Crayola" or equal)	box	.20	3	.60	4	.80	5	1.00	Initial supply. For use in making charts, flannelgraphs, etc.
2392)	18-202	DUPLICATOR: simple clay-bed type; foolscap size. (as Matthews, Drew and Shelbourne)	each	6.00	1	6.00	1	6.00	1	6.00	For reproduction of maps, drawings, test papers, etc. This type of duplicator is similar to the ordinary hectograph, but cleaner to operate.
2393)	99-070	FLANNELETTE: 36" wide x 3 yards long (90 x 275 cm); heavy, rough, double napped; one piece in each of the following colours: black, dark green, navy blue, red. (Winceyette)	set	6.00	1	6.00	1	6.00	2	12.00	For flannelgraphs. Black (#18-280) Navy blue (18-280-4) Dark green (18-280-8) Red (18-280-12)
2394)	26-275	GUM, Liquid: approx. 3 oz. (90 cc) bottle, with cap. (Mucilage)	doz.	2.40	1	2.40	2	4.80	2	4.80	Initial supply. Not to be requested if suitable locally-made gum is available.
2395)	45-393	PANTOGRAPH: approx. 21" (53 cm) long, ratio of 25:1; hardwood; with 6 spare lead points. (as Beckley-Cardy cat.114A p.123 #47031)	each	2.25	1	2.25	1	2.25	2	4.50	For teachers' use in making enlargements and reductions.
2396)	18-510	PAPER, White: 30" to 36" (75 - 90 cm) wide; 54-lb. or 80 gm stock; unglazed, cartridge type; 25-yard (23 m) roll.	roll	1.50	1	1.50	2	3.00	2	3.00	Initial supply. For making charts, maps, etc.
2397)	18-512	PAPER, White, Thick: 12" x 18" (30 x 45 cm) sheets; approx. 300 gm or 175-lb. stock; light glaze; "Manila Tag"; package of 100.	pkg.	1.40	1	1.40	1	1.40	1	1.40	Initial supply. For making flip-charts, etc.
2398)	51-685	SANDPAPER: 9-1/2" x 10" (24 x 25 cm); 3 sheets of each of the following grits: "0", "F", "1", "1-1/2"; package of 12 sheets.	pkg.	.11	4	.44	5	.55	6	.66	Initial supply. For backing flannelgraph cut-outs.
2399)	25-550	SCISSORS, Safety School Type: 4-1/2" (11 cm) long; blunt/blunt.	each	.41	6	2.46	12	4.92	12	4.92	
2400)	26-730	SCISSORS, Teacher's: 8" (20 cm) long; sharp/sharp.	each	.84	2	1.68	2	1.68	2	1.68	For teachers' use in cutting paper, cardboard, flannelette, etc.
2401)	26-870	TAPE, Cellophane: 1/2" wide x 1000" (13 mm x 25 m); self-adhesive; with dispenser.	each	.29	1	.29	2	.58	2	.58	Initial supply.
2402)	45-800	THUMB TACKS: 1/2" diameter (Ø 13 mm), solid head; box of 100. (Drawing Pins)	box	.46	1	.46	2	.92	2	.92	Initial supply. For affixing flannelgraphs, cut-out pictures, etc.
		- Winceyette: see Item 2393.									
		TOTALS, List F, Basic Items				25.00		33.00		41.00	

List F: AUDIO-VISUAL AIDS (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. FA	4-year schools Cost $	5-year schools Qty. FB	5-year schools Cost $	6-year schools Qty. FC	6-year schools Cost $	Notes
		OPTIONAL									
2421)	26-045	BRUSHES, for Powder Paint: non-rusting seamless ferrules; set of six in the following shapes and sizes: Flat: sizes 4, 8, 12 Round: sizes 4, 8, 12	set	1.00	1	1.00	2	2.00	2	2.00	For use with Powder Paints, Item 2422, in making charts, flannelgraphs, etc.
2422)	26-560	PAINTS, Powder: set of eight 1-lb. (454 gm) tins in the following colours: scarlet, orange, yellow, green, ultramarine blue, brown, black, white.	set	5.00	1	5.00	1	5.00	1	5.00	Initial supply. These paints are to be mixed with water and are used for colouring charts, cutouts, etc.
2423)	18-010	PROJECTOR, 300 watts, for slides 2" x 2" (5 x 5 cm): tropicalized, blower-cooled, aspheric condenser system, complete with 100 mm f/3.5 tropicalized lens, projection lamp, plus two spare projection lamps and 2.5 meters (8 ft.) flex; with filmstrip carrier for single and double frame (24 x 36 mm and 18 x 24 mm) horizontal and vertical pictures, and semi-automatic slide dispenser and magazine. For operation on 220 volts, 50/60 cycles, AC. (as CAPAC, Paris)	each	49.18	-	-	-	-	1	49.18	Items 2423, 2424 and 2425 Projectors should be requested only if full use is to be made of them and arrangements have been made for an adequate supply of slides and/or filmstrips. For screen, see Item 2430.
		or							or		
2424)	18-020	PROJECTOR, 300 watts, for slides 2" x 2" (5 x 5 cm): tropicalized, blower-cooled, aspheric condenser system, complete with 100 mm f/3.5 tropicalized lens, projection lamp, plus two spare projection lamps and 2.5 metres (8 ft.) flex with filmstrip carrier for single and double frame (24 x 36 mm and 18 x 24 mm) horizontal and vertical pictures, and semi-automatic slide dispenser and magazine. For operation on 110 volts, 50/60 cycles AC. (as CAPAC, Paris)	each	49.18	-	-	-	-	1	49.18	
		or							or		
2425)	18-015	PROJECTOR, 300 watts, for single and double frame (24 x 36 mm and 18 x 24 mm) filmstrips and 2" x 2" (5 x 5 cm) slides: complete with 5" (127 mm) coated projection objective, f/3.5 anastigmatic lens and projection bulb lamp plus 2 spare projection lamps; blower-cooled. In carrying case. Complete with 2 spare bulbs (lamps)-300 watts, 220 volts, and 2 spare bulbs (lamps), 100 watts, 12 volts. With semi-automatic slide dispenser. For dual operation on 220 volts 50/60 cycles AC or 12 volt car battery.	each	50.00	-	-	-	-	1	50.00	

List F: AUDIO-VISUAL AIDS (Primary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. FA	4-year schools Cost $	5-year schools Qty. FB	5-year schools Cost $	6-year schools Qty. FC	6-year schools Cost $	Notes
		OPTIONAL (cont'd)									
2426)	N.S.	RADIO RECEIVER: table model; transistorized.	each	40.00	-	-	-	-	1	40.00	When requisitioning this item specify the waveband(s) and whether for battery or mains operation. If for mains, specify current, voltage and cyclage. Batteries do not store well and are not supplied by UNICEF.
2427)	25-415	RECORD PLAYER: two-speed, 33 and 45 RPM; transistorized, battery-operated.	each	30.00	-	-	-	-	1	30.00	Batteries do not store well and are not supplied by UNICEF.
		or								or	
2428)	25-155	RECORD PLAYER: four-speed including 78, 45, 33 and 16 RPM; monophonic, portable. For operation on 110/220 volts, 60 cycles.	each	20.00	-	-	-	-	1	20.00	
		or								or	
2429)	25-156	RECORD PLAYER: four-speed including 78, 45, 33 and 16 RPM; monophonic, portable. For operation on 110/220 volts, 50 cycles.	each	20.00	-	-	-	-	1	20.00	
2430)	18-100	SCREEN, Projection: 47" x 47" (120 x 120 cm); fungus proofed, matte white; portable.	each	9.44	-	-	-	-	1	9.44	This item is to be requested only if Item 2423, 2424 or 2425 is also requested.

PRIMARY SCHOOLS: GAMES EQUIPMENT (PHYSICAL EDUCATION)

80) Such simple equipment as is needed for a sound basic course of physical training, especially at the primary stage, can in most cases be obtained locally or made from locally obtainable materials. The construction of bean bags, for example, and similar articles need usually offer little difficulty, and local musical instruments, which can be used for rhythmic exercise work, are, normally, fairly easy to obtain. Similarly, for athletics most of the equipment needed can usually be made locally.

81) It will be seen therefore that the following list contains only one or two items for physical training and athletics. This is not to be construed as a lack of interest on the part of UNICEF in these aspects of training; on the contrary UNICEF attaches great importance to them. It is appreciated that these activities can be enriched with more elaborate equipment, particularly in the field of gymnastics; but, as explained in the introductory notes, the principle on which UNICEF aid and these guide lists are based is to provide essentials only, so that its help may be deployed where it is most needed, and it is felt that this more elaborate and expensive equipment, though desirable, can hardly be considered as absolutely essential.

82) As regards team games the list contains equipment for the three which are perhaps most commonly played in schools throughout the world. It is assumed that the posts required in connection with this equipment can be obtained or made locally.

83) The two items in the optional part of the list require little explanation. The stop-watch is for schools which take a special interest in athletics. The tumbling mats, for use in physical training, are included to meet the possible need of schools in areas where such mats, or suitable alternatives, cannot be made locally.

84) For the measurement of jumps and tracks use can be made of the Surveyors' Tape included in the "General Science" list (List B).

List G: GAMES EQUIPMENT (PHYSICAL EDUCATION) (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for: 4-year schools Qty. GA	4-year schools Cost $	5-year schools Qty. GB	5-year schools Cost $	6-year schools Qty. GC	6-year schools Cost $	Notes
		BASIC									
2441)	27-028	BALL, Sponge Rubber: diameter approx. 2-1/2" to 3" (Ø 6 to 8 cm); assorted colours.	doz.	2.00	2	4.00	2	4.00	2	4.00	
2442)	27-032	BASKETBALL, Junior Size: circumference 28" (70 cm), weight 19 oz. (540 gm); durable vinyl composition cover, seamless, with durable nylon-wound butyl bladder.	each	5.00	-	-	-	-	2	10.00	Items 2442, 2444 and 2446 These balls have the same behaviour qualities as leather-covered balls, but last much longer. They are officially recognised. The bladders are manufactured to last as long as the covers and are not replaceable. The Inflating Kit, Item 2385, is for use with all of the balls.
2443)	27-034	BASKETBALL GOAL: net and frame with bracket for mounting.	pair	7.00	-	-	-	-	1	7.00	Posts and backboards must be provided locally.
2444)	27-312	FOOTBALL, Round: professional model, official size and weight; durable vinyl composition cover, seamless, with durable nylon-wound butyl bladder. (Soccer Ball)	each	4.75	3	14.25	4	19.00	4	19.00	
2445)	27-416	INFLATING KIT: includes hand pump and three inflating needles. (For use with footballs, basketballs, and volleyballs)	kit	1.00	1	1.00	2	2.00	2	2.00	
2446)	27-957	VOLLEYBALL: professional model, regulation size and weight; durable vinyl composition cover, seamless, with durable nylon-wound butyl bladder.	each	5.00	-	-	-	-	2	10.00	
2447)	27-958	VOLLEYBALL NET: regulation size, 27 ft. x 3 ft. (8.2 m x 91 cm), 4" (10 cm) mesh.	each	3.50	-	-	-	-	1	3.50	Posts must be provided locally.
2448)	27-973	WHISTLE, Referee's: brass.	each	.45	4	1.80	5	2.25	6	2.70	
		TOTALS, List G, Basic Items				21.00		27.00		58.00	
		OPTIONAL									
2461)	27-837	STOP WATCH: 30 minutes, in tenths of seconds.	each	10.00	-	-	1	10.00	1	10.00	To be requested only if accurate timing and recording of track racing, etc. are required.
2462)	NS	TUMBLING MAT: approx. 110 x 180 cm (44" x 72"); minimum of 5 cm (2") thick; tufted coir or equal.	each	10.00	2	20.00	2	20.00	2	20.00	To be requested only if tumbling mats are required and if they cannot adequately be made locally from local materials.

HEALTH (HYGIENE) - PRIMARY SCHOOLS

85) In many primary schools in developing countries, separate periods are allotted to the teaching of "Health-Care" or "Hygiene". During these periods, habits of personal hygiene, dangers from common carriers of diseases, such as flies and mosquitoes, general principles of nutrition and household sanitation and similar matters are normally taught. Requests are therefore not infrequently made for equipment for the teaching of these subjects.

86) It is felt, however, that, though the principles underlying such instruction are of a more or less universal nature, the lessons to be derived from them need to be presented from a local viewpoint and to be related to local conditions if they are to make any real appeal to the pupils or to have any practical effect on them. In realisation of this need a number of countries have produced, or are producing, books, charts, posters and similar instructional materials for this purpose, through the medium of the local languages and with locally-based illustrative materials.

87) It is therefore considered that, in general, where such materials have been locally produced, they can properly be left to local supply. Where they have not, it is thought that UNICEF's aid in this field can perhaps best be channelled through the provision of equipment for the making of flannelgraphs and similar visual aids (see List F) and through the provision of equipment for Production Units (see Section 4). (It is assumed that any such materials made in the Production Units would be produced in full consultation with the Health Authorities in the area.)

88) In cases where none of these measures is sufficiently applicable and there are available commercially-produced charts suited to the syllabus and local conditions and with legends in a language intelligible to the pupils, requests may be made for such charts. They are referred to as "Charts of Choice" in the "optional" part of the list that follows. Requests for such charts must be accompanied by full details including cost and source of supply.

89) For the reasons given above it will be seen that, in the list that follows, there are no other items directly related to the teaching of hygiene and care of health. It is however obvious that the teaching of healthful ways of living can be of little effect unless this teaching is seen to be put into practice in the sanitation and in the running of the school itself. It is for this reason, among others, that in paragraph 41, it is stated that one of the pre-requisites for UNICEF's assistance to a school is that the construction of the school and its sanitation should as far as possible fulfil the requirements, where these exist, of the Health Authorities in the area. Applications for UNICEF assistance in bringing a school up to the required level of sanitation may be considered in cases where it is necessary.

90) Further support to health education may also be provided through interest taken by the school in the personal health of the individual pupils. This interest is in some cases taken by the school on its own; in other cases it is taken in connection with a school health service, where such a service exists.

91) In appreciation and encouragement of such developments the list that follows contains a few basic items of universal application in this connection. It will be noted that these items are included as "optional". The reason is that they should be requested only if there is a reasonable certainty that they will be properly used and, in the case of the instruments for first-aid use, that a supply of the requisite expendable materials, such as bandages, lint, cotton-wool, and disinfectants can be assured by the school or local authorities.

92) In the case of schools wishing to obtain reference books on Health and Health Education for the use of teachers, attention is drawn to the fact that the World Health Organisation of the United Nations prepares lists, which can be obtained through UNICEF Headquarters, of suitable books on these subjects published in a variety of languages. Up to three books for each school may be selected and requested for supply from those lists.

93) Attention is also drawn to the fact that the World Health Organisation is prepared to supply to schools which require it, its monthly publication "World Health", free of charge. Applications for the regular supply of this magazine should be made directly to the "Director, Division of Public Information, World Health Organisation, Geneva".

List H: HEALTH (HYGIENE) (Primary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for 1 primary school: Qty. HA	Cost $	Notes
		OPTIONAL					
2481)	06-100	CHART, VISION TEST, SNELLEN: Alphabet/Illiterate; printed on one side with Snellen alphabet letters and on reverse side with astigmatic dial and illiterate E, distances marked in both feet and metres; 15-guage (.38 mm) white, washable vinyl plastic card 11" x 21-1/2" (28 x 44 cm) with eyelet on top for hanging. (Eye Chart)	each	1.10	1	1.10	For testing the vision of pupils, when required. It should be used only by persons who have been instructed in its proper use.
2482)	*(17-183: English) (17-183-2: French)	CHARTS, Health Education, Selection: illustrating causes of disease, carriers of disease, prevention of disease, habits of personal hygiene, etc.; in language of choice. (See note at right) *When other languages are desired, do not cite the warehouse numbers given here.	each	2.00	4	8.00	These charts should be related to local conditions and needs, and the legends on them should, if possible, be in the language of the pupils or in a language intelligible to them. It is for this reason that it is considered that they should be left to local choice. Full details of the charts including cost and source of supply should accompany requests for these items. The unit price shown is thought to be a fair average price.
2483)	07-210	FORCEPS, DRESSING, 6" (15 cm): spring type; serrated rounded tips; stainless steel. (Thumb Forceps, Dissecting Forceps)	each	.35	2	.70	For use in first-aid. This item should be requested only if a regular local supply of bandages, disinfectants, etc. can be assured.
2484)	01-470	SCALE, BATHROOM, AVOIRDUPOIS, Capacity 280 lbs: with carrying handle, white.	each	5.94	1	5.94	For use in recording the weights of pupils.
		or					
2485)	01-465	SCALE, BATHROOM, METRIC, Capacity 120 kgs. x 1/2 kilo calibration: with carrying handle; white.	each	5.94	1	5.94	
2486)	07-700	SCISSORS, BANDAGE, Lister, 7-1/4" (182 mm): with flattened probe end on lower blade; stainless steel. (Bandage Shears)	each	.80	2	1.60	For use in first-aid. This item should be requested only if a regular local supply of bandages, disinfectants, etc. can be assured.
2487)	06-900	TAPE, MEASURING, STEEL, 6-ft. (2 m): calibrated in inches and centimetres; spring rewind; nickelled steel case. (Tape Measure)	each	.25	1	.25	For use in recording the heights and other physical measurements of pupils.
2488)	04-815	THERMOMETER, CLINICAL, ORAL, Centigrade: 35-43° C; lens front; cylindrical bulb. In case.	each	.20	2	.40	
		or					
2489)	04-810	THERMOMETER, CLINICAL, ORAL, Farenheit: 95-110° F; lens front; cylindrical bulb. In case.	each	.20			
2490)	-	BOOKS, Reference, Selection: in the fields of hygiene, school health and health education methods. (See note at right)	each	(5.00)	(3)	(15.00)	To be selected from a list of suitable books prepared and kept currently up to date by WHO, and available from UNICEF, New York, as document SUNO-19. Books may be selected from this list up to a maximum total cost of about $15.00 per school.

SECTION 2

SECONDARY SCHOOLS

SECONDARY SCHOOLS - INTRODUCTORY NOTES

94) This section of the lists deals with the requirements of schools providing general education after the end of the first six years of formal schooling (see paragraph 12 of the General Introduction). This second or "Secondary" part of school education is further subdivided in many countries, into sections variously termed "junior secondary" and "senior secondary", "junior high school" and "senior high school", "first cycle" and "second cycle", and so on. The lengths of these subdivisions, however, vary in different countries so that the use of these terms in connection with the guide lists would only lead to confusion and misunderstanding.

95) In the lists which follow therefore estimated requirements are shown by reference to years of schooling (not counting kindergarten - see paragraph 24a of the General Introduction). This arrangement also makes it possible for the lists to be used for estimating requirements not only of "Secondary" schools, as defined in paragraph 12 of the General Introduction, but also of primary schools, "cours complémentaires" and "middle schools" which provide an elementary education beyond the first six years of schooling.

96) It is to be noted that primary schools which proceed beyond the sixth year of schooling may also require, in addition to the items indicated in the following lists, some of the simple equipment contained in the Primary School lists, insofar as they provide for the earlier years of schooling. In such cases the necessary additional selections should be made from the Primary School lists.

97) It is again emphasized (see paragraph 14 of the General Introduction) that the listing of estimated requirements under years of schooling is to be taken only as a very rough indication of average requirements for those years. In the secondary stage, even more than in the primary stage, the relative pace of progress in the various subjects differs widely. In Science, for example, many schools basing their curricula on the French system may do more Biology and Geology from the beginning and leave the closer study of Physics and Chemistry to a later stage, whereas other schools following other patterns may study Physics and Chemistry, as well as Biology, from the beginning. Others again may provide a course in General Science instead of, or in addition to, the study of Physics, Chemistry or Biology as separate subjects. Considerable latitude must therefore be allowed in selections from the lists, though, as in the case of the Primary School lists, any very wide deviations will call for explanation.

98) As a measure of standards it is assumed that by the end of the twelfth year of schooling the pupils should have reached a standard roughly equivalent to that required for the Baccalauréat (Part I) in French-based systems or the School Certificate or Ordinary Level of the General Certificate of Education in English-based systems.

99) As regards minimum standards of accommodation and staffing that should be assured before schools are assisted with equipment it is virtually impossible to lay down any very definite criteria for universal application except that the school buildings should fulfil the requirements, where these exist, of the Health authorities in the area and that the staff should have appropriate qualifications for the level at which they are to teach. In general, one would expect the teachers to have had at least two or three years of school or university level study beyond the level at which they are to teach, in addition to training in the theory and practice of teaching.

100) As regards the construction and equipment of science laboratories valuable guidance will be found in the UNESCO booklet entitled "Science Teaching in Secondary Schools of Tropical Africa". As the compiler of the booklet points out, "the conclusions and advice" contained in it "are, of course, applicable to other parts of the world".

101) The lists contained in this Section are arranged in the following order, prefaced by brief introductory notes where thought necessary:

List J: General Equipment

List K: Mathematics

List L: Geography

List M: Manual Arts

List N: Home Economics

List O: Audio-Visual Aids

List P: Physical Education (Games Equipment)

List Q: Science - Physics, Chemistry and Biology

List R: Health (Hygiene)

102) The lists are based on the requirements of a single-stream school (i.e. a school with one class only for each year of schooling - see paragraph 24-b of the General Introduction), though, as this is not the most economical unit, it is expected that requests will often be made in respect of schools with more than one stream. It is also assumed that the numbers of pupils will not exceed 40 in the lower classes and about 30 in the higher classes.

103) In calculating the quantities suggested for each item it has been assumed that each school will contain from two to five classes (or years of schooling) below the highest shown in the various columns in the list. Thus the quantities shown as suggested for a school with the 12th year of

schooling as its highest class or level are calculated on the assumption that the school contains five classes, or years of schooling, below that. In other words it is assumed that it will be a full secondary school covering the 7th to the 12th years of schooling inclusive. Similarly the quantities shown as suggested for a school with the 11th year of schooling as its highest class or level are calculated on the assumption that the school will cover the 7th to the 11th years of schooling inclusive. Similarly, again, a school with the 10th year of schooling as its highest is assumed to cover the 7th to the 10th years of schooling inclusive. A school with the 9th year of schooling as its highest is assumed to cover the 7th to the 9th years of schooling inclusive (a common "junior secondary" school pattern).

104) A school with the 8th year of schooling as its highest is assumed to cover the 5th to the 8th years of schooling and may require, in addition to the items shown, some items from the Primary School Section (Section 1) lists (see paragraph 96). It is assumed that a school with the 7th year of schooling as its highest will cover also any number of years up to and including the 6th and will require additional items from the Primary School Section (Section 1) lists accordingly.

105) The column headed "13/14th" is added to indicate that schools which go beyond the 12th year of schooling are also considered within the range of these lists.

106) Variations other than those described above may exist, but it is thought that such variations will mean slight reductions, rather than increases, in the quantities suggested; and it is a cardinal rule that more equipment should not be requested than is actually required.

107) It is difficult to give any hard and fast rule as to increases in the quantities shown that will be required in cases of schools with more than one stream except that an increase in the number of streams does <u>not</u> automatically mean a corresponding increase in the quantities of <u>all the</u> items. The quantities of any items should be increased only if the number of classes is such that, however carefully the school time-table is arranged, an increase in that item will obviously be necessary. The answer depends not only on the number of streams, but also on the number of periods allowed to each subject and the arrangement of the time-table.

SECONDARY SCHOOLS: GENERAL EQUIPMENT

108) This list contains a few miscellaneous items which are not properly or exclusively classifiable under the other lists. The purposes of the items in the main part of the list are self-explanatory. Explanations of the items in the "optional" part of the list are as follows:

109) Chalkboard Panel. This is a panel of fibreboard with a black surface on both sides, suitable for writing on with chalk. It can be used, as a chalkboard, as it is or it can be framed to protect the edges and improve its appearance or it can be affixed to a wall.

110) Pencil Sharpeners. These may be required in a few rooms in which work requiring well-sharpened pencils is done.

111) Clocks - Electric or 8-day lever movement. These may ordinarily be expected to be provided as part of the building. They are included here, one for each school, in case they are not so provided.

112) Typewriter and Duplicator. These should, in general, be requested only in the case of schools which will be supplied with a clerk who can operate them. The long-carriage typewriter is included for use in schools in which there is a frequent need for the typing of large tables and documents; for this reason it is indicated as a possible extra item for full secondary schools only. In the larger of such schools, schools with several streams, it may be required in addition to a standard size typewriter.

List J: GENERAL EQUIPMENT (Secondary Schools)

Quantities suggested for schools of various levels. The quantity suggested for any one (single-stream) school will be found in the column headed by the highest year of schooling provided by that school. The quantities in preceding columns should not be added to this. (See paragraphs 103/105.)

Item#	Whse.#	Description	Unit	Price $	7th JA	8th JB	9th JC	10th JD	11th JE	12th JF	13/14th JG	Notes
		BASIC										
2801)	44-184	COMPASS, Chalkboard: length approx. 16" (40 cm); with adjustable chalk holder and hard rubber foot.	each	1.25	2	2	2	2	3	3	3	
2802)	26-645	PUNCH, Paper: hand, single hole.	each	1.21	2	2	2	2	2	2	2	
2803)	44-670	RULER, Chalkboard: calibrated in inches and centimetres; with handle.	each	.75	•	•	•	•	•	•	•	One per classroom. Average cost per school: $4.50
		TOTALS, List J, Basic Items			$ 9.00	$ 9.00	$ 9.00	$ 9.00	$ 11.00	$ 11.00	$ 11.00	
		OPTIONAL										
2821)	44-165	CHALKBOARD PANEL: thickness 1/4" or 3/16" (6.35 or 4.76 mm), 4 ft. x 6 ft. (120 x 180 cm); fibreboard, hardboard, blockboard, or Masonite; black, silicate coated on both sides.	each	9.00	•	•	•	•	•	•	•	One per classroom. To be requested only if chalkboards cannot be supplied as part of the furniture provided locally. See explanatory notes preceeding this list. These panels can be used immediately as movable blackboards, resting on easels; they can also be affixed to walls.
2822)	44-657	- RENOVATOR, Silicate, Black: for resurfacing chalkboards; 1-pint (1/2 litre) tin.	tin	1.38	•	•	•	•	•	•	•	Requisition as needed. This is for resurfacing the silicate-coated Chalkboard Panel, Item 2821, the original surface of which will normally withstand 2 to 4 years of use before it requires re-coating. May also be used as finish coat over other smooth surfaces (e.g. good quality plywood) when applied over sealer and primer. One pint (1/2 litre) covers approx. 90 square feet (8 square metres).

List J: GENERAL EQUIPMENT (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th JA	8th JB	9th JC	10th JD	11th JE	12th JF	13/14th JG	Notes
		OPTIONAL (cont'd)										
2823)	44-173	CLOCK, Wall, Electric: 15" diameter (Ø 38 cm); metal or high impact plastic case. For operation on 110 volts, 60 cycles.	each	11.00								Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
		or										
2824)	44-175	CLOCK, Wall, Electric: 15" diameter (Ø 38 cm); metal or high impact plastic case. For operation on 220 volts, 50 cycles.	each	11.00	1	1	1	1	1	1	1	
		or										
2825)	44-177	CLOCK, Wall, Spring Wound, Eight Day: 15" diameter (Ø 38 cm); metal or high impact plastic case.	each	15.00								
2826)	18-200	DUPLICATOR, Portable, Hand Operated: with plastic cover and instruction book. (as Gestetner or Mimeograph)	each	64.68	1	1	1	1	1	1	1	For clay-bed duplicator see Item 3363
2827)	18-804	- CORRECTING FLUID, Stencil: 1 oz. (30 ml) bottle.	bot.	.31	4	4	4	4	4	4	4	
2828)	18-210	- INK, Duplicating: black, No. 44, for hot climate.	tube	.75	4	4	4	4	4	4	4	
2829)	18-500	- PAPER, Duplicating, White, Quarto Size: 8-1/2" x 11" (21 x 28 cm); 75 g/m; woodfree, suitable absorbent for printing on both sides.	ream	.62	6	6	6	6	6	6	6	Initial supply.
2830)	18-800	- STENCIL, Duplicating, Foolscap Size, White: box of 48 sheets.	box	2.47	3	3	3	3	3	3	3	
2831)	18-820	- STYLUS, Set of 4: Gestetner SP-2, SP-3, RP-3, RP-5.	set	3.47	1	1	1	1	1	1	1	
2832)	44-740	SHARPENER, Pencil, Desk Type: adjustable to fit various sizes of pencils.	each	2.05	.	.	.	.	.	.	.	Requisition as needed.
2833)	18-900	TYPEWRITER, ENGLISH Keyboard: 11/12" (28/30 cm) carriage; standard, elite type; with instruction manual in English.	each	83.00								
		or										
2834)	18-915	TYPEWRITER, FRENCH Keyboard: 11/12" (28/30 cm) carriage; standard, elite type; with instruction manual in French.	each	83.00	1	1	1	1	1	1	1	
		or										
2835)	18-930	TYPEWRITER, SPANISH Keyboard: 11/12" (28/30 cm) carriage; standard, elite type; with instruction manual in Spanish.	each	83.00								

List J: GENERAL EQUIPMENT (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th JA	8th JB	9th JC	10th JD	11th JE	12th JF	13/14th JG	Notes
		OPTIONAL (cont'd)										
2836)	18-910	TYPEWRITER, English Keyboard: 18" (45 cm) carriage; standard, elite type; with instruction manual in English.	each	99.63								
		or										
2837)	18-925	TYPEWRITER, FRENCH Keyboard: 18" (45 cm) carriage; standard, elite type; with instruction manual in French.	each	99.63	-	-	-	-	-	1	1	
		or										
2838)	18-940	TYPEWRITER, SPANISH Keyboard: 18" (45 cm) carriage; standard, elite type; with instruction manual in Spanish.	each	99.63								

SECONDARY SCHOOLS: MATHEMATICS

113) The list which follows may appear meagre, but, as has already been explained the intention is to provide, in the main parts of the lists, only items which may be considered essential and, in the optional parts of the lists, items which are essential in certain circumstances or are near-essential. It is felt that the items in the following list comprise the main essentials and near-essentials, in addition to the metre-sticks and chalkboard compasses, which are provided under the General Equipment list, List J.

114) Though there are, on the market, various devices designed to facilitate the teaching of mathematics, many of those of the simpler kind can satisfactorily be improvised with the use of locally obtainable materials or with flannelgraph materials and cardboard provided under the Audio-Visual Aids list, List O. (Models for demonstrating the Pythagorean Theorem, for example, which have been requested from time to time in the past at a cost of $5.00 or $6.00, can be made easily and just as effectively from flannelgraph materials or cardboard alone at a very small fraction of this cost.)

115) Slide Rules and Geometrical Instruments. Class sets of these have been included for consideration in cases where the pupils are unable to provide their own.

List K: MATHEMATICS (Secondary Schools)

Quantities suggested for schools of various levels. The quantity suggested for any one (single-stream) school will be found in the column headed by the highest year of schooling provided by that school. The quantities in preceding columns should not be added to this. (See paragraphs 103/105.)

Item#	Whse.#	Description	Unit	Price $	7th KA	8th KB	9th KC	10th KD	11th KE	12th KF	13/14th KG	Notes
		BASIC										
2851)	44-621	PROTRACTOR, Chalkboard: approx. 15" (38 cm) long; hardwood; with knob handle.	each	3.25	1	1	2	2	2	2	2	Related item: Chalkboard Compass, Item 2801.
2852)	44-745	SOLIDS, Geometric, Set of 12: approx. 2-3/4" x 4-1/2" (70 x 114 mm); wood; to include the following: 1 cone, 1 sphere, 1 cube, 1 cylinder, 1 hemisphere, 3 pyramid shapes, 4 prism shapes.	set	16.00	1	1	1	1	1	1	1	
2853)	90-005	TAPE, Measuring, Surveyor's: length 30 metres (100 ft.); calibrated in inches and centimetres; reinforced synthetic material, plastic covered; in wind-up case.	each	4.00	1	1	1	1	1	1	1	
2854)	44-919	TRIANGLE, Chalkboard: approx. 24" (60 cm) long; 90°, 70°, 20° angles; hardwood. (Set Square)	each	2.70	1	1	2	2	2	2	2	
		TOTALS, List K, Basic Items			$ 26.00	$ 26.00	$ 32.00	$ 32.00	$ 32.00	$ 32.00	$ 32.00	
		OPTIONAL										
2861)	44-072	BLOCK, Litre: 10 cm (4") on each edge in 1 cm divisions; dissectible to show the following volumes; 1cc, 9cc, 90cc, 900cc. (as WELCH #129)	each	8.00	1	1	1	1	1	1	1	
2862)	44-185	CONE, Dissectible: base diameter 6" x 9" high (Ø 15 x 23 cm) approx.; dissectible to illustrate conic sections, circle, ellipse, parabola and hyperbola; in contrasting colours to differentiate sections. (as CENCO cat.J-300 p.504 #74115)	each	11.10	-	-	-	-	-	1	1	
2863)	45-165	DRAWING SET: geometric instruments including one 6" (15 cm) ruler, one protractor, one compass, two triangles. (as ESA Stationery cat. p.105 #3776)	set	.98	40	40	40	40	40	40	40	Intended for use as class sets in situations where pupils are unable to provide their own.
2864)	45-770	SLIDE RULE: Mannheim type; A, B, C, C1, D, K, S, L, T scales; 10" (25 cm) long; hard plastic; in plastic sheath.	each	.99	-	-	-	35	35	35	35	

SECONDARY SCHOOLS: GEOGRAPHY

116) It will be seen that, as might be expected, most of the items in the following list are maps or charts. It will also be noted that the words "in language of choice" are included in the descriptions of the charts and maps, other than those which are "blank". The reason for this is that, at the secondary stage, maps other than blank maps are ordinarily required, and it is obviously desirable that the legends and names on these maps should be in the language most easily intelligible to the pupils. Maps are being increasingly produced in the languages of the developing countries, and the existence and sources of supply of such maps may reasonably be expected to be best known by the educational authorities in the countries concerned. Furthermore, the local education authorities are in the best position to judge the suitability of the maps from the linguistic point of view.

117) When maps and charts, which include in their description the words "in language of choice", are being requested, the request should be accompanied by detailed information as to the type, size, language, source of supply and cost.

118) In addition to the maps listed, maps of the country and region in which the schools concerned are situated will also be required. It is felt that these, which in many cases may be produced by the country concerned, can best be left to local supply.

119) The following notes concern items in the "Optional" part of the lists.

Wall Maps - Blank. These are included for possible request for schools which wish to use them, in addition to the more usual type of map, for activity purposes, such as the marking of routes, historical dates, geographical data and various other items, and for test purposes. They may also be requested for lower secondary classes in place of the "worded" maps in cases where no satisfactory maps in "language of choice" are available.

120) Compass, prismatic. This may be requested in addition to, or in place of, the compass contained in the basic part of the list, in cases where it is desired to do very simple surveying work as part of the geography course.

121) Filmstrips and Films. The range of these is extremely wide and individual requirements are quite varied. Some, for example, want scenes of ordinary life in countries other than their own; others want pictures of agricultural, industrial or commercial development in other countries; others again want pictures of vegetation, animal life or natural or

man-made phenomena such as dams, rivers, mountains, icebergs, and so on. Some want the pictures to have a more intensive coverage of a particular continent or region; others prefer a wider world coverage. The linguistic complications, referred to in the case of maps, frequently apply here also. Pictures which may be considered suitable for showing in some countries may be considered unsuitable in others.

122) In these circumstances it is not thought practicable, at least at this stage, to produce a satisfactory guide list of films and filmstrips for the teaching of geography. The need for such aids is, however, fully recognized and provision is therefore made in the optional part of the following list for a certain number of filmstrips or films or both to be requested. (Obviously such requests will only be made in the case of schools which have access to or are to be supplied with appropriate projectors.)

123) When such requests are made, full details of the film or filmstrip requested should be given together with source of supply and cost. It is suggested that, where it is not already the practice, the selection of filmstrips and films for local use, not only for geography but also for other subjects, might well be done by territorial panels appointed for the purpose. This point is more fully dealt with in connection with the "Audio-Visual Aids" list.

124) In case it may not be known, it may be helpful to mention that films and filmstrips, of value for the teaching of geography, can often be obtained, on free loan or as a gift, on application to the local Information services of foreign embassies or consulates or from the local representatives of firms with world interests.

125) A further point, which is dealt with more fully in connection with the "Audio-Visual Aids" list, but which can appropriately be mentioned here also, is that the supply of films and filmstrips to separate schools is not, unless the schools are very large ones, the most economical system. A system giving fuller coverage and a more effective use of the materials supplied, where communications are reasonably good, is the establishment of territorial or regional film and filmstrip libraries on which the schools can draw as and when they require. Where such a system exists or is to be established, the films and filmstrips indicated in the optional part of the following list may be requested for the library serving the school concerned.

126) Finally, attention is again drawn to the fact that, as was emphasized in connection with the Geography list in the Primary Section, much can be done, in the way of illustration, by the use of posters and cut-outs from appropriate magazines, which can usually be obtained without undue difficulty from various sources.

List L: GEOGRAPHY (Secondary Schools)

Quantities suggested for schools of various levels. The quantity suggested for any one (single-stream) school will be found in the column headed by the highest year of schooling provided by that school. The quantities in preceding columns should not be added to this. (See paragraphs 103/105.)

Item#	Whse.#	Description	Unit	Price $	7th LA	8th LB	9th LC	10th LD	11th LE	12th LF	13/14th LG	Notes
		BASIC										
2881)	46-063	BAROMETER, Aneroid: diameter approx. 5-1/2" (Ø 14 cm).	each	5.00	1	1	1	1	1	1	1	
...		CHART, Wall: approx. 40" x 30" (100 x 75 cm); titles and legends in language of choice; roller mounted; as follows:										Requests for Items 2882 through 2887 should be accompanied by detailed information as to the type, size, language, source of supply and cost.
2882)	*47-170	...Solar System	each	4.50	1	1	1	1	1	1	1	
2883)	*47-168	...Phases of the Moon	each	4.50	1	1	1	1	1	1	1	
2884)	*47-166	...Eclipses of the Sun and Moon	each	4.50	1	1	1	1	1	1	1	
2885)	*47-164	...Astronomical Geography	each	4.50	-	-	1	1	1	1	1	
2886)	*47-167	...Mathematical Geography	each	4.50	-	-	1	1	1	1	1	
2887)	*47-167-4	...Meridians and Parallels	each	4.50	-	-	1	1	1	1	1	
2888)	46-218	COMPASS, Mariner's Type: 8-1/2" diameter (Ø 21 cm) (as ESA p.98 #9286)	each	6.00	1	1	1	1	1	1	1	
2889)	47-360	GLOBE, Slated: 16" diameter (Ø 40 cm); blank, without titles and legends; continents in outline; mounted on semi-meridian stand. (Similar to IVAC p.43 #390)	each	25.00	1	1	1	1	1	1	1	
		or										
2890)	47-354	GLOBE, Physical-Political: 16" diameter (Ø 40 cm); titles and legends in language of choice; mounted on semi-meridian stand.	each	25.00								When requisitioning Item 2890, specify language.
...		MAP, Wall, Physical-Political: approx. 50" (125 cm) wide x 50" to 63" (125 - 158 cm) long; titles and legends in language of choice; roller mounted; as follows:										Requests for Items 2891 through 2897 should be accompanied by detailed information as to the type, size, language, source of supply and cost.
2891)	* 47-475	...The World	each	12.00	1	1	1	1	1	1	1	
2892)	* 47-469	...Africa	each	10.00	1	1	1	1	1	1	1	
2893)	* 47-470	...America, North	each	10.00	1	1	1	1	1	1	1	
2894)	* 47-471	...America, South	each	10.00	1	1	1	1	1	1	1	
2895)	* 47-472	...Asia	each	12.00	1	1	1	1	1	1	1	
2896)	* 47-473	...Europe	each	10.00	1	1	1	1	1	1	1	
2897)	* 47-474	...Oceania	each	10.00	1	1	1	1	1	1	1	

*The warehouse numbers listed are for English versions only, since at this stage only these are carried in stock. When other languages are desired, do not cite the warehouse numbers given here.

List L: GEOGRAPHY (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th LA	8th LB	9th LC	10th LD	11th LE	12th LF	13/14th LG	Notes
		BASIC (cont'd)										
...		MAP, Wall, World: approx. 80" x 50" (200 x 125 cm); titles and legends in language of choice; demonstrating the following:										Requests for Items 2898 through 2900 should be accompanied by detailed information as to the type, size, language, source of supply and cost.
2898)	*47-485	...Climates	each	16.00	-	-	1	1	1	1	1	
2899)	*47-486	...Mineral Resources	each	14.00	-	-	1	1	1	1	1	
2900)	*47-487	...Vegetation	each	16.00	-	-	1	1	1	1	1	* The warehouse numbers listed are for English versions only, since at this stage only these are carried in stock. When other languages are desired, do not cite the warehouse numbers given here.
2901)	47-489	MINERALS, Set of 25: each item identified; in display box.	box	2.00	-	-	1	1	1	1	1	
2902)	46-300	RAIN GAUGE: graduated glass measure; 5" diameter (Ø 13 cm) funnel; plastic receiver, plastic outer case. (similar to ESA #9321, but with British and metric calibrations)	each	6.00	1	1	1	1	1	1	1	
		TOTALS, List L, Basic Items			$ 130.00	$ 130.00	$ 191.00	$ 191.00	$ 191.00	$ 191.00	$ 191.00	
		OPTIONAL										
2921)	46-222	COMPASS, Prismatic: with 3" (75 mm) dial graduated in degrees 0 - 360, adjustable prism and detachable sight; fitted in case. (as PH Physics cat.12 p.41 #P6600)	each	10.50	-	-	-	1	1	1	1	To be requested only if simple surveying work is to be undertaken as part of the geography course.
...		MAP, Wall, Slated: approx. 50" (125 cm) wide x 50" - 63" (125 - 158 cm) long; continents, political boundaries and rivers clearly indicated; blank, without titles and legends; roller mounted. (as IVAC p.33 or Rand McNally p.26) As follows:										When requisitioning Items 2922 through 2928 introduce with this full description.
2922)	47-484	...The World	each	12.00	1	1	1	1	1	1	1	Items 2922 through 2928 may be requested for special activity purposes, as described in paragraph 119.
2923)	47-478	...Africa	each	10.00	1	1	1	1	1	1	1	
2924)	47-479	...America, North	each	10.00	1	1	1	1	1	1	1	These maps may also be requisitioned in place of "worded" maps for lower secondary classes where no satisfactory maps in "language of choice" are available.
2925)	47-480	...America, South	each	10.00	1	1	1	1	1	1	1	
2926)	47-481	...Asia	each	12.00	1	1	1	1	1	1	1	
2927)	47-482	...Europe	each	10.00	1	1	1	1	1	1	1	
2928)	47-483	...Oceania	each	10.00	1	1	1	1	1	1	1	

List L: GEOGRAPHY (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th LA	8th LB	9th LC	10th LD	11th LE	12th LF	13/14th LG	Notes
		OPTIONAL (cont'd)										
2929)	NS	FILMS, 8 mm Loop, Single-Concept Type, Silent: of choice.	each	8.00*	-	-	-	8	10	10	10	For comments regarding these items see paragraphs 122/125.
		or						or	or	or	or	Requests for Films, Filmstrips and Slides should be accompanied by detailed information as to the type, size, language, source of supply and cost.
2930)	NS	FILMS, 16 mm: of choice.	each	60.00*	-	-	-	2	2	2	2	
2931)	NS	FILMSTRIPS or SLIDES: of choice; as follows: - Filmstrips, averaging approx. 30 views per strip, at approx. $4.00 per strip; or - Slides, within the same total cost as the filmstrips; or - Filmstrips and Slides, within the same total cost as the filmstrips.	set	40.00*	1	1	1	1	1	1	1	

*(Average price)

SECONDARY SCHOOLS: MANUAL ARTS

127) In many developing countries there is a demand for more practical work, of a semi- or pre-vocational nature, as a part of the secondary school course, especially in the earlier years of it. This part of the course is not intended to produce skilled craftsmen in any particular trade, but to give the students a working knowledge and understanding of practical things and an increased skill with their hands, all of which will stand them in good stead whether or not they go on to further training in the crafts which, or through which, they have been taught.

128) In appreciation of that demand the lists that follow provide suggested basic items of equipment for the following subjects at the levels indicated:

Carpentry and Woodwork	- Elementary and more advanced
Sheet Metal Work	- Elementary and more advanced
Automechanics	- Elementary
Masonry	- Elementary

129) In the main parts of the lists the quantities suggested for the various levels of schools are in most cases the same. The reason is that, as explained in the introductory notes to the Secondary Schools Section, paragraph 103, it is assumed that every school will provide for several years of education below its highest class. Thus a school which has the 9th year as its highest year of schooling is assumed to cover the seventh and eighth years also. Similarly, a school with the 12th year as its highest year of schooling is assumed to provide education for the previous years down to the 7th. The fact that equipment is shown under the 12th year column does not therefore mean that that equipment will necessarily be used actually in that year, though it may be. It may be required in the lower classes of a school that goes up to the 12th year - or the same equipment may be used for more advanced work in the higher classes.

130) In general it is assumed that there will be less "manual arts" work done in the higher classes of secondary schools than in the lower - except perhaps in the case of "technical high" (or "technical secondary") schools.

131) The quantities for each of the items in the lists other than those marked with an asterisk (*) are calculated on the requirements of about 10 pupils engaged in practical work in the art concerned at one and the same time, it being assumed that if training in three arts (woodwork, sheet-metal work and masonry, for example) is being given, a class of 30 or 35 pupils would be distributed over the three courses. If training in only one art is to be given, proportionate increases would have to be made. The quantities shown against items marked with an asterisk (*) are considered to be sufficient to meet the requirements of up to 30 or 35 pupils without further increase.

132) Pre-requisites for the supply of any of the equipment in the lists are, of course, that there are instructors capable of making full use of them and that supplies of the necessary consumable articles, wood, metal, etc. are available. For items shown as being powered by electric motors an essential pre-requisite is that there should be a reliable electricity supply.

133) The following notes are for further general guidance in regard to the lists.

134) Optional Items - Carpentry, Woodwork and Sheet Metal Work. Most of the items contained in the optional parts of these lists are, as will be seen, expensive and should only be requested if they are really needed as part of the course and there is an instructor fully conversant with their use.

135) Automechanics. This may be an unusual subject to introduce, but it is understood that there may be a demand for it in some areas. The items contained in the list have been selected for a course which would cover simple maintenance of motor vehicles, including lubrication and tire repairs.

136) The equipment here too is comparatively expensive. It should be requested only if it is certain that it will be fully used for instructional purposes by a competent instructor and that it will not become merely useful equipment for servicing the school cars!

137) An old disused vehicle, or disused vehicles, will be required for instructional purposes, and it is assumed that these will be obtained locally.

138) Masonry. It will be observed that the items contained in this list are comparatively few. It is thought that such other items as are required for an elementary course can usually be obtained or made locally.

139) Agriculture. It is usually found desirable that the "manual arts" part of the school course should have some relation to the interests and pursuits of the area in which the school is situated. In agricultural areas a course in practical agriculture, possibly with a school farm run by the pupils on a Young Farmer's Club basis, can meet the need. Some of the simple requirements for "agricultural" work can be requested under guide list "MOIRA". Any requirements above that level should, it is suggested, be worked out in consultation with the local agricultural authorities in accordance with the needs of the particular area. Tools and workshop equipment of a more general nature required in connection with an agricultural course can be selected from within List M which follows.

List M: MANUAL ARTS (Secondary Schools)

Quantities suggested for schools of various levels. The quantity suggested for any one (single-stream) school will be found in the column headed by the highest year of schooling provided by that school. The quantities in preceding columns should not be added to this. (See paragraphs 103/105.)

Item#	Whse.#	Description	Unit	Price $	7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		CARPENTRY AND WOODWORK										
		BASIC										
2951)	40-030	AWL, Marking: blade length 5" (13 cm). (Scratch Awl; Scriber)	each	.22	10	10	10	10	10	10	10	
2952)	40-160	BRACE, Hand: 10" (25 cm) sweep; with ratchet.	each	4.07	2	2	2	2	2	2	2	
2953)	99-200	- BIT, Auger, Woodworking: set of the following:	set	4.71	1	1	1	1	1	1	1	
		1/4" (6.35 mm) (40-090) 3/8" (9.5 mm) (40-091) 1/2" (12.7 mm) (40-092) 5/8" (15.9 mm) (40-093) 3/4" (19. mm) (40-094) 7/8" (22.23 mm) (40-095) 1" (25.4 mm) (40-096)										
2954)	40-098	- BIT, Countersink, Woodworking: 1/2" (12.7 mm) cutting edge; length 4" (10 cm).	each	.46	1	1	1	1	1	1	1	
2955)	40-130	- BIT, Screwdriver: set of the following:	set	.68	1	1	1	1	1	1	1	
		7/32" (5.56 mm) 1/4" (6.35 mm) 9/32" (7.1 mm)										
2956)	99-216	CHISEL, Wood: set of the following:	set	5.65	1	1	1	1	1	1	1	
		1/4" (6.35 mm) (40-251) 1/2" (12.7 mm) (40-253) 3/4" (19. mm) (40-255) 1" (25.4 mm) (40-256) 1½" (38.1 mm) (40-258)										
2957)	40-259	CHISEL, Wood, Mortise: 1/4" (6.35 mm)	each	1.66	1	1	1	1	1	1	1	
2958)	40-260	CHISEL, Wood, Mortise: 3/8" (9.5 mm)	each	1.66	1	1	1	1	1	1	1	
2959)	40-286	CLAMP, "C": 8" (20 cm) opening	each	2.89	-	2	2	2	2	2	2	
2960)	40-288	CLAMP, Gluing: 7" (18 cm) opening, adjustable. (as Sears #9K 66637)	each	4.29	-	4	4	4	4	4	4	
2961)	40-352	CLAMP, Long Reach: 48" (122 cm) opening. (Bar Clamp)	each	3.48	-	2	2	2	2	2	2	
2962)	40-290	COMPASS, Pencil: length 5" (13 cm)	each	.98	2	2	2	2	2	2	2	
2963)	40-380	DRILL, Hand: capacity 1/4" (6.35 mm); double pinion.	each	3.11	1	1	1	1	1	1	1	

List M: MANUAL ARTS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		CARPENTRY AND WOODWORK										
		BASIC (cont'd)										
2964)	40-105	-*BIT, Drill, Hand: set of 10 drills, to 1/4" (6.35 mm)	set	1.93	1	1	1	1	1	1	1	
2965)	99-230	FILE, Set of 4: 10" (25 cm) long: - half-round, bastard cut (40-422) - round, bastard cut (40-435) - shoe rasp (40-444) - wood rasp, half-round, bastard cut (40-456)	set	2.26	1	1	1	1	1	1	1	
2966)	40-461	- HANDLE, File: length 5" 13 cm).	each	.13	4	4	4	4	4	4	4	
2967)	40-500	GAUGE, Marking, Carpenter's: half-round polished head; hardwood, thumb screw.	each	.51	2	2	2	2	2	2	2	
2968)	51-357	GLUE, Urea Resin: water resistant; 5-lb. (2 kg) tin.	tin	3.40	-	1	1	1	1	1	1	
2969)	40-530	*GRINDER, Bench, Hand: grinding wheel diameter 6" x 1" wide (Ø 15 cm x 2.54 cm), totally enclosed gears.	each	5.68	1	1	1	1	1	1	1	
2970)	40-580	HAMMER, Nail: 16 oz. (456 gm), bell face, with curved claw. (Carpenter's Hammer; Claw Hammer)	each	.69	10	10	10	10	10	10	10	
2971)	40-600	HATCHET, Lath: 3-5/8" (92 mm) cut. (Half Hatchet)	each	2.93	1	1	1	1	1	1	1	
2972)	40-620	KNIFE, Putty: blade 4-1/2" x 1-1/2" (11 x 4 cm) chisel edge.	each	.39	1	1	1	1	1	1	1	
2973)	NS	LATHE, Wood: 37" (94 cm) capacity; bench mounted; with electric motor, drive belt and face plate.	each	70.00	-	opt.	1	1	1	1	1	Spell out the details of voltage, cyclage, current and phasing when requisitioning Item 2973.
2974)	99-250	- WOOD TURNING TOOLS: set of the following: - Gouge, 1/2" (12.7 mm) (40-623-12) - Parting Tool, 1/2" (12.7 mm) (40-623-20) - Round Nose Chisel, 1/2" (12.7 mm) (40-623-24) - Skew Chisel. 1/2" (12.7 mm) (40-623-29) - Spear Point Chisel, 1/2" (12.7 mm) (40-623-31)	set	7.50	-	opt.	2	2	2	2	2	Do not requisition Items 2973 and 2974 if there is no supply of electricity available at the school.
2975)	40-625	*LEVEL, Carpenter's: plumb and spirit level; length 24" x 2-5/8" x 1-1/8" (60 x 7 x 3 cm).	each	2.89	1	1	1	1	1	1	1	
2976	40-660	MALLET, Carpenter's: 1 lb.(454 gm) head; seasoned beech.	each	.52	2	2	2	2	2	2	2	
2977)	40-676	*MITRE BOX: complete with 16" (40 cm) backsaw.	each	10.00	1	1	1	1	1	1	1	

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		CARPENTRY AND WOODWORK										
		BASIC (cont'd)										
2978)	40-681	NAILSET: 1/8" (3.2 mm) tip, round head; cast steel.	each	.14	10	10	10	10	10	10	10	
2979)	40-705	PLANE, Block: 6" (15 cm) long, with 1-3/8" (35 mm) cutter.	each	2.53	2	2	2	2	2	2	2	
2980)	40-722	PLANE, Smooth: 9" (23 cm) long with 2" (5 cm) cutter.	each	4.10	2	2	2	2	2	2	2	
2981)	40-719	PLANE, Rabbet: 6-1/2" (17 cm) long, with 1" (25 mm) cutter.	each	4.40	1	1	1	1	1	1	1	
2982)	40-765	PLIERS, Slip-Joint, Wire Cutting: 7-1/2" (19 cm) long; with 2 adjustments.	each	1.62	1	1	1	1	1	1	1	
2983)	40-772	PUNCH, Center: 1/8" tip x 5/16" x 4" (3.2 mm x 8 mm x 10 cm).	each	.14	1	1	1	1	1	1	1	
2984)	51-685	SANDPAPER: 9-1/2" x 10" (24 x 25 cm); 3 sheets of each of the following grits: "0", "F", "1", "1-1/2"; package of 12 sheets.	pkg.	.11	4	4	4	4	4	4	4	Initial supply.
		- Saw, Back (Tenon Saw): See Item 2977.										
2985)	40-801	SAW, Cross Cut: 26" (66 cm) long; 8 points per inch (16 points/5 cm).	each	4.00	3	3	3	3	3	3	3	
2986)	40-802	SAW, Rip Cut: 26" (66 cm) long; 5-1/2 points per inch (11 points/5 cm).	each	4.02	3	3	3	3	3	3	3	
2987)	40-804	SAW, Hand, Small: set of one each of the following blades: - Compass - Keyhole - Metal Cutting	set	2.79	1	1	1	1	1	1	1	
2988)	40-812	*SAW FILING GUIDE: hand.	each	1.50	1	1	1	1	1	1	1	
2989)	40-810	*SAW SETTING TOOL: hand, pistol grip.	each	1.93	1	1	1	1	1	1	1	
2990)	40-816	SCRAPER, Wood: 4-edge blade, 6-1/2" (17 cm) handle. (as Sears 9K 3656)	each	.91	-	2	2	2	2	2	2	
2991)	40-832	SCREWDRIVER, Set of 5: standard, chrome or vanadium alloy steel blades; with plastic handles; in the following sizes: 8" x 3/8" - (203 x 9.5 mm) 6" x 5/16" - (152 x 8 mm) 4" x 5/16" - (102 x 8 mm) 3" x 1/4" - (76 x 6.35 mm) 1-3/4" x 1/4" - (44 x 6.35 mm)	set	3.06	-	1	1	1	1	1	1	

List M: MANUAL ARTS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		CARPENTRY AND WOODWORK										
		BASIC (cont'd)										
2992)	40-390	*SHIELD, Face, Safety: non-inflammable. (Chipping Screen)	each	1.85	1	1	1	1	1	1	1	
2993)	40-870	SPOKESHAVE: 10" (25 cm), straight bottom, 2-1/8" (54 mm) cutter, malleable iron body. (Draw Knife)	each	1.12	1	1	1	1	1	1	1	
2994)	40-875	SQUARE, Carpenter's, Combination: 90° and 45°; 9" (23 cm) adjustable blade; 4-1/2" (11 cm) handle.	each	1.58	2	2	2	2	2	2	2	
2995)	40-876	SQUARE, Carpenter's, Steel: 24" x 16" (60 x 40 cm).	each	1.07	1	1	1	1	1	1	1	
2996)	40-898	STONE, Oil, Sharpening, Combination: 8" x 2" x 1" (20 x 5 x 2.5 cm).	each	1.36	2	2	2	2	2	2	2	
2997)	40-900	TAPE, Measuring, Steel: 10 ft. (3 m); self-returning, graduated in inches and centimetres.	each	1.20	2	2	2	2	2	2	2	
2998)	40-940	VISE, Woodworking, Continuous Screw: 4" x 7" (10 x 18 cm); 6" (15 cm) jaw opening.	each	7.13	10	10	10	10	10	10	10	
					$	$	$	$	$	$	$	
		SUBTOTALS, Carpentry and Woodwork, (Basic Items).....			201.00	238.00	324.00	324.00	324.00	324.00	324.00	
		OPTIONAL										
3011)	99-208	BRUSH, Paint: rubber set, good quality; set of six 2 each of the following widths: 1" (25 mm) (40-690) 2" (50 mm) (40-691) 3" (76 mm) (40-692)	set	8.00	1	1	1	1	1	1	1	
3012)	NS	*DRILL PRESS: capacity 1/2" (12.7 mm); throat 14" (35 cm) minimum; with pedestal, electric motor and drive belt. (as Sears Cat. #99K2451 5N2)	each	140.00	-	-	-	1	1	1	1	Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
3013)	NS	-*VISE, Drill Press: adjustable from 0° to 90°.	each	11.00	-	-	-	1	1	1	1	
3014)	40-529	*GRINDER, Bench, Electric: 6" diameter (Ø 15 cm); with fine and medium fine grinding wheels, tool rest, and eye shield. (as Sears p.1002 #99K1958K but for 220 volt, 50 cycle operation.	each	38.00	-	-	-	1	1	1	1	
3015)	NS	*JIGSAW: 18" (45 cm) throat; maximum cutting capacity 2" (5 cm) wood thickness; blade rotates 90°; minimum 12" x 12" (30 x 30 cm) table tilts to 45°; with sawdust blower, electric motor and drive belt; complete with one gross assorted blades.	each	73.00	-	-	-	1	1	1	1	
3016)	NS	*JOINTER/PLANER: minimum 6" (15 cm); bench mounted; with safety guard, motor and drive belt; complete with spare cutter blades.	each	142.00	-	-	-	1	1	1	1	

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		CARPENTRY AND WOODWORK										
		OPTIONAL (cont'd)										
3017)	NS	*SAW, Band: 12" (30 cm) throat; pedestal mounted; with belt guard and electric motor; complete with extra blades. (as Sears p.994)	each	140.00	-	-	-	1	1	1	1	Items 3012 to 3018 Specify the details of voltage, cyclage, current and phasing when requisitioning these items. Do not requisition these items if there is no supply of electricity available at the school.
3018)	NS	*SAW, Bench; Radial (Circular): 8" (20 cm), tilting arbor, 7" (18 cm) grid-type table extensions; with blade guard, electric motor and metal bench; complete with extra blades.	each	108.00	-	-	-	1	1	1	1	
3019)	40-806	*SAW BLADE SETTER, for Radial (Circular) Saws: capacity up to 12" (30 cm) blade; accommodates spindle holes of 1/2", 5/8", 3/4" and 1" (12.7 mm, 15.9 mm, 19 mm and 24.5 mm). (as Sears p.989 #9K3530)	each	2.70	-	-	-	1	1	1	1	
3020)	40-838	*SHARPENER, for Radial (Circular) Saws: capacity up to 12" (30 cm) blade; accommodates spindle holes of 1/2", 5/8", 3/4" and 1" (12.7 mm, 15.9 mm, 19 mm, and 24.5 mm).	each	18.00	-	-	-	1	1	1	1	
		SHEET METAL WORK										
		BASIC										
3031)	40-030	AWL, Marking: blade length 5" (13 cm). (Scratch Awl; Scriber)	each	.22	10	10	10	10	10	10	10	
3032)	40-156	*BLOWTORCH: capacity 2 pints (945 cc); fitted with windproof nozzle; complete with one set of standard replacement parts. (Pressure Lamp; Blow Lamp)	each	10.67	1	1	1	1	1	1	1	
3033)	40-240	CHISEL, Metal: 1/2" (12.7 mm) cut; 6" (15 cm) long. (Cold Chisel)	each	.20	2	2	2	2	2	2	2	
3034)	99-219	CLAMP, "C", Set of 4: two each of the following: 3" (7.6 cm) (40-280) 6" (15 cm) (40-284)	set	6.66	1	1	1	1	1	1	1	
3035)	40-360	DIVIDER: 8" (20 cm), firm joint construction.	each	.99	2	2	2	2	2	2	2	
3036)	40-380	DRILL, Hand: capacity 1/4" (6.35 mm); double pinion.	each	3.11	1	1	1	1	1	1	1	
3037)	40-105	- BIT, Drill; Hand: set of 10 drills, to 1/4" (6.35 mm)	set	1.93	2	2	2	2	2	2	2	
3038)	40-429	FILE, Mill: length 10" (25 cm); medium cut.	each	.38	1	1	1	1	1	1	1	
3039)	40-461	- HANDLE, File: length 5" (13 cm).	each	.13	1	1	1	1	1	1	1	

List M: MANUAL ARTS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		SHEET METAL WORK										
		BASIC (cont'd)										
3040)	41-500	HAMMER, Creasing: 3/4 lb (340 gm); ash handle.	each	1.09	1	1	1	1	1	1	1	
3041)	41-505	HAMMER, Peining, Tinner's: 3/4 lb. (340 gm); ash handle.	each	1.09	10	10	10	10	10	10	10	
3042)	41-515	HAMMER, Riveting: 8 oz. (227 gm); ash handle.	each	2.00	1	1	1	1	1	1	1	
3043)	40-661	MALLET, Tinsmith's: 3" diameter (Ø 8 cm.); boxwood head; ash handle.	each	1.23	2	2	2	2	2	2	2	
3044)	40-772	PUNCH, Center: 1/8" tip x 5/16" x 4" (3.2 mm x 8 mm x 10 cm).	each	.14	2	2	2	2	2	2	2	
3045)	41-477	PUNCH, Groove: 1/4" (6.35 mm). (Groover)	each	.75	1	1	1	1	1	1	1	
3046)	99-255	PUNCH, Hollow, Metal, Set of 5: one each of the following hole diameters: 3/8" (9.5 mm) (41-630) 1/2" (12.7 mm) (41-631) 5/8" (15.9 mm) (41-632) 3/4" (19. mm) (41-633) 7/8" (22.23mm) (41-634)	set	10.50	3	3	3	3	3	3	3	
3047)	51-610	RIVETS, Tinner's, Assorted: 5 lb. (2.27 kg) box.	box	2.60	1	1	1	1	1	1	1	Initial supply.
3048)	40-789	RULE, Folding: 6 feet (2 m) long; graduated in inches and centimetres.	each	.85	1	1	1	1	1	1	1	
3049)	40-790	SAW, Hack: length 10" to 12" (25 - 30 cm); adjustable.	each	1.53	1	1	1	1	1	1	1	
3050)	40-151-2	- BLADE, Hack Saw: length 12" (30 cm); 32 teeth per inch (64 teeth/5 cm); package of 12 blades.	pkg.	.90	2	2	2	2	2	2	2	
3051)	40-390	SHIELD, Face, Safety: non-inflammable (Chipping Screen)	each	1.85	2	2	2	2	2	2	2	
3052)	40-891	*SNIPS, Tinner's, Aviation Type: 10" (25 cm) long; straight and circular cut.	each	2.76	1	1	1	1	1	1	1	
3053)	40-892	SNIPS, Tinner's, "Duckbill": 10" (25 cm) long; 3" (8 cm) cut.	each	1.69	2	2	2	2	2	2	2	
3054)	40-890	SNIPS, Tinner's, Straight: 8" (20 cm) long; 3" (8 cm) cut.	each	1.51	2	2	2	2	2	2	2	
3055)	41-765	SOLDERING FURNACE and MELTING POT: petrol-fired; minimum capacity 15 lbs. (6.8 kg) of solder; complete with cast iron melting pot and pouring ladle. (as Sears p.970 #9K5428, 5435 and 5436)	each	26.00	1	1	1	1	1	1	1	

List M: MANUAL ARTS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		SHEET AND METAL WORK										
		BASIC (cont'd)										
3056)	51-698	- SOLDER: 1 lb. (454 gm) bar.	bar	.98	10	10	10	10	10	10	10	Initial supply.
3057)	40-312	SOLDERING IRON, Copper, Pointed Head, 1/2 lb. (227 gm): complete with handle; non-electric.	each	.83	1	1	1	1	1	1	1	
3058)	40-311	SOLDERING IRON, Copper, Pointed Head, 1 lb. (454 gm): complete with handle; non-electric.	each	1.45	1	1	1	1	1	1	1	
3059)	40-309	SOLDERING IRON, Copper, Pointed Head, 2 lb. (907 gm): complete with handle; non-electric	each	2.77	1	1	1	1	1	1	1	
3060)	51-698-3	SOLDERING PASTE: 1/4 lb. (113 gm) can.	can	.17	1	1	1	1	1	1	1	Initial supply.
3061)	40-875	SQUARE, Carpenter's Combination: 90° and 45°; 9" (23 cm) adjustable blade.	each	1.58	1	1	1	1	1	1	1	
3062)	40-876	SQUARE, Carpenter's, Steel: 24" x 16" (60 x 40 cm)	each	1.07	1	1	1	1	1	1	1	
3063)	40-900	TAPE, Measuring, Steel: 10 feet (3 metres); self-returning; graduated in inches and centimetres.	each	1.20	2	2	2	2	2	2	2	
3064)	40-942	VISE, Machinist's, Swivel Base: jaw width 4" (10 cm); opening 4-3/4" (12 cm).	each	10.59	2	2	2	2	2	2	2	
3065)	40-956	WRENCH, Plier, Locking: 7" (18 cm) long; capacity 1-1/4" (32 mm); straight jaws, rust-resistant finish. (Vise Grip)	each	.99	2	2	2	2	2	2	2	
		SUBTOTALS, Sheet Metal Work (Basic Items).....			$ 167.00	$ 167.00	$ 167.00	$ 167.00	$ 167.00	$ 167.00	$ 167.00	
		OPTIONAL										
3081)	99-260	*STAKE SET, complete with the following: a) Bench Plate (Stake Holder) (41-835-15) (as Mc Masters #24A129F) b) Beakhorn Stake (41-822) (as Mc Masters #2441A21) c) Conductor Stake (41-822-12) (as Mc Masters #24A116F) d) Needle Case Stake (41-835-12) (as Mc Masters #24AF113) e) Creasing Stake with Horn) (41-822-15) (as Mc Masters #24E4112) f) Candle Mold Stake (41-822-8) (as Mc Masters #2441D14) g) Blowhorn Stake (41-822-5) (as Mc Masters #24411E5) h) Double Seaming Stake (41-835-10) (as Mc Masters #24A123F) (from Mc Masters cat.69 p.1058)	set	222.00	-	-	-	-	1	1	1	Stakes are anvils for hand-forming various sheet metal shapes.

List M: MANUAL ARTS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		AUTO MECHANICS										
		BASIC										
3091)	80-060	BEAD BREAKER, Tire: for 12" to 19-1/2" (30 - 49 cm) wheels; portable. (as Sears p.1092 #28K1033L)	each	17.50	1	1	1	1	1	1	1	
3092)	40-185	BRUSH, Wire: standard, hardwood handle.	each	.60	10	10	10	10	10	10	10	
3093)	51-185	COTTER PINS: assorted.	gross	.50	1	1	1	1	1	1	1	Initial supply.
3094)	80-175	CREEPER: with 4 swiveling mushroom-style casters. (as Snap-On cat. "Y" #JC-12)	each	9.50	1	1	1	1	1	1	1	
3095)	40-529	GRINDER, Bench Electric: 6" diameter (Ø 15 cm); with fine and medium fine grinding sheels; with tool rest eye shield, and 6" (15 cm) wire buffing wheel. (as Sears p.1002 #99K1958K but for 220 volt, 50 cycle operation. or	each	38.00	1	1	1	1	1	1	1	Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
3096)	40-530	GRINDER, Bench, Hand: grinding wheel diameter 6" x 1" wide (Ø 15 cm x 25 mm).	each	5.68								
3097)	80-430	JACK STAND: minimum capacity 2 tons (2 tonnes), adjustable pin or ratchet type, car and truck stands, minimum extended height 17" (43 cm); maximum unextended height 11" (28 cm); wide base minimum 8" x 9" (20 x 23 cm).	each	8.20	4	4	4	4	4	4	4	
3098)	80-458	LUBRICATOR: chassis, minimum 25 lb. (12 kg) grease capacity, hand operated, develops minimum 5000 lb. (1 tonne) pressure, complete with minimum 6 ft. (2 m) grease hose with adaptor and hydraulic coupler and grease gun, manually pressurized.	set	28.81	1	1	1	1	1	1	1	
3099)	40-390	SHIELD, Face, Safety: non-inflammable. (Chipping Screen)	each	1.85	1	1	1	1	1	1	1	
3100)	80-915	TIRE GAUGE: pencil type, calibrated in 1 lb. (454 gm) increments up to minimum of 40 lbs. (18 kg).	each	3.41	2	2	2	2	2	2	2	
3101)	80-918	TIRE IRONS, Set.	each	2.50	5	5	5	5	5	5	5	
3102)	80-922	TIRE PUMP: standard, hand-operated.	each	2.55	1	1	1	1	1	1	1	
3103)	80-390	TIRE AND TUBE PATCHING KIT: Vulcanizing. (as Sears Summer '64 Cat. p.11092 #28K1034)	each	1.00	1	1	1	1	1	1	1	
3104)	80-923	TUBELESS TIRE REPAIR KIT. (as Goodyear "Simplug")	each	1.00	1	1	1	1	1	1	1	
3105)	80-025	TOOL KIT, Auto Mechanic's: partial; as described in UNICEF Transport Bulletin No. 21; Code AMT-1-P.	set	131.90	2	2	2	2	2	2	2	

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		AUTO MECHANICS										
		BASIC (cont'd)										
3106)	(see detail)	TOOL KIT, Auto Mechanic's, Complementary: as described in UNICEF transport Bulletin No. 21; to be chosen according to local requirements from the following:										
		- Wrench Set, US Sizes (AMT-2-US) 80-025-3	set	49.00)								
		- Wrench Set, Metric Sizes (AMT-3-M) 80-025-6	set	24.00)	5	5	5	5	5	5	5	
		- Wrench Set, Whitworth Sizes (AMT-4-W) 80-025-9	set	24.00)								
3107)	40-471	TUBE, Metal, Cutting/Bending/Flaring Set; capacity 0 to 1" (0 to 25 mm). (as Sears p.970 #9K5527)	each	7.29	1	1	1	1	1	1	1	
3108)	40-942	VISE, Machinist's, Swivel Base: jaw width 4" (10 cm); opening 4-3/4" (12 cm).	each	10.59	5	5	5	5	5	5	5	
3109)	80-970	WHEEL PULLER: rear, adjustable, three leg, universal.	each	14.50	1	1	1	1	1	1	1	
		SUBTOTALS, Auto Mechanics, (Basic Items).....			$ 585. to 742.	$ 585. to 742.	$ 585. to 742.	$ 585. to 742.	$ 585. to 742.	$ 585. to 742.	$ 585. to 742.	
		MASONRY										
3131)	40-540	GROOVER-JOINTER, Cement: approx. 3" x 6" (8 x 15 cm); cuts 3/8" (9.5 mm) groove; both ends curved. (as Sears p.950 #9K65413)	each	.72	5	5	5	5	5	5	5	
3132)	40-578	HAMMER, Mason's: 16 oz. (454 gm) forged steel head 7" (18 cm) long. (as Sears p.950 #9K6543)	each	3.14	5	5	5	5	5	5	5	
3133)	40-610	JOINTER, Brick: 9" (23 cm); one round and one square point; forged steel. (as Sears p.950 #9K43215)	each	1.22	5	5	5	5	5	5	5	
3134)	40-625-5	LEVEL, Mason's: 48" (120 cm); 2 horizontal and 4 vertical spirit levels; adjustable; corrosion-resistant metal. (as Sears p.948 #99K39999C)	each	10.00	1	1	1	1	1	1	1	
3135)	40-625-10	LINE, Mason's: approx. 200 feet (60 m) long.	each	.42	2	2	2	2	2	2	2	
3136)	40-767	PLUMB-BOB, Carpenter's: 16 oz. (454 gm).	each	1.55	5	5	5	5	5	5	5	
3137)	NS	SCREENING, Wire (Wire Cloth): woven, galvanized after weaving; 8 x 8 mesh per inch, width of opening 0.108" (2.74 mm), wire diameter 0.0173" (Ø .44 mm) piece 24" x 24" (60 x 60 cm). (as McMaster cat.70 p.1458 #S9217)	piece	.70	2	2	2	2	2	2	2	For use in sifting sand for mortar. To be attached to wooden frame provided locally.
3138)	40-838-8	SHOVEL, Mason's: approx. 9-1/2" x 12" (24 cm x 30 cm); square point; "D" handle.	each	.90	5	5	5	5	5	5	5	
		or										
3139)	30-702	SHOVEL, Round Point: blade size 9" x 12" (23 x 31 cm); hollow back, rolled shoulder; 30" (75 cm) iron "D" top handle.	each	.80	5	5	5	5	5	5	5	

List M: MANUAL ARTS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th MA	8th MB	9th MC	10th MD	11th ME	12th MF	13/14th MG	Notes
		MASONRY										
		BASIC (cont'd)										
3140)	40-902	TAPE, Measuring, Surveyor's: length 30 metres (98 ft.) long; calibrated in inches and centimetres; reinforced synthetic material, plastic covered; in wind-up case.	each	4.00	5	5	5	5	5	5	5	
3141)	40-927	TROWEL, Brick, Mason's: 4-1/2" x 8" (11 x 20 cm) tempered steel blade; brass mounting. (as Sears p. 950 #9K6556)	each	1.72	5	5	5	5	5	5	5	
3142)	40-927-3	TROWEL, Cement Finishing: approx. 4-3/4" x 11" (12 x 28 cm); spring steel; shaped wooden handle. (as Sears p.950 #9K6550)	each	2.99	5	5	5	5	5	5	5	
3143)	40-927-15	TROWEL, Pointing: approx. 2-3/4" x 8-1/2" (7 x 21 cm). tempered steel blade. (as Sears p.950 #9K6581)	each	.90	5	5	5	5	5	5	5	
		SUBTOTALS, Masonry (Basic Items).....			$ 102.00	$ 102.00	$ 102.00	$ 102.00	$ 102.00	$ 102.00	$ 102.00	
		TOTALS, List M, Basic Items.....			$ 1,055. to 1,212.	$ 1,092. to 1,249.	$ 1,178. to 1,335.	$ 1,178. to 1,335.	$ 1,178. to 1,335.	$ 1,178. to 1,335.	$ 1,178. to 1,335.	

SECONDARY SCHOOLS: HOME ECONOMICS

140) With the exception of the bottle-gas stove, which is self-explanatory, all the items in the list that follows are included or referred to in Guide List "ISIS" for Mothercraft/Homecraft Projects where full details as to their purpose and use will be found. It is in the teaching of this subject that instruction in correct nutrition can most appropriately be given and should ordinarily be expected to form part of the course. It is most important that this should be of a practical nature and related to local needs and resources.

141) The quantities suggested for the various items are based on the assumption that not more than 12 pupils will be doing practical work in any one division of the subject (Cookery, Sewing, etc.) at the same time and that, for practical Home Economics periods, a class of more than 12 pupils will be divided into groups, each being engaged in a separate division of the subject. This is understood to be a commonly practised arrangement.

142) Mobile Units. In the case of schools which do not have accommodation or staff for regular "internal" Home Economics teaching but rely for their Home Economics tuition on demonstration lessons given by a peripatetic teacher, reference should be made to the Home Economics list in the Primary Section, List E, where suggested requirements of "Mobile Units" are given.

143) A few additional items may be needed to bring the equipment contained in that list up to the standard required for secondary school work. It is thought, however, that "mobile units" will not often be used in connection with secondary schools and that, when they are used, they may have limited objectives related to particular local needs. It is felt therefore that such items, additional to those contained in List E, as may be required are best left to local selection from within the list that follows, List N.

144) The equipment recommended for "mobile units" used in connection with secondary schools is, therefore, either as in List E or as in List E plus a few items, to be selected in relation to local needs, from List N.

145) Notes on individual items in List N, which perhaps call for special comment, follow.

146) Stoves. In the case of countries which have developed a satisfactory form of local stove, such as the "HULA" smokeless stove, developed in India and Pakistan and used also in parts of Africa, it is assumed that these stoves will be incorporated in the Home Economics classrooms. In such cases the full numbers of stoves contained in the basic part of List N should not be required, and it is expected that appropriate reductions will be made in requests accordingly.

147) Stove, Electric (Item 3211). This item is included for possible consideration only in the case of schools, with a reliable electricity supply, in which the pupils are likely to use such stoves after they leave school. If this stove is supplied, the number of Primus stoves which might otherwise have been supplied under the basic part of the list should be reduced by four.

148) Stove, Bottle Gas (Item 3212). Requests for this stove should be made only in cases where a reliable local supply of the gas is available. Where this stove is supplied a corresponding reduction should be made in the number of other stoves which would otherwise have been requested under the basic part of this list.

149) Irons, Electric (Items 3241/3244). These items are included for consideration in the case of schools with a reliable electricity supply as possible alternatives to kerosene and charcoal irons. Where these are requested, the number of kerosene and/or charcoal irons which would otherwise have been requested under the basic part of the list should be reduced accordingly.

150) Clothes "Horse" or Drying Rack (Item 3247). This item is included for possible consideration in the case of schools in areas in which, for climatic or other reasons, drying on clothes lines is impracticable.

151) Line, Laundry (Item 3246). This item should be requested only in cases where materials suitable for clothes lines are not available locally.

152) Sewing Machine, Electric (Items 3291/3292). This item should be requested only in cases where there is a definite need for instruction on this type of machine to be given. A reliable electricity supply is, of course, a further pre-requisite. Where this machine is supplied the number of treadle-operated machines recommended in the basic part of the list should be reduced by one.

153) Pre-requisites for the supply of any of the items under List N are that the equipment will be used by or under the supervision of a trained Home Economics teacher and that suitable accommodation, including firm work tables for the pupils, will be provided.

List N: HOME ECONOMICS (Secondary Schools)

Quantities suggested for schools of various levels. The quantity suggested for any one (single-stream) school will be found in the column headed by the highest year of schooling provided by that school. The quantities in preceding columns should not be added to this. (See paragraphs 103/105.)

Item#	Whse.#	Description	Unit	Price $	7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		COOKING										
		BASIC										
3161)	20-500	BEATER, Egg: one wing type; family size stainless steel; handle of wood, metal or plastic.	each	.74	1	1	1	1	1	1	1	
3162)	20-508	BOARD, Chopping: approx. 11" x 8" x 3/4" (28 x 20 x 2 cm), hardwood.	each	.50	6	6	6	6	6	6	6	
3163)	20-510	BOARD, Pastry: approx. 24" x 18" (60 x 45 cm), smooth wood.	each	1.00	6	6	6	6	6	6	6	
3164)	20-200	BOWL, Mixing or Serving, Set of Four: heat-resistant glass; one each of the following sizes: 1 pint, 1-1/4 quart, 2-1/4 quart, 4 quart. (50 cl, 120 cl, 215 cl, 375 cl).	set	2.17	3	3	3	3	3	3	3	
3165)	20-220	BOWL, Soup: capacity 9 oz. (250 cc); diameter 7" x 2" deep (Ø 18 x 5 cm); unbreakable, Melamine; assorted pastel colours.	each	.17	12	12	12	12	12	12	12	
3166)	20-530	CUP AND SAUCER: capacity of cup 7-1/2 oz. (225 cc); unbreakable, Melamine; assorted pastel colours.	set	.35	12	12	12	12	12	12	12	
3167)	20-675	CUP, Measuring: capacity 16 oz. (500 ml); graduated in liquid ozs., cups, fractions of cups, and metric equivalents; heat-resistant glass.	each	.33	6	6	6	6	6	6	6	
3168)	20-560	DISH, Serving: capacity 1-1/2 to 2 quart (140-190 cl); with fitted cover approx. 8" diameter (Ø 20 cm); stainless steel. (Soup Tureen)	each	3.85	3	3	6	6	6	6	6	
3169)	20-570	FUNNEL, Set of Three: rigid, polyethylene; molded - in air vents; one each of the following capacities: 2 oz., 4 oz., 8 oz. (60 cc, 120 cc, 250 cc).	set	.24	3	3	3	3	3	3	3	
3170)	20-595	GRINDER AND FOOD CHOPPER: cast iron, rust and corrosion resistant; three removable cutting blades for fine, medium and coarse cutting; with handle.	each	3.80	1	1	1	1	1	1	1	For raw or cooked meat.
3171)	20-400	KETTLE, All Purpose: capacity 5 quarts (5 litres); stainless steel with aluminium clad bottom, seamless construction; 2 side handles; fitted cover.	each	4.95	3	3	3	3	3	3	3	
3172)	20-620	KNIFE, Paring: 3" (8 cm) stainless steel blade, wavy edge; plastic handle. (Kitchen Knife)	each	.09	6	6	6	6	6	6	6	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

List N: HOME ECONOMICS (Secondary Schools) (cont'd)

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		COOKING										
		BASIC (cont'd)										
3173)	20-605	KNIFE, Utility: 6" (15 cm) stainless steel blade, plain edge; plastic handle. (Cook's Knife; Kitchen Knife)	each	.17	3	3	3	3	3	3	3	
3174)	20-655	LADLE: capacity 6 oz. (175 cc); stainlesss steel; long curved handle.	each	.35	3	3	3	3	3	3	3	
3175)	20-750	MATERIAL, Plastic: 36" (90 cm) wide; 5 guage (.125 mm); heavy duty vinyl; yellow. (Table Cover)	yard	.13	10	10	10	10	10	10	10	
3176)	20-710	OPENER, Combination, can and bottle, with cork screw: Nickel plated.	each	.14	3	3	3	3	3	3	3	
3177)	20-020	OVEN, Portable: two-burner model; approx. 19" x 12" x 16" (48 x 30 x 40 cm); steel with baked-on enamel finish, asbestos insulated; with deflector plate for even heat distribution; 2 glass panel doors 2 baking racks; carrying handles.	each	8.93	1	1	1	1	1	1	1	
3178)	20-280	PAN, Baking and Roasting: 16" x 12" x 2-1/2" (40 x 30 x 6 cm); stainless steel.	each	2.25	3	3	3	3	3	3	3	
3179)	20-285	PAN, Baking and Utility: 15-1/2" x 10-1/2" x 1" (39 x 26 x 2.5 cm); rimmed on four sides; stainless steel. (Baking Sheet)	each	1.76	3	3	3	3	3	3	3	
3180)	20-290	PAN, Baking Bread: 9-1/2" x 4-7/8" x 2-3/4" (24 x 12 x 7 cm); seamless construction; stainless steel.	each	1.32	3	3	3	3	3	3	3	
3181)	20-295	PAN, Baking, Cake, Round: 8-5/8" diameter x 1-1/2" deep (Ø 22 x 4 cm); stainless steel.	each	.66	3	3	3	3	3	3	3	
3182)	20-320	PAN, Dishwashing: capacity 12 quarts (11 litres), approx. 15" diameter x 6" deep (Ø 38 cm x 15 cm); strong rolled rims, with hole for hanging; polyethylene.	each	.74	3	3	3	3	3	3	3	
3183)	20-260	PAN, Frying: approx. 8-3/4" diameter (Ø 22 cm); stainless steel, aluminium or copper clad bottom.	each	2.50	3	3	3	3	3	3	3	
3184)	02-650	PITCHER Water: capacity 3 quart (285 cl); approx. 5-1/4" x 8" deep (Ø 135 x 200 mm); straight-sided; stainless steel.	each	3.97	3	3	3	3	3	3	3	
3185)	20-760	PLATE: 9" diameter (Ø 23 cm); unbreakable, Melamine; assorted pastel colours.	each	.33	12	12	12	12	12	12	12	

List N: HOME ECONOMICS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		COOKING										
		BASIC (cont'd)										
3186)	20-365	POT, Cooking, 1-1/2 quart capacity (140 cl): stainless steel with aluminium or copper clad bottom; seamless construction; long, heat resistant plastic or bakelite handle with hanging ring; fitted lid with knob.	each	1.82	3	3	3	3	3	3	3	(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)
3187)	20-360	POT, Cooking, 2-1/2 quart capacity (235 cl): stainless steel with aluminium or copper clad bottom; seamless construction; long, heat resistant plastic or bakelite handle with hanging ring; fitted lid with knob.	each	3.06	3	3	3	3	3	3	3	
3188)	20-350	POT, Cooking, 4 quart capacity 375 cl: stainless steel with aluminium or copper clad bottom; seamless construction; long, heat resistant plastic or bakelite handle with hanging ring; fitted lid with knob.	each	4.68	3	3	3	3	3	3	3	
3189)	20-590	SHREDDER/GRATER, Semicircular: 3 to 4 cutting blades for cutting from very coarse to very fine, approx. 5" x 13" (13 x 33 cm); four-sided; stainless steel.	each	.63	3	3	3	3	3	3	3	
3190)	20-800	SPATULA, Kitchen: broad flat flexible blade of spring steel; blade length approx. 9" to 10" (23 - 25 cm); plastic or bakelite handle.	each	.44	3	3	3	3	3	3	3	
3191)	20-820	SPOON, Basting and Cooking: solid bowl; stainless steel; approx. 13" (33 cm).	each	.30	6	6	6	6	6	6	6	
3192)	20-860	SPOON, Mixing, Set of Three: wooden; one each of the following sizes: 8" long, 10" long, 12" long (20 cm, 25 cm, 30 cm).	set	.30	3	3	3	3	3	3	3	
3193)	20-865	SPOON, Serving: stainless steel. (Tablespoon)	each	.11	12	12	12	12	12	12	12	
3194)	20-870	SQUEEZER, Fruit: rigid plastic, one piece. (Fruit Juicer)	each	.20	3	3	3	3	3	3	3	
3195)	20-050	STOVE, Kerosene, 2-Burner, Non-Pressure, "Valor" Type, Floor Model: steel body and grates, rust-resistant burner bowls; 4-pint (190 cl) glass fuel tank; complete with one set of standard spare parts.	each	10.35	1	1	1	1	1	1	1	
3196)	01-700	STOVE, Vaporized Kerosene, Single Burner, Pressure Type: silent; complete with standard spare parts kit.	each	3.00	6	6	6	6	6	6	6	
3197)	20-890	STRAINER, Puree: approx. 7" to 8" diameter (ø 18 - 20 cm); stainless steel mesh sieve and rim, reinforced bowl; plastic handle.	each	.77	3	3	3	3	3	3	3	

List N: HOME ECONOMICS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		COOKING										
		BASIC (cont'd)										
3198)	20-540	TABLEWARE, Set of Four: stainless steel; one each of the following: table knife, table fork, dessert spoon, teaspoon.	set	.34	12	12	12	12	12	12	12	
3199)	20-920	TRAY, Cooling: approx. 10" x 9" (25 x 23 cm); open mesh, tin finish.	each	.26	3	3	3	3	3	6	6	
3200)	20-930	TRAY, Serving: 16" x 9" (40 x 23 cm); rigid plastic.	each	.34	3	3	3	3	3	3	3	
3201)	20-950	TUMBLER, Drinking: capacity 10 oz. (300 cc); hardened and heat resistant glass.	each	.04	12	12	12	12	12	12	12	
		SUBTOTALS, Cooking (Basic Items).....			$ 185.00	$ 185.00	$ 197.00	$ 197.00	$ 197.00	$ 198.00	$ 198.00	
		OPTIONAL										
3211)	20-100	STOVE, Electric, Standard Model: overall range 20-1/2" x 27" x 45-1/2" (52 x 68 x 115 cm), 4 burner top; oven 16" x 19-1/2" x 14" (40 x 50 x 35 cm), automatic thermostat on solid oven door; storage drawer below oven. For operation on 220 volts.	each	105.60	-	-	1	1	1	1	1	Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
3212)	20-042	STOVE, Bottled Gas, 2-Burner, Floor Model: to accommodate portable oven approx. 19" x 12" x 16" (48 x 30 x 40 cm).	each	10.00	1	1	1	1	1	1	1	
		LAUNDRY										
		BASIC										
3221)	21-050	BASIN, Utility: approx. 20" diameter x 8" deep (Ø 50 x 20 cm); polyethylene.	each	1.24	2	2	2	2	2	2	2	
3222)	21-100	BOILER: capacity 11-gallons (42 litres); galvanized steel or copper; leakproof, rust resistant; straight sides; flat bottom, non-snag rolled rim; wooden or plastic handles; snug-fitting cover.	each	5.90	1	1	1	1	1	1	1	
3223)	21-530	IRON, Charcoal: flat, box type; wooden handle.	each	1.99	3	3	3	3	3	3	3	
3224)	21-520	IRON, Kerosene: Tilley pressure type. (Paraffin Iron)	each	7.32	3	3	3	3	3	3	3	
3225)	21-540	IRON REST: metal top; asbestos back.	each	.35	3	3	3	3	3	3	3	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

List N: HOME ECONOMICS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		LAUNDRY										
		BASIC (cont'd)										
3226)	21-600	IRONING BOARD, Table Type: approx. 54" x 12" (135 x 30 cm); height adjustable from 23" to 36" (58 to 90 cm); wooden or contour curved tubular steel folding legs; steam vent top; steady self-levelling rubber-tipped feet.	each	5.50	1	1	1	1	1	1	1	
3227)	21-130	- COVER, Ironing Board: complete cover and pad set to fit the above ironing board; pad preferably of fire-resistant material; cover of heavy cotton drill.	set	2.75	1	1	1	1	1	1	1	
3228)	21-140	PAD: approx. 36" wide x 5 ft. long (90 x 150 cm); heavy felt or asbestos material.	piece	1.83	8	8	8	8	8	8	8	For covering tables when ironing.
		- Cover: See Item 3230.										
3229)	21-700	PAIL, Utility: capacity 11 quarts (10 litres), 10-5/8" diameter x 9-1/2" high (Ø 27 x 24 cm); seamless, polyethylene; plastic handle on rust-proof metal bail.	each	.53	2	2	2	2	2	2	2	
3230)	21-145	SHEETING: approx. 36" wide x 5 feet long (90 x 150 cm), heavy cotton drill; white.	piece	.48	8	8	8	8	8	8	8	For covering the table pad, Item 3228, when ironing.
		SUBTOTALS, Laundry (Basic Items).....			$ 78.00	$ 78.00	$ 78.00	$ 78.00	$ 78.00	$ 78.00	$ 78.00	
		OPTIONAL										
3241)	21-510	IRON, Electric, Dry, Automatic Control: aluminium sole plate with beveled edge; chrome plated body; 2-1/2 to 3 lbs. (1.13-1.36 kg.); detachable cord; black plastic handle and trim. For operation on 220 volts, AC.	each	6.11								Items 3241 to 3244 Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
		or			1	1	1	1	1	1	1	
3242)	21-515	IRON, Electric, Dry, Automatic Control: aluminium sole plate with beveled edge; chrome plated body; 2-1/2 to 3 lbs. (1.13-1.36 kg.); detachable cord; black plastic handle and trim. For operation on 110 volts, AC.	each	6.11								

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		LAUNDRY										
		OPTIONAL (cont'd)										
3243)	21-500	IRON, Electric, Steam and Dry, Automatic Control: aluminium sole plate with beveled edge; chrome plated body; 2-1/2 to 3 lbs. (1.13-1.36 kg.); for all grades of water; easy to fill and empty; black plastic handle and trim. For operation on 220 volts, AC.	each	10.00	1	1	1	1	1	1	1	(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)
		or										
3244)	21-505	IRON, Electric, Steam and Dry, Automatic Control: aluminium sole plate with beveled edge; chrome plated body; 2-1/2 to 3 lbs. (1.13-1.36 kg.); for all grades of water; easy to fill and empty; black plastic handle and trim. For operation on 110 volts, AC.	each	10.85								
3245)	21-605	IRONING BOARD, Sleeve: wooden frame with two ironing surfaces, 23" x 8" and 7" x 5" (58 x 20 cm. and 18 x 13 cm); folding Silicone-treated cover over firm pads.	each	1.50	1	1	1	1	1	1	1	
3246)	21-650	LINE, Laundry: approx. 5/16" diameter (ø 8 mm), length 50 ft. (15 m); heavy cord or plastic covered.	length	.80	2	2	2	2	2	2	2	For request only if no suitable material for a line is obtainable locally.
		or										
3247)	21-120	RACK, Drying: wooden or aluminium or aluminized steel; rust-resistant; approx. 75 ft. (22 m) of plastic or nylon cord; completely folding; height approx. 6 ft. (2 m) when in use. (Clothes Horse)	each	6.60	1	1	1	1	1	1	1	To be requested only if, for climatic or other reasons, drying by other means is impracticable.
		SEWING										
		BASIC										
3261)	22-051	BOX: approx. 9" x 7" x 3" (23 x 18 x 8 cm); translucent plastic or metal; with close-fitting lid.	each	1.46	18	18	18	18	18	18	18	For needles, pins, etc.
3262)	22-100	CHALK, Tailor's: pencil-type holder, complete with 2 chalk refills.	each	.18	6	6	6	6	6	6	6	
3263)	22-281	FASTENER, Hook and Eye, Black: No. 1 (medium size); card of 12.	card	.04	12	12	12	12	12	12	12	Initial supply.
3264)	22-280	FASTENER, Hook and Eye, White: No. 1 (medium size); card of 12.	card	.04	12	12	12	12	12	12	12	Initial supply.
3265)	22-276	FASTENER, Press-Stud or Snap, Black: size "0", card of 36.	card	.04	12	12	12	12	12	12	12	Initial supply.
3266)	22-275	FASTENER, Press-Stud or Snap, White: size "0", card of 36.	card	.04	12	12	12	12	12	12	12	Initial supply.

List N: HOME ECONOMICS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		SEWING										
		BASIC (cont'd)										
3267)	22-300	GAUGE, Needle: for knitting needles.	each	.08	1	1	1	1	1	1	1	
3268)	22-350	HOOK, Crochet, Set of 12: steel; three each of the following sizes: 3, 7, 8, 11.	box	.90	1	1	1	1	1	1	1	
3269)	99-100	NEEDLE, Knitting, Set of 10 Pairs: one pair in each of the following lengths and sizes: 10" (25 cm) long: Eng.# 1, 2, 3, 4, 5 — Fr. # 7½, 7, 6½, 6, 5½ (22-400) 14" (35 cm) long: Eng.# 6, 7, 8, 9, 10 — Fr. # 5, 4½, 4, 3½, 3¼ (22-405)	set	2.56	12	12	12	12	12	12	12	
3270)	99-105	NEEDLE, Sewing, Set of 200: packets of 25 in each of the following types and sizes: a) sharps: 3, 7, 8, 11 (22-480) b) darning: 3 (22-450) c) darning: 7 (22-460) d) crewel: 7 (22-430) e) raffia: 7 (22-470)	set	.44	12	12	12	12	12	12	12	Initial supply.
3271)	22-500	PINS, Dressmaker: plated, 1/4 lb. (110 gm.) box. - Rule: See Items 3278 and 3279	box	.25	12	12	12	12	12	12	12	Initial supply.
3272)	22-700	SCISSORS, Dressmaker: 7" (18 cm) long; straight handle, blunt/sharp, stainless steel.	each	.80	6	6	6	6	6	12	12	
3273)	22-710	SCISSORS, Embroidery: 3" (8 cm) long; straight blades, sharp/sharp, stainless steel.	each	.28	6	6	6	6	6	6	6	
3274)	22-850	SEWING MACHINE, Hand Operated: complete with wooden base, cover, standard accessories, and spare parts.	set	25.00	2	2	3	3	3	3	3	
3275)	22-857	SEWING MACHINE, Treadle Operated, Semi-Industrial: with table and stand; complete with one set of separate accessories and one set of spare parts for normal maintenance. (as Juki Model TR7 or similar)	each	58.30	2	2	3	3	3	3	3	
3276)	22-890	SHEARS, Pinking: 7" (18 cm) long; large finger loops; stainless steel.	each	3.47	2	2	2	2	2	2	2	
3277)	22-900	SKIRT-MARKER: pin-it type; to mark hems 7" to 20" (18 - 50 cm) from floor; heavy metal base; built-in pin cushion; hardwood ruler.	each	1.97	1	1	1	1	1	1	1	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

List N: HOME ECONOMICS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		SEWING										
		BASIC (cont'd)										
3278)	05-670	TAPE MEASURE, Cloth: 60" (150 cm) long; calibrated in inches and centimetres.	each	.14	12	12	12	12	12	12	12	
3279)	06-900	TAPE MEASURE, Steel: 6 ft. (2 m) long; calibrated in inches and centimetres; spring rewind; nickelled steel case.	each	.24	1	1	1	1	1	1	1	
3280)	99-110	THIMBLE, Set of 3: one each of the following sizes: a) small, size 5 (22-920) b) medium, size 6 (22-921) c) large, size 7 (22-922)	set	.09	12	12	12	12	12	12	12	
		SUBTOTALS, Sewing (Basic Items).....			$ 254.00	$ 254.00	$ 338.00	$ 338.00	$ 338.00	$ 342.00	$ 342.00	
		OPTIONAL										
3291)	22-860	SEWING MACHINE, Electric, Standard Console: straight stitcher; complete with standard accessories. For operation on 220 volts, 50 cycles, AC. (as JANOME Type EQ-350, Model 504, Japan)	each	47.25	-	-	-	2	2	2	2	Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
		or										
3292)	22-861	SEWING MACHINE, Electric, Standard Console: straight stitcher; complete with standard accessories. For operation on 110 volts, 60 cycles, AC. (as JANOME Type EQ-350, Model 504, Japan)	each	47.25								
		CHILD CARE AND TRAINING										
		BASIC										
3311)	02-200	BATH, Baby: capacity 26 quarts (25 litres); oval, approx. 30" x 14" x 8" deep (75 x 37 x 20 cm); polyethylene.	each	1.11	1	1	1	1	1	1	1	
3312)	05-126	BLANKET, Baby: fire-resistant, lightweight, cotton blend.	each	1.50	1	1	1	1	1	1	1	
3313)	20-522	CONTAINER: approx. 5" x 5" (13 x 13 cm) shallow with fitted lid.	each	.99	1	1	1	1	1	1	1	
3314)	20-526	CUP, Baby: capacity 5 oz. (150 cc); safety rolled rim, easy grip handle; stainless steel.	each	.64	1	1	1	1	1	1	1	
3315)	04-450	NURSER, Infant, 8-oz (250 ml), Wide Mouth: complete with protective cap, closure and rubber nipple; graduated in fl. ozs and mls; heat resistant glass. (Feeding Bottle; Baby Bottle; Nursing Bottle)	each	.12	1	1	1	1	1	1	1	
3316)	04-455	- NIPPLE, Rubber: to fit the above Nurser; spare.	each	.03	4	4	4	4	4	4	4	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

List N: HOME ECONOMICS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	7th NA	8th NB	9th NC	10th ND	11th NE	12th NF	13/14th NG	Notes
		CHILD CARE AND TRAINING										
		BASIC (cont'd)										
3317)	03-375	PAIL, Diaper: capacity approx. 3 to 4 gallons (11 - 15 litres); polyehtylene; bail handle, with cover.	each	1.73	1	1	1	1	1	1	1	
3318)	21-700	PAIL, Utility: capacity 11 quarts (10 litres), 10-5/8" diameter x 9-1/2" high (Ø 27 x 24 cm); seamless, polyethylene; plastic handle on rust-proof metal bail.	each	.53	1	1	1	1	1	1	1	
3319)	03-390	POT, Chamber, Baby: polyethylene, with cover.	each	.30	1	1	1	1	1	1	1	
3320)	03-610	SHEETING, Plastic: 36" wide x 2 yds long (90 x 180 cm); 8 guage (0.2 m); vinyl, boilable.	piece	.32	1	1	1	1	1	1	1	
3321)	20-890	STRAINER, Puree: approx. 7" to 8" diameter (Ø 18 - 20 cm); stainless steel mesh sieve and rim; reinforced bowl; plastic handle.	each	.77	1	1	1	1	1	1	1	
3322)	20-897	STRAINER, Tea: 2-1/2" (64 mm) diameter; fine tinned mesh and wire; black plastic handle.	each	.26	1	1	1	1	1	1	1	
		SUBTOTALS, Child Care (Basic Items).....			$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	
		OPTIONAL										
3341)	17-185	DOLL, Demonstration, Dark: newborn; without reservoirs.	each	9.24	1	1	1	1	1	1	1	
		or										
3342)	17-186	DOLL, Demonstration, Light: newborn; without reservoirs.	each	9.24								
		TOTALS, List N, Basic Items.....			$ 525.	$ 525.	$ 621.	$ 621.	$ 621.	$ 626.	$ 626.	

(For detailed suggestions regarding the use of these items, see UNICEF Guide List ISIS.)

SECONDARY SCHOOLS: AUDIO-VISUAL AIDS

154) Most of the items in the list which follows are self-explanatory, but it is felt that a few notes of guidance may be helpful in the case of some of the items.

155) Films, Filmstrips, Slides, and Projectors. Before a request for projectors is put forward, it should be ensured that arrangements exist or are in hand for a supply of films, filmstrips or slides sufficient to keep the projectors in regular use. With a small static supply a projector remains idle for most of the time, and its provision can rarely be justified.

156) To provide each school with an adequate film, filmstrip and slide "library" is not usually regarded as an economic arrangement, except perhaps in the case of very large schools. A more satisfactory system is the establishment of territorial or regional libraries or libraries serving groups of schools, on which the schools draw as and when they require to do so. Where communications are not so difficult as to render it impracticable, it is suggested that it is a system whose development should be encouraged.

157) The advantages of such a system can readily be seen, in miniature, from these guide-lists - in the case, for example, of Geography. In the optional part of the guide-list for that subject provision is made for a certain number of films or filmstrips per school. If the programme of assistance covers, say, five schools and a centralized library is established, five times that number of different films or filmstrips could be provided so that each of the schools would have five times the variety that it would have got under a separate system of supply to each school. It would not normally be considered absolutely essential that all the five schools would be teaching exactly the same subject at exactly the same time. (Libraries serving larger numbers of schools would, of course, have to carry a number of copies of each film, etc.)

158) In the case of a number of small schools in a fairly restricted area, consideration might perhaps also be given to a centralized store of projectors, for issue to the schools as required.

159) As was mentioned briefly in the explanatory notes to the Geography list, some developing countries, which have established territorial or regional film, filmstrip and slide libraries, have set up panels of teachers and others to select, from the wide variety of films, filmstrips and slides which appear on the market or are otherwise published, those which are considered suitable for use in those countries. Films, filmstrips and slides, which to an outside eye or ear or from a catalogue description might seem to be just what is wanted may, because of their background or mode of presentation, lack appeal or even be objectionable to the people of countries other than those in which they were produced.

160) It is most desirable therefore that before films, filmstrips and slides are requested and issued to schools, in UNICEF supply, their suitability should be checked with the local education authorities. It is with this need, among other things, in view that films, filmstrips and slides in these guide-lists have been marked "of choice".

161) Notes on items calling for special comment follow.

162) Battery-operated Equipment. It will be seen that there are several battery-operated instruments, included in both the main and the optional parts of the list, as alternatives to the mains-operated types. Before these are requested, it should be made sure that satisfactory arrangements can be established for the batteries to be re-charged or replaced when necessary.

163) Screens (Items 3376, 3405). It will be noted that two types of screen are included in the main part of the list - a rear-projection and a front-projection type. The former has the advantage that it can be used in a semi-darkened room, but it has the disadvantage of providing a smaller picture.

164) Attention is drawn to the fact that where there are suitable walls available, expense can be saved by painting them with white matte paint and using them as screens. The painted area should normally not be less than about 50" x 50".

165) Flannelgraph Materials. These comparatively simple but no less valuable materials are included also in the Audio-Visual Aids list, List F, in the Primary Schools Section, Section 1, and comments on them are contained in the first three paragraphs of the explanatory notes preceding that list, paragraphs 72-74.

166) Projector - for 8mm. Loop Films (Item 3395). It is thought that this form of projector should have a very considerable future in instructional work. It is a comparatively new development and the production of films for it is not yet very plentiful, though it appears to be coming along fast. The films used with this projector are enclosed in plastic cases or "cassettes", which are inserted straight into the projector. The changing of films is thus a matter of seconds only. The films are of a "single-concept" type; that is to say, they are short motion-pictures showing single items or single aspects of a subject. They are silent, so that the teacher can introduce them into his own lesson, in his own language and in his own way. In running time they last generally for about four minutes. Being in loop form they can be repeated immediately, if desired, and they can be stopped for study in "still" form, at any point.

167) The machine listed can be used with a front-projection screen in a darkened room or with a rear-projection screen in subdued daylight. With a rear-projection screen it provides clear pictures up to the screen size of a 21 inch (53 cms) television tube - about 17 inches (43 cms) x 12½ inches (32 cms). With a front projection screen in a darkened room it can be used satisfactorily with classes of up to about 30.

168) The films at present on the market, in black and white and in colour, vary in price from about $4 to $12. Not only therefore is this equipment much less expensive than equipment for ordinary 16 mm. film projection but it is also thought, by many, to be a more effective and flexible teaching aid. It is therefore recommended that serious consideration should be given to the selection of this projector as against the 16 mm. film projector, which is shown as an alternative.

169) Projector - for 16 mm. Films (Items 3396/3397). Please see the comments in the preceding paragraph.

170) Radio-Receiving Set (Item 3401). This is included in the optional, rather than in the main, part of the list because it should be requested only if:

a) There is a regular programme of school broadcasts, produced in collaboration with or approved by the education authorities responsible for the schools, which can be received clearly at appropriate times by the schools concerned;

b) The programme contains broadcast lessons designed for the level of school for which the receivers are requested; and

c) The teachers in the schools for which the receivers are requested have had, or are to have, training or instruction in the conduct of broadcast lessons.

171) Episcope, 10" x 10" aperture (Item 3391). If a photocopier, Item 3394 and an overhead projector, Item 3400 are supplied, it is suggested that this item should not be required in addition. Please see note below on "Projector, Overhead," paragraph 175.

172) Episcope (Item 3392). This is a small instrument which may be requested in cases in which the larger episcope (Item 3391) is not supplied. It is too small for class use, but it can be of help to teachers in the making of their own charts and drawings from diagrams, books, etc.

173) Projector, Sunlight-Powered (Item 3399). This device is hardly beyond the experimental stage. It is included in case it may be desired to try it in schools situated in areas of long sunlight, which have no electric-mains supply or ready source of battery re-charging or replacement. It is for use with filmstrips only. Sunlight is focussed on a swivel mirror so that it shines through a large condensing lens. The film image appears on a plastic rear-projection screen at the front of a shadow box. It can be used outdoors or the mirror can be extended through a window or doorway so that the picture may be seen indoors.

174) Projector, Kerosene-Operated (Item 3398). The source of power for which this projector is devised is the ordinary kerosene pressure-pump lantern. It can be used for classes of up to about 30. It requires a darkened room for effective operation. It is included for possible consideration in cases where it is not practicable to use any other form of projector.

175) Projector, Overhead (Item 3400). This machine is useful for showing transparencies. Transparencies can be made on acetate sheets with the use of the photocopier (Item 3394), from books and other material. Where this projector and the photocopier are both supplied, they can thus jointly fulfil a number of the functions of an episcope.

176) An ordinary duplicating machine is provided under General Equipment, List J, Item 2826.

List O: AUDIO-VISUAL AIDS (Secondary Schools)

Quantities suggested for schools of various levels. The quantity suggested for any one (single-stream) school will be found in the column headed by the highest year of schooling provided by that school. The quantities in preceding columns should not be added to this. (See paragraphs 103/105.)

Item#	Whse.#	Description	Unit	Price $	7th OA	8th OB	9th OC	10th OD	11th OE	12th OF	13/14th OG	Notes
		BASIC										
3361)	26-045	BRUSHES, for Powder Paint: non-rusting seamless ferrules; set of six in the following shapes and sizes: Flat: sizes 4, 8, 12 Round: sizes 4, 8, 12	set	1.00	2	2	2	2	2	2	2	For use with powder paints, Item 3366, in making charts, flannelgraphs, etc.
3362)	25-840	CRAYONS: approx. 4¾" long x 7/16" diameter (11 cm x Ø 11 mm); non-smudge, non-toxic, wrapped; box of 8 in the following colours: red, orange, yellow, green, blue, purple, brown, black. (as "Crayola or equal)	box	.20	5	5	5	5	5	5	5	Initial supply. For use in making charts, flannelgraphs, etc.
3363)	18-202	DUPLICATOR: simple clay-bed type; foolscap size. (as Matthews, Drew and Shelbourne)	each	6.00	1	1	1	1	1	1	1	For reproduction of maps, drawings, test papers, etc. This type of duplicator is similar to the ordinary hectograph, but cleaner to operate. A rotary type duplicator, Item 2826, is included in the list.
3364)	99-070	FLANNELETTE: 36" wide x 3 yards long (90 x 275 cm); heavy, rough, double napped; one piece in each of the following colours: black, dark green, navy blue, red. (Winceyette)	set	6.00	2	2	2	2	2	2	2	For flannelgraphs. Black (#18-280) Navy Blue (18-280-4) Dark green (18-280-8) Red (18-280-12)
3365)	26-275	GUM, Liquid: approx. 3 oz. (90 cc) bottle, with cap. (Mucilage)	doz.	2.40	1	1	1	1	1	1	1	Initial supply. Not to be requested if suitable locally-made gum is available.
3366)	26-560	PAINTS, Powder: set of eight 1-lb. (454 gm) tins in the following colours: scarlet, orange, yellow, green, ultramarine blue, brown, black, white.	set	5.00	1	1	1	1	1	1	1	Initial supply. These paints are to be mixed with water and are used for colouring charts, cut-outs, etc.
3367)	45-393	PANTOGRAPH: approx. 21" (53 cm) long, ratio of 25:1; hardwood; with 6 spare lead points. (as Beckley-Cardy cat.114A p.123 #47G31)	each	2.25	2	2	2	2	2	2	2	For teachers' use in making enlargements or reductions.
3368)	18-510	PAPER, White: 30" to 36" (75 - 90 cm) wide; 54-lb. or 80 gm stock; unglazed, cartridge type; 25-yard (23 m) roll.	roll	1.50	2	2	2	2	2	2	2	Initial supply. For making charts, maps, etc.
3369)	18-512	PAPER, White, Thick: 12" x 18" (30 x 45 cm) sheets; approx. 300 gm or 175-lb. stock; light glaze; "Manila Tag"; package of 100.	pkg.	1.40	1	1	-	-	-	-	-	Initial supply. For making flip-charts, etc.

List O: AUDIO-VISUAL AIDS (Secondary Schools) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th OA	8th OB	9th OC	10th OD	11th OE	12th OF	13/14th OG	Notes
		BASIC (cont'd)										
3370)	18-010	PROJECTOR, 300 watts, for slides 2" x 2" (5 x 5 cm): tropicalized, blower-cooled, aspheric condenser system, complete with 100 mm f/3.5 tropicalized lens, projection lamp, plus two spare projection lamps and 2.5 metres (8 ft.) flex; with filmstrip carrier for single and double frame (24 x 36 mm and 18 x 24 mm) horizontal and vertical pictures, and semi-automatic slide dispenser and magazine. For operation on 220 volts, 50/60 cycles, AC. (as CAPAC, Paris)	each	49.18								Items 3370, 3371 and 3372 Projectors should be requested only if full use is to be made of them and if arrangements have been made for an adequate supply of slides and/or filmstrips.
		or										
3371)	18-020	PROJECTOR, 300 watts, for slides 2" x 2" (5 x 5 cm): tropicalized, blower-cooled, aspheric condenser system, complete with 100 mm f/3.5 tropicalized lens, projection lamp, plus two spare projection lamps and 2.5 metres (8 ft.) flex, with filmstrip carrier for single and double frame (24 x 36 mm and 18 x 24 mm) horizontal and vertical pictures and semi-automatic slide dispenser and magazine. For operation on 110 volts, 50/60 cycles AC. (as CAPAC, Paris)	each	49.18	1	1	1	1	1	1	1	
		or										
3372)	18-015	PROJECTOR, 300 Watts, for single and double frame (24 x 36 mm and 18 x 24 mm) filmstrips and 2" x 2" (5 x 5 cm) slides: complete with 5" (127 mm) coated projection objective f/3.5 anastigmatic lens and projection bulb lamp plus 2 spare projection lamps; blower-cooled. In carrying case. Complete with 2 spare bulbs (lamps)-300 watts, 220 volts, and 2 spare bulbs(lamps)-100 watts, 12 volts. With semi-automatic slide dispenser. For dual operation on 220 volts 50/60 cycles AC or 12 volt car battery.	each	50.00								
3373)	51-685	SANDPAPER: 9½" x 10" (24 x 25 cm); 3 sheets of each of the following grits: "0", "F", "1", "1½"; package of 12 sheets.	pkg.	.11	4	4	4	4	4	4	4	Initial supply. For backing flannelgraph cut-outs.
3374)	25-550	SCISSORS, Safety School Type: 4½" (11 cm) long; blung/blunt.	each	.41	12	12	12	12	12	12	12	
3375)	26-730	SCISSORS, Teacher's: 8" (20 cm) long; sharp/sharp.	each	.84	2	2	2	2	2	2	2	For teachers' use in cutting paper, cardboard, flannelette, etc.
3376)	18-100	SCREEN, Projection: 47" x 47" (120 x 120 cm); fungus-proofed; matte white; portable.	each	9.44	1	1	1	1	1	1	1	This Screen is to be requested only if Item 3370, 3371 or 3372 is also requested.

List O: AUDIO-VISUAL AIDS (Secondary Schools)(cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th OA	8th OB	9th OC	10th OD	11th OE	12th OF	13/14th OG	Notes
		BASIC (cont'd)										
3377)	26-870	TAPE, Cellophane: ½" wide x 1000" (13 mm x 25 m); self-adhesive; with dispenser.	each	.29	4	4	4	4	4	4	4	Initial supply.
3378)	45-800	THUMB TACKS: ½" diameter (Ø 13 mm), solid head; box of 100. (Drawing Pins)	box	.46	1	1	1	1	1	1	1	Initial supply. For affixing flannelgraphs, pictures, etc.
		- Winceyette: see Item 3364										
		TOTALS, List O, Basic Items			$ 105.00 to 106.00	$ 105.00 to 106.00	$ 103.00 to 104.00	$ 103.00 to 104.00	$ 103.00 to 104.00	$ 103.00 to 104.00	$ 103.00 to 104.00	Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
		OPTIONAL										
3391)	18-003	EPISCOPE: 10" x 10" (25 x 25 cm) aperture; blower-cooled; 1000 watt lamp. For operation on 220 volts 50/60 cycles. (Opaque Projector) (as "Opa-Scope" by Projection Optics Co.)	each	250.00								
		or			-	-	1	1	1	1	1	Item 3392 is for teachers' use only, in making their own charts and maps. This item is too small for class use.
3392)	18-003-2	EPISCOPE, Small: mains or battery operated; with two spare lamps. (as Dux)	each	16.00								
3393)	45-370	LETTERING SET: 4 Roman alphabets of capital letters from 1/4" to 7/8" (6 to 22 mm) high, 3 lower case alphabets, 4 sets of Arabic numbers from 0 to 9; clear plastic; complete with two quick-drying paints and necessary accessories. (Stencilling Set) (as "Econosign", ESA Stationery cat. p.119 #3999)	set	8.70	1	1	1	1	2	2	2	
3394)	18-004-60	PHOTOCOPIER: for making paper prints and film transparencies, capable of copying from bound books; copies up to foolscap size. (as Contoura)	each	150.00	-	-	-	-	1	1	1	When requisitioning the Photocopier, Item 3394, specify voltage, cyclage, and current.
3395)	18-004-90	PROJECTOR, 8 mm Loop Film: /for short single-concept films./ (as Technicolor 500 Economy, with hold button) For operation on 220 volts, 50 cycles, A.C.	each	65.00	-	-	-	1	1	1	1	For explanatory notes on projector, see paragraphs 166/168.

List O: AUDIO-VISUAL AIDS (Secondary Schools)(cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th OA	8th OB	9th OC	10th OD	11th OE	12th OF	13/14th OG	Notes
		OPTIONAL										
3396)	18-005	PROJECTOR, 16 mm Film: magnetic-optical sound, built-in detachable speaker, matching speaker microphone; 1000-watt lamp; 100-ft. (30 m) cable; set of spare parts; in carrying case. For operation on 117 volts, 50/60 cycles. (as Bell and Howell Model 8302)	each	500.00	-	-	-	-	1	1	1	
		or										
3397)	18-007	PROJECTOR, 16 mm Film: magnetic-optical sound, built-in detachable speaker, matching speaker microphone; 1000-watt lamp; 100-ft (30 m) cable set of spare parts; in carrying case. For operation on 220 volts, 50/60 cycles. (as Bell and Howell Model 8302)	each	500.00								
3398)	18-002	PROJECTOR, Filmstrip and Slide, Kerosene-Operated: complete with standard accessories and spare parts. (Diascope)	each	67.06	1	1	1	1	1	1	1	
3399)	18-024	PROJECTOR, Filmstrip and Slide, Sunlight-Operated: complete with shadow box and rear projection screen. (as Graflex, Rochester, N.Y.)	each	90.00	1	1	-	-	-	-	-	For use only in areas where there are long periods of sunlight for most of the year.
3400)	18-028	PROJECTOR, Overhead: 10" x 10" (25 x 25 cm) aperture; blower-cooled; 1200 lumens, with 14" (35 cm) f/3.5 lens; table model. (as Beseler Porta-Scribe Portable, Model #15710) For operation on 220 volts, 50/60 cycles, A.C.	each	175.00	-	-	-	-	1	1	1	For projecting transparencies only. Transparencies can be made with the Photocopier, Item 3394. When requisitioning the Overhead Projector, Item 3400, specify the voltage, cyclage, and current.
3401)	NS	RADIO RECEIVER: table model; transistorized.	each	40.00	1	1	2	2	2	2	2	When requisitioning the Radio Receiver, Item 3401, specify the waveband(s) and whether for battery or mains operation. If for mains, specify the current, voltage and cyclage. Batteries do not store well and are not supplied by UNICEF. This item should be requested only if the conditions in paragraph 170 apply.

List O: AUDIO-VISUAL AIDS (Secondary Schools)(cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th OA	8th OB	9th OC	10th OD	11th OE	12th OF	13/14th OG	Notes
		OPTIONAL (cont'd)										
3402)	25-415	RECORD PLAYER: two-speed, 33 and 45 RPM; transistorized, battery-operated.	each	30.00								
		or										
3403)	25-155	RECORD PLAYER: four-speed including 78, 45, 33 and 16 RPM; monophonic, portable. For operation on 110/220 volts, 60 cycles.	each	20.00	1	1	1	1	1	1	1	
		or										
3404)	25-156	RECORD PLAYER: four-speed including 78, 45, 33 and 16 RPM; monophonic, portable. For operation on 110/220 volts, 50 cycles.	each	20.00								
3405)	18-106	SCREEN, Rear-Projection: approx. image size 24" x 18" (60 x 45 cm)	each	50.00	-	-	-	1	1	1	1	For use, in particular, with the 8 mm Loop Film Projector, Item 3395, but can be used with other projectors.
3406)	18-838	TAPE RECORDER, Portable, Battery-Operated: twin track; reel size 3" and 4" (76 and 100 mm); complete with microphone, reel with dual-purpose tape, empty reel and connecting cable. (as Philips EL-3586)	each	75.00								
		or										
3407)	18-840	TAPE RECORDER, Portable, Electric: two 5 1/4" speakers, 5 watt amplifier, takes reels up to 7" diameter, two-speed dual track recording, 7 1/2 ips, 3.75 ips, up to 4 hours recording/playback with thin base 2400' tape, 2 recording inputs - 1 for microphone, 1 for radio phonograph, 2 output jacks - 1 for external auxilary speaker or monitoring earphones, 1 for external amplifier or public address system; single tone control knob for bass and treble; 5 pushbutton controls- record, play, rewind, forward and stop; recording level guide; program indicator; pause control, fast rewind and forward; on-off single volume control for record and play; durable aluminum and vinyl rugged case; 8 ft. power cord, ceramic microphone with cord; take-up reel and 1 reel of blank recording tape weight - 38 lb., H-10" x W-15" x D-16". For 115/220 volt, 50/60 cycle AC operation. (as Bell & Howell Model 785 X)	each	131.53	-	-	1	1	1	1	1	Items 3406, 3407, and 3408: These tape recorders are for use in language teaching.
		or										
3408)	18-842	TAPE RECORDER, Portable, Electric: .....same description as above, but: For 220 volt, 50/60 cycle, AC operation. (as Bell & Howell Model 785 X)	each	134.82								

SECONDARY SCHOOLS: GAMES AND PHYSICAL EDUCATION

177) As is mentioned in the introductory notes to the Games (Physical Education) list in the Primary section, a sound basic course of Physical Education can be given with comparatively little equipment, most of which can be obtained locally or made from locally obtainable materials. The main requirement is adequate space, both outdoors and in areas where weather conditions may make outdoor training impracticable, under cover. Similarly for athletics most of the equipment needed - items such as, for example, high-jump posts and hurdles - can usually be made locally at much less cost than the same articles supplied and transported from abroad.

178) Most modern gymnastic equipment is usually built into, or attached with special fittings to, the structure of the gymnasium itself and the specifications are therefore best left to be dealt with between the architect or designer of the building and the makers or suppliers of the equipment. It is not felt therefore that such equipment can suitably be included in the guide list. In any case it is suggested that equipment of this nature might reasonably be regarded either as part of the structure of the building or as basic furniture, in the same way as desks and laboratory benches and fittings, and that, when it is decided that a gymnasium for a school can be afforded, the supply of such equipment could normally be left to the local authorities.

179) The list that follows therefore contains only a few items of "movable" gymnastic equipment and equipment for the three "universal" team games for which requests are most frequently made. Notes on items which perhaps call for further comment are given below.

180) Tumbling Mats (Item 3454). In areas where materials such as kapok or thick coir or coconut matting are readily available, adequate tumbling mats can probably be made at considerably less cost than the mats shown on this list. In such cases, it is suggested, this item should not be requested.

181) Swedish Bench (Item 3452). This article, which serves the double purpose of a bench and balancing beam, can probably be made satisfactorily and very much more cheaply than the cost here shown, plus freight charges, in areas where the supply of wood causes no difficulty. In such cases, it is suggested this item should not be requested.

182) Vaulting Box and Jump Board (Items 3455/3456). The comments made on Item 3452 apply to these items also.

183) Parallel Bars and Vaulting Buck (Items 3451, 3457). These items are included for possible consideration in the case of schools with gymnasia. For outdoor use adequate parallel bars can be improvised with the use of galvanized iron pipes of suitable strength, set in concrete, at usually considerably less cost.

184) The notes and comments above may seem, at first sight, to be unduly negative and to suggest a possible lack of interest in Physical Education on the part of UNICEF. Nothing could be further from the truth; the physical well-being of children is a major preoccupation of UNICEF, but it is felt that it would be a disservice, rather than a help, to a country to encourage it to rely on more expensive imported ready-made equipment when it can provide, at less expense, satisfactory alternatives made from local materials or locally made from imported materials. Furthermore it would not be a properly economical use of UNICEF resources.

List P: GAMES AND PHYSICAL EDUCATION (Secondary Schools)

Quantities suggested for schools of various levels. The quantity suggested for any one (single-stream) school will be found in the column headed by the highest year of schooling provided by that school. The quantities in preceding columns should not be added to this. (See paragraphs 103/105.)

Item#	Whse.#	Description	Unit	Price $	7th PA	8th PB	9th PC	10th PD	11th PE	12th PF	13/14th PG	Notes
		BASIC										
3431)	27-033	BASKETBALL: professional model, regulation size and weight, durable vinyl composition cover, seamless, with durable nylon-wound butyl bladder.	each	6.00	4	4	4	5	6	6	6	
3432)	27-034	BASKETBALL GOAL: net and frame, with bracket for mounting.	pair	7.00	1	1	1	1	1	1	1	Posts and backboards must be provided locally.
3433)	27-312	FOOTBALL, Round: professional model, official size and weight, durable vinyl composition cover, seamless, with durable nylon-wound butyl bladder. (Soccer Ball)	each	4.75	5	5	6	6	6	6	6	Items 3431, 3433 and 3436 These balls have the same behaviour qualities as leather-covered balls, but last much longer. They are officially recognised. The bladders are manufactured to last as long as the covers and are not replaceable. The Inflating Kit, Item 3434, is for use with all of the balls.
3434)	27-416	INFLATING KIT: includes hand pump and three inflating needles. (For use with footballs, basketballs, and volleyballs)	kit	1.00	2	2	2	2	2	2	2	
3435)	27-837	STOP WATCH: 30 minutes, in tenths of seconds.	each	10.00	1	1	1	1	2	2	2	Used for accurate timing and recording of track racing, etc.
3436)	27-957	VOLLEYBALL: professional model, regulation size and weight, durable vinyl composition cover, seamless, with durable nylon-wound butyl bladder.	each	5.00	2	3	4	4	4	4	4	
3437)	27-958	VOLLEYBALL NET: regulation size, 27 ft. x 3 ft. (8.2 m x 91 cm), 4" (10 cm) mesh.	each	3.50	1	1	1	1	1	1	1	Posts must be provided locally.
3438)	27-973	WHISTLE, Referee's: brass.	each	.45	6	6	6	6	6	6	6	
		TOTALS, List P, Basic Items.....			$ 83.00	$ 88.00	$ 98.00	$ 103.00	$ 119.00	$ 119.00	$ 119.00	
		OPTIONAL										
3451)	NS	PARALLEL BARS: 10 ft. long x 32" wide (3 m x 80 cm), height adjustable from 27" to 40" (68 - 100 cm); demountable; hardwood hand rails, abduction board; on platform with inclined ends; /Suitable for use in secondary schools (for ages approx. 13 to 20)./ (as Hausmann p.15 #H1300WR)	each	160.00	-	-	-	1	1	1	1	

List P: GAMES AND PHYSICAL EDUCATION (Secondary Schools)(cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th PA	8th PB	9th PC	10th PD	11th PE	12th PF	13/14th PG	Notes
		OPTIONAL (cont'd)										
3452)	NS	"SWEDISH BENCH": approx. 12 ft. x 18" x 12" (3.6 m x 45 cm x 30 cm). (Bench-Beam) (as Star 1961 cat., p.7)	each	59.00	1	1	1	1	1	1	1	
3453)	27-665	TUG-OF-WAR ROPE: 1" (25.4 mm) Manila rope; 75 ft. (22.5 m) long; bound ends.	each	20.00	1	1	2	2	2	2	2	
3454)	NS	TUMBLING MAT: approx. 110 x 180 cm (44" x 72"); minimum of 5 cm (2") thick; tufted coir or equal.	each	10.00	2	2	2	2	2	2	2	To be requested only if tumbling mats are required and if they cannot adequately be made locally from local materials.
3455)	NS	VAULTING BOX: 4 sections; base measurements approx. 36" x 60" (90 x 150 cm); maximum height 50" (125 cm); top padded and upholstered with fabric-backed vinyl cover.	each	230.00	-	-	1	1	1	1	1	
3456)	NS	- JUMP BOARD: approx. 24" x 40" x 5" high (60 x 100 x 13 cm); birch plywood; cork carpeted take-off area; rubber shod. (Beat Board) (as Star cat.62 p.5 #1183)	each	33.00	-	-	1	1	1	1	1	
3457)	NS	VAULTING BUCK: approx. 24" (60 cm) long; 4 legs; adjustable from 36" to 50" (90 - 125 cm); padded. (as Star cat.61 p.3 #95)	each	215.00	-	-	1	1	1	1	1	

SECONDARY SCHOOLS: SCIENCE (PHYSICS, CHEMISTRY, BIOLOGY OR NATURAL SCIENCE)

185) Science, at the secondary school level, is one of the most difficult fields to cover in a guide list, though as a subject, or group of subjects, it is one of the most "universal". The reason is that there is a variety of courses commonly taken and a variety of approaches within those courses. In some schools "General Science", as a single comprehensive subject, is taken throughout the secondary school course; in others Physics, Chemistry and Biology are taken as separate subjects and there are various permutations and combinations in between. There are various laboratory patterns accordingly. In some areas "natural sciences" only are taught during the first part of the secondary course, the "physical sciences" being left to the end.

186) A very helpful review of some of these varieties, with conclusions from them, is contained in a booklet recently produced by UNESCO, entitled "Science Teaching in the Secondary Schools of Tropical Africa", to which attention is drawn. It contains much valuable advice on the planning of laboratories, general requirements, time-tables and similar matters. It is obtainable from UNESCO Headquarters in Paris. It is pointed out, in the Foreword to the booklet, "that the conclusions and advice (contained in the booklet) for improving Science teaching in the countries of Tropical Africa are of course applicable also to other parts of the world. They can, to advantage, be read and put into practice by all those endeavoring to build up, improve or modernize Science teaching at the secondary level."

187) Reference is made to these varieties at the outset to indicate that considerable latitude must be allowed in selections from the list that follows.

188) The list is drawn up on the basis of a single "combined" laboratory for a single-stream school as being the most comprehensive form of basic unit and one which is not infrequently found in developing countries. The list, as it stands, should, it is thought, cover the main requirements, other than expendable items such as chemicals (see paragraph 195 below), of a single-stream school taking "General Science" as a single subject.

189) It is however appreciated that some single-stream schools may take a single division or two divisions of the subject only, such as Physics alone or Biology alone or Physics and Chemistry as two separate subjects.

190) It is further appreciated that the single-stream secondary school is not the most economical form of unit (though often a necessary form in the early stages of development) and that many schools for which assistance is sought will have more than one stream and require more than one laboratory. A common procedure in the case of such schools is gradually, or from the beginning, to establish separate laboratories for each division of the subject - Physics, Chemistry and Biology.

191) To make the list adaptable for use in dealing with the different requirements referred to in the two foregoing paragraphs each of the items in the list has, shown against it in the left-hand margin, an indication of the division of the subject for which it is intended - "p" for Physics. "c" for Chemistry and "b" for Biology. The list is arranged in alphabetical order for ease of reference.

192) A single-stream school taking only one division of the subject, say Physics, will require only the items indicated as intended for that division - by "p" for example, in the case of Physics. The requirements of a single-stream school taking only two divisions of the subject, in a "combined" laboratory, can be deduced similarly - in the case, say, of Physics and Biology, by reference to those items only which are indicated by "p" or "b" or both "p" and "b".

193) In the case of schools with separate laboratories for different divisions of the subject the quantities shown in the list should, in general, be increased only in the case of items indicated in the list as serving the purposes of more than one division of the subject by the insertion against them, in the left-hand margin, of the letters bc, bp, cp, or bcp. If therefore a school has one laboratory for Biology and a "combined" laboratory for Physics and Chemistry, appropriate increases should be made <u>only</u> in the quantities of the items when the letters bc, bp or bcp are shown against the item. If, alternatively, a school has one laboratory for Physics and a combined laboratory for Biology and Chemistry, increases should be made only in the case of items with bp, cp or bcp against them. If, as another alternative, a school has one laboratory for Chemistry and a "combined" laboratory for Physics and Biology, increases should be made only in the case of items with bc, cp or bcp against them. For a school with three separate laboratories, one for each division of the subject, appropriate increases should be made only in the case of items with the letters bc, bp, cp or bcp against them.

194) The quantities suggested in the list are calculated on the assumption that, for the first two, or possibly three, years of the secondary course, the practical work will consist largely of demonstration, with and without pupil participation, developing, through supervised demonstration by groups of pupils in front of the class, into group work by groups of up to about five pupils. Thereafter it is assumed that the groups will gradually diminish in size, to individual or pair work in the last year, with staggered experiments. It is however emphasized that the quantities suggested are tentative only, in view of the variety of practices and the varying sizes of classes, and that it is not intended that they should be too rigidly enforced. Much of the equipment, especially for the higher classes, is expensive and the utmost care should be taken to ensure, as far as is possible, that more equipment is not requested than is actually required.

195) It will be noted that the list contains no quickly expendable or consumable materials such as chemicals. It is felt that the supply of these articles, in the same way as pens, pencils and similar articles, is one which the country itself can reasonably be expected to undertake from the beginning. It may well be that a regular supply of such articles already exists, which can be expanded. In any case the country will have to undertake it eventually, and the cost, in comparison with the cost of the equipment which UNICEF may be asked to supply, is small. It may be argued that sources of supply do not exist in the country; but it is thought that there are few if any places, where secondary schools are likely to be established, to which outside suppliers are not prepared to despatch the articles required; and, if the articles are ordered as soon as it is known that UNICEF will supply the equipment, there seems no reason why they should not arrive at the same time (or before) the equipment.

196) It will be seen that the films, filmstrips, slides and charts included in this list are all shown as "of choice". As has been pointed out on several occasions in these guide lists, the number of these articles and the number of languages in which the legends and notes on them are produced is wide and growing. To include a complete list of all those that could be recommended is thought to be hardly practicable. To list just a few would be invidious. It is felt therefore that these items should be left to local selection. When requests are made for them, full details should be given including costs and sources of supply. The prices shown in the list are estimated average prices only.

197) Laboratory Tools. It is most desirable - in fact, virtually essential - that a fairly simple set of tools should be available for the making and repair of laboratory equipment. Attention is again drawn to the very valuable information and instruction in this regard contained in the UNESCO "Source Book for Science Teaching" and, incidentally, to the fact that several of the articles contained in the list that follows could be made locally with a little skill. It is expected that articles which can be made locally will not be requested, even though they may be contained in the following list.

198) In the case of schools with Manual Arts workshops, the necessary tools should be available in them for this purpose. In case of schools which do not have such workshops, the necessary tools can be requested from List T in Section 3, Teacher-Training, of this guide list.

199) Finally, in the unlikely event of their not being already known, attention is also drawn to the valuable series of books on the teaching of Science in Tropical Secondary Schools published for UNESCO by the Oxford University Press.

200) It may be asked why - in the case of this list, perhaps more than others - there is no specific provision of instructional kits for the teaching of various aspects of the subjects dealt with in the list or an indication of sets for "programmed instruction". The main reason is that it is not the purpose of this Guide List to provide instruction as to how the various subjects should be taught but to provide equipment with which they can be taught. Different countries have different approaches to the subjects. It is therefore thought better that countries in receipt of assistance, which wish to work on a system of such sets or kits, should make up their own from within the items contained in the list that follows, than that the list should comprise series of made-up kits which might not meet the various individual requirements and which, incidentally, are more expensive to buy than the separate items.

201) It may further be asked why the list that follows does not contain more of the simplified items which are now being produced, many of a trial nature, with the aim of greater pupil participation in experiments at an earlier stage and a quickened approach to the ever-widening horizons of scientific knowledge. The reasons are, first, that major programmes of research into improved methods and equipment for the teaching of science are at present taking place. Until these researches have reached a more advanced stage it has been thought advisable to base the list that follows on the generally accepted "orthodox" forms of equipment. A further reason is that much of the simpler equipment can be made on a "do-it-yourself" basis, tools for which are included in this Guide List.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools)

Quantities suggested for schools of various levels. The quantity suggested for any one (single-stream) school will be found in the column headed by the highest year of schooling provided by that school. The quantities in preceding columns should not be added to this. (See paragraphs 103/105.)

Code	Item#	Whse.#	Description	Unit	Price $	7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC										
			(AMMETER: See Item 3727, VOLT-AMMETER)										
b	3482)	46-037	AQUARIUM: capacity 10 gallons (38 litres); glass sided, 20" x 10" x 12" (50 x 25 x 30 cm); stainless steel frame. (as Aquariums, Inc.)	each	8.40	1	1	1	1	1	1	1	For keeping and observing fish and other fresh- or saltwater animals as well as water plants. See also Aerator Pump Unit, Item 3763.
c	3483)	46-042	ASBESTOS PAD: wire gauze covered on one side, metal bound edges, diam. 20 cm, thickness 2 mm. (as KK #120-010)	each	.25	4	8	8	12	18	18	18	
p	3484)	46-763-10	BALANCE, SPRING, 100 g in 1 g divisions: flat brass scale, hook and suspension ring. (as PH P6004 p.4)	each	2.10	1	1	2	4	6	10	10	
p	3485)	46-763-12	BALANCE, SPRING, 200 g in 2 g divisions: flat brass scale, hook and suspension ring. (as PH P6004 p.4)	each	2.10	-	-	-	4	6	10	10	These are Spring Scales.
p	3486)	46-763-14	BALANCE, SPRING, 500 g in 5 g divisions: flat brass scale, hook and suspension ring. (as PH P6004 p.4)	each	2.10	1	1	1	1	2	2	2	
cp	3487)	46-060	BALANCE, STUDENT'S, Twin Rider: capacity 250 g on each pan, sensitivity 2 mg; open brass beam, agate bearings; with notched bar carrying 2 non-removable rider weights, 1g and 0.1 g, obviating use of fractional weights; 2 s/s pans 10 cm in diameter; mounted on rigid base. (as Gallenkamp 1964 cat. p.44 #BC-035)	each	28.00	-	-	-	4	8	8	8	
bcp	3488)	46-060-4	BALANCE, TRIP, Laboratory: double beam, capacity 2000 g on each plate, sensitivity 1/10 g; with round stainless steel plates 6" in diameter (Ø 15 cm), stainless steel beam, upper beam graduated from 0 to 10 g in 0.1 g divisions, lower beam graduated from 0 to 200 g in 10 g divisions, self-aligning agate bearings and steel knife edges; aluminum alloy body. (as Fisher cat.63 p.58 #2-037S)	each	18.00	1	2	2	2	2	2	2	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3489)	46-061	BALL AND RING APPARATUS: Gravesande type, consisting of captive brass ball with brass ring and handle. (as PH P8088 p.168)	set	1.54	1	1	1	1	1	1	1	Thermal expansion of metals.
p	3490)	46-062-4	BAR AND GAUGE APPARATUS: iron bar with handle, with accurately fitted gauge for length and diameter. (as PH P8098 p.168)	each	2.80	1	1	1	1	1	1	1	Thermal expansion of metals.
p	3491)	46-062-7	BAR BREAKING APPARATUS: Heavy iron casting with four U-shaped uprights accommodating a thick iron bar, one end fitted with hand nut, the other drilled with hole to carry a cast iron rod 3" long x ¼" diam. (76 x Ø6.3 mm), bearing against knife-edges. Overall dimensions approximately 13" long x 2½" high x 2½" wide (330 x 64 x 64mm). With twelve cast iron rods and asbestos board to insulate base from heated bar. (as GG p. 78 #141-150 with #141-155)	each	11.50	-	-	-	-	-	1	1	To show force exerted on expansion and contraction of solids.
p	3492)	46-062	BAR, COMPOUND: comprising a bar of copper and a bar of iron each 8" x 1" (20 cm x 25 mm) riveted together. (as PH P8094 p.168)	each	1.20	-	-	-	-	-	1	1	To demonstrate inequalities in thermal expansion of metals.
p	3493)	46-063	BAROMETER, Aneroid, Demonstration: 14 cm diameter (Ø 5-5/8"); 700-800 Torr and 930-1060 mb; visible mechanism, with loop and device to change inside pressure artificially. (as Phywe #2687A)	each	10.95	1	1	1	1	1	1	1	To indicate atmospheric pressure. mm Hg = Torr mb = millbars
cp	3494)	46-063-6	BAROMETER TUBE: straight, 90 cm long, one end closed, stout walls, 10 mm outside Ø, 5 mm bore. (as PH P10420 p.284)	each	.60	-	-	1	3	3	3	3	
bc	3495)	46-063-15	BATH, SAND: diameter 15 cm (Ø 6"); shallow form; tinned iron. (as B & T cat.62 p.256)	each	.15	2	4	6	6	12	18	18	For uniform conduction of heat.
bcp	3496)	46-063-18	BATH, WATER: diameter 12.5 cm x 7.5 cm deep (Ø 5" x 3"); two handles and set of rings; spun aluminum. (as GK cat.64 p.825 #WF-100)	each	1.82	1	1	1	1	1	1	1	To provide means of gently heating mixtures of reactants without danger of overheating.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3497)	80-034	BATTERY CHARGER, for 2, 6 and 12 volt batteries at 1.5 amp: with selenium rectifier and mains voltage selector panel for 200-250 volts A.C., 50-100 cycles; power consumption 30 watts. Complete with battery leads and spring clips. (as B & T p.334 #C8/0051)	each	11.50	-	-	-	-	1	1	1	If electrical characteristics differ from those stated, specify the desired characteristics but do not cite the warehouse code number given.
p	3498)	46-070-46	BEAKER, Laboratory, 100 ml: tall form, without pouring spout; borosilicate glass. (as GK cat.64 p.59 #BJ-620)	each	.26	2	2	2	8	12	18	18	
bc	3499)	09-155	BEAKER, Laboratory, 150 ml: low form (Griffin), with lip and pouring spout; borosilicate glass. (as AHT cat.61 p.89 #2110)	each	.18	3	3	6	24	36	36	36	
bcp	3501)	09-160	BEAKER, Laboratory, 250 ml: low form (Griffin), with lip and pouring spout; borosilicate glass. (as AHT cat.61 p.89 #2110)	each	.29	5	8	8	40	54	60	60	Approx. ¼ the quantities are intended for use in physics, often as spare Battery Jars.
bc	3502)	09-163	BEAKER, Laboratory, 400 ml: low form (Griffin), with lip and pouring spout; borosilicate glass. (as AHT cat.61 p.89 #2110)	each	.35	3	3	3	24	36	36	36	
p	3503)	46-070-49	BEAKER, Laboratory, 400 ml: tall form, without pouring spout; borosilicate glass. (as GK cat.64 p.59 #BJ-620)	each	.39	2	2	2	6	8	12	12	
bcp	3504)	46-070-51	BEAKER, Laboratory, 600 ml: tall form, without pouring spout; borosilicate glass. (as GK cat.64 p.59 #BJ-620)	each	.48	2	2	3	5	6	6	6	
c	3505)	09-170	BEAKER, Laboratory, 1000 ml: low form (Griffin), with lip and pouring spout; borosilicate glass. (as AHT cat.61 p.89 #2110)	each	.42	1	1	1	3	3	3	3	
c	3506)	46-070-65	BEEHIVE SHELF, Stoneware: for use with gas jars; diameter 75 mm. (as B & T p.141 #B43/0090)	each	.26	3	6	6	6	12	12	12	
p	3507)	46-071-96	BELL, ELECTRIC, 4-volt, Battery Operated: bakelite case with detachable cover. (as PH P6992 p.62)	each	1.10	2	2	2	4	6	8	8	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3508)	46-072	BELL PUSH: diameter 2-3/8" (60 mm); bakelite. (as PH P6996 p.62)	each	.40	6	6	6	8	10	12	12	
p	3509)	46-090	BLOCK, GLASS, SOLID, Cubical, 50 mm: clear white glass; edges beveled slightly to prevent chipping. (as PH P8628 p.209)	each	3.50	-	-	1	1	1	1	1	
p	3510)	46-090-5	BLOCK, GLASS, SOLID, Rectangular: 11.5 x 6.5 x 2 cm (4-1/2" x 2-1/2" x 3/4"); edges slightly beveled one side ground to enable path of light rays to be seen. (as PH P8630 p.209)	each	1.72	-	-	-	2	6	8	8	For experiments in refraction of light.
p	3511)	46-090-7	BLOCK, GLASS SOLID, Semi-circular: 9 x 4.5 x 1.6 cm (3-5/8" x 1-3/4" x 5/8"); one face ground. (as PH P8634 p.209)	each	1.26	-	-	-	2	6	8	8	
c	3512)	46-091	BLOWPIPE, Mouth, Black's: japanned tinplate body, brass tube and jet. (as PH C320 p.32)	each	.27	2	2	6	12	18	18	18	For concentrating the heat from a flame over a small area.
p	3513)	45-150	BOARD, Drawing, 60 x 45 cm: student's quality, soft wood with hardwood edges. (as PH P6290 p.25)	each	3.58	-	2	4	6	8	12	12	For making mechanical drawings, electrical layouts etc.
c	3514)	46-095	BOAT, COMBUSTION: length 50 mm x 10 mm (2-3/8" x 3/8") glazed porcelain with handle. (as PH C334 p.33)	each	.24	-	6	6	6	12	12	12	For holding samples for analysis in direct combustion method.
bcp	3515)	09-180	BORER SET, CORK: set of 6; O.D. 5 to 11 mm; polished hard brass with brass handles; complete with ejector. (as AHT cat.61 p.332 #4068)	set	1.09	1	1	2	2	2	2	2	(See also Item 3674, Sharpener).
c	3516)	46-100-26	BOTTLE, REAGENT, NARROW MOUTH, 250-ml: amber glass; with ground-in flat glass stopper; unlabelled. (as AHT cat.61 p.99 #2220-A)	each	.21	6	12	12	12	24	36	36	For storage of chemical reagents. See also Item 3741.
c	3517)	09-195	BOTTLE, REAGENT, NARROW MOUTH, 250-ml: clear flint glass; with ground-in flat glass stopper; unlabelled. (as AHT cat.61 p.99 #2220)	doz.	2.88	1	2	3	6	12	24	24	
c	3518)	09-212	BOTTLE, WASH, Polyethylene, 250-ml: squeeze type; with bent delivery tube and vented screw cap. (as Nalgene cat.K-961 #2402)	each	.40	-	-	2	6	12	24	24	For delivery of small stream of liquid, controlled as to direction and amount.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
b	3519)	03-175	BOTTLE, WIDE MOUTH, Screw Cap, Round, Polyethylene, 2 oz. (60 ml): with bakelite screw cap.	each	.17	6	6	12	12	24	24	24	
c	3520)	46-100-32	BOTTLE, WEIGHING: diameter 25 mm x 50 mm high; lighweight polyethylene, translucent, with fitting cap. (as GK cat.64 p.842 #WT-070)	each	.19	-	-	4	12	24	36	36	
bcp	3521)	09-236	BRUSH, TEST TUBE, Large: bristled diameter 1-3/8" (35 mm), length 3" (7.5 mm); nylon bristles on twisted galvanized wire, tufted end; overall length 12" (30 cm).	each	.08	3	6	6	12	12	18	18	
bcp	3522)	09-235	BRUSH, TEST TUBE, Small: bristled diameter 1/2" (13 mm), length 2" (50 mm); nylon bristles on twisted galvanized wire, tufted end; overall length 9" (22.5 cm).	each	.09	3	6	6	12	12	18	18	
p	3523)	46-130	BUCKET AND CYLINDER APPARATUS: brass bucket with closely fitting brass cylinder; for suspension from hanger hook of an ordinary laboratory balance. (as PH P6178 p.17)	each	2.45	1	1	1	1	1	1	1	Mechanics of fluids: Archimedes' principle.
b	3524)	09-237	BULB, RUBBER, Size 5: fits dropping pipettes of approx. 6 to 9 mm O.D. (Rubber Teat) (as GK cat.64 p.698 #RV-220)	each	.03	6	6	12	12	24	24	24	
cp	3525)	46-140	BURETTE, 50 ml, with Pinchcock and Jet: graduated in 1/10 ml. intervals; plain soda glass. (as PH C472 p.42)	each	1.65	4	6	6	24	36	36	36	For delivery of liquids in measured quantities.
p	3526)	40-216	CALIPERS, Combined: 4" (10 cm), for inside and outside measurements; steel. (as PH P6078 p.12)	each	.48	-	-	-	4	6	8	8	For measurement of inside and outside dimensions.
p	3527)	40-225	CALIPERS, Sliding Vernier: Columbus type, metal; for inside, outside and depth measurements; calibrated in inches and centimetres; beam graduated to 5-1/2" and 140 mm; knurled roller for fine adjustments; vernier readings to 128th of an inch and 1/10th mm. (as PH P6084 p.12)	each	3.10	-	-	1	1	1	1	1	For more refined measurement of inside, outside and depth dimensions; for class demonstration of the principle of the vernier scale.
p	3528)	46-160	CALORIMETER, Double-Walled: comprising inner and outer vessels of heavy-gauge, drawn and polished aluminum; outer vessel diameter 10 cm x 14 cm high (Ø 4" x 5-5/8"); inner vessel diameter 7 cm x 9 cm high (2-3/4" x 3-5/8"), capacity 250 ml; complete with fiber ring for insulating and supporting the inner vessel, molded bakelite cover, stirrer and rubber stopper. (as Welch 1963 cat. p.173 #1689)	set	5.50	-	-	-	-	8	8	8	For quantitative measurement of heat. Related Items: Steam Generator (Item 3596), Steam Trap (Item 3680) and Equal Weight Cylinders (Item 3742).

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3529)	46-164	CAPILLARY TUBE SET, Mounted, For Tumbler: Four capillary tubes, 11 cm long and of different internal diameters, clamped to a metal bracket which holds the tubes erect when they are partially submerged in liquid in a tumbler or beaker. (as Welch p.25 #521)	set	1.20	-	-	1	1	1	1	1	For demonstrating the dependence of capillary rise upon the inside diameter of a tube.
p	3530)	46-170	CELL, Daniell: complete with heavy-gauge copper outer vessel, internal perforated shelf, porous pot and zinc rod with waxed wooden cap; E.M.F. 1.08 volts approx. (as PH P6720 p.43)	each	3.65	1	1	1	1	1	1	1	Electricity: electric current.
p	3531)	46-171	CELL, Leclanché: complete with rectangular glass container, charged porous pot with carbon plate and terminal, amalgamated zinc rod fitted with connecting wire; E.M.F. 1.5 volts approx. (as PH P6726 p.44)	each	1.96	-	-	-	4	6	8	8	Electricity: electric current. For spare rods see Item 3740.
p	3532)	46-172	CELL, VOLTAIC, Student's: set consisting of circular glazed porcelain top with two clamps for holding round or flat electrodes and with two binding posts for wire connections; separation of electrodes is adjustable; complete with glass jar (tumbler) and the following flat 22 mm x 125 mm electrodes: - 1 each carbon - 2 each copper - 2 each lead - 1 each zinc (as Welch cat. 1963 p.209 #2200 with extra electrodes as noted.)	set	3.45	-	-	-	8	8	8	8	Use with appropriate galvanometer, volt/ammeter and circuitry. Electrolytes are to be supplied locally. Glass jar may be replaced by tumbler or beaker of 70-80 mm top diameter.
cp	3533)	09-285	CLAMP, BURETTE: Fixed Position, vinyl-coated round jaws, maximum opening 1-1/2" (38 mm); support muff takes rods up to 11/16" (17.5 mm) diameter; die-cast aluminum alloy. (as AHT cat.61 p.246 #3222-C)	each	1.20	4	6	6	24	36	36	36	Related item: Support Stand, Item 3691.
bcp	3534)	09-290	CLAMP, EXTENSION, Laboratory, Large: cork-lined, forked non-swivel jaws, grip capacity 1/16" to 3-3/4" (1.5-93 mm); with extension arm; die-cast aluminum alloy. (Retort Stand Clamp) (as Gallenkamp p.791 #SM-600)	each	1.08	2	6	12	18	24	30	30	See also Holder, Extension Clamp, Item 3597.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
c	3535)	05-185	CLAMP, RUBBER TUBING, Adjustable, Hoffman: fixed bar; 1/2" x 3/4" (13 x 19 mm) opening; screw adjustment; nickel-plated brass. (Screw Clamp; Tubing Clip) (as AHT cat.61 p.255 #3268)	each	0.07	3	3	3	6	6	6	6	
c	3536)	05-186	CLAMP, RUBBER TUBING, Adjustable, Hoffman: fixed bar; 3/4" x 1" (19 x 25 mm) opening; screw adjustment; nickel-plated brass. (Screw Clamp; Tubing Clip) (as AHT cat.61 p.255 #3268)	each	0.10	3	3	3	6	6	6	6	
cp	3537)	09-305	CLAMP, RUBBER TUBING, Shut-Off, Mohr, 2-1/4" (57 mm) long: for tubing up to 1/2" (12.5 mm) diameter; nickel-plated brass. (Mohr Pinchcock; Mohr Clip) (as AHT cat.61 p.265 #3278)	each	0.11	2	3	3	12	12	12	12	
bc	3538)	09-300	CLAMP, TEST TUBE, Stoddard: 5" (125 mm); max. jaw opening 1-1/2" (38 mm); nickel-plated spring wire. (Test Tube Holder) (as AHT cat.61 p.254 #3246)	each	0.07	2	2	4	8	24	24	24	
p	3539)	46-218	COIL, INDUCTION: standard type; comprising a fixed coil, vibrator, polarity-reversal switch, and binding posts mounted on 10 x 20 cm (4" x 8") wooden base, with the condenser within; operates on 3 to 6 volts; spark length 6 mm. (Ruhmkorff coils) (as WELCH 1963 cat. p.228 #2382)	each	18.25	-	-	-	-	1	1	1	For demonstrating changes in induced electromotive force.
p	3540)	46-219	COMPASS, PLOTTING: in plastic case with 16 mm diameter card dial. (as PH P6592 p.41)	each	0.11	3	3	3	9	12	18	18	To plot and explore magnetic fields.
p	3541)	46-233	CONDUCTIVITY APPARATUS, HEAT: consisting of six rods - iron, brass, aluminum, copper, nickel, zinc - approx. 5 mm diameter, 10 mm long attached radially to a brass disc; each rod with cavity at distal end for holding paraffin; disc attached to suitable handle with insulating grip. (Conductometer) (as WELCH 1963 cat. p.155 #1653)	each	3.35	1	1	2	4	6	8	8	For study of heat conductivity rates in different metals.
c	3542)	46-230	CONDENSER, Liebig, 50 cm: jacket fused to condenser tube, inner tube of resistance glass. (as B & T p.72 #B24/0050)	each	2.00	1	1	2	2	3	3	3	For cooling and condensing vapors to liquid state.
b	3543)	46-235	CORK, SHEET: compressed; 30 cm x 15 cm x 6 mm. (as GK cat.64 p.184 #CV-050)	each	0.25	8	8	12	16	20	20	20	For mounting specimens, etc.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
b	3544)	09-340	COVER GLASS, Microscope Slide, 22 x 22 mm: No.1, thickness 0.13-0.17 mm. Tropical packing. Box of 1/2 oz. (Cover Slips) (as AHT cat.61 p.668 #7020)	box	0.94	1	1	1	2	2	2	2	See also Microscope Slides, Item 3675.
c	3545)	46-240	CRUCIBLE, Fireclay, Size D: height 4"(10 cm), top diam. 2-3/8" (7 cm); tall, narrow or French form; without lid. (as PH C800 p.59)	each	0.63	6	6	6	6	6	6	6	For fusion and assay.
p	3546)	46-244	CUBE, LESLIE'S: comprising copper box 13 x 13 cm with one face polished, one roughened, one white and one black; 3" (7.5 cm) top opening, sith spun copper lid; without stand. (as PH P8258 p.185)	each	5.22	-	-	-	-	1	1	1	To demonstrate the effects of different surface coatings on rate of heat radiation.
c	3547)	09-350	CYLINDER, GRADUATED, Laboratory, 10 ml: graduated in 1/10 ml intervals; single metric scale; calibrated to deliver; with pouring spout and hexagonal base, tolerance ±0.1 ml, borosilicate glass. (as AHT cat.61 p.370 #4409-1)	each	0.68	-	-	-	1	1	1	1	Graduated Cylinders (Items 3547 through 3556): For delivery of measured quantities of liquids.
c	3548)	09-352	CYLINDER, GRADUATED, Laboratory, 25 ml: graduated in 1/5 ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±0.3 ml, borosilicate glass. (as AHT cat.61 p.370 #4409-1)	each	0.85	-	-	2	3	4	6	6	
bcp	3549)	09-360	CYLINDER, GRADUATED, Laboratory, 100-ml: graduated in 1-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±0.6 ml; borosilicate glass. (as AHT cat.61 p.370 #4409-1)	each	0.78								
			or			3	4	6	16	24	36	36	
bcp	3550)	09-372	CYLINDER, GRADUATED, Laboratory, Polypropylene, 100-ml: graduated in 1-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±0.35 ml. (as Nalgene cat. K-961 #3662)	each	2.15								

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
cp	3551)	09-362	CYLINDER, GRADUATED, Laboratory, 250-ml: graduated in 2 ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±1.4 ml; borosilicate glass. (as AHT cat. 61 p.370 #4409-1)	each	1.45								
			or			1	1	1	1	2	3	3	
cp	3552)	09-373	CYLINDER, GRADUATED, Laboratory, Polypropylene, 250-ml: graduated in 2-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±0.65 ml. (as Nalgene cat. K-961 #3662)	each	2.55								
b	3553)	09-365	CYLINDER, GRADUATED, Laboratory, 500-ml: graduated in 5-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±2.6 ml; borosilicate glass. (as AHT cat.61 p. 370 #4409-1)	each	1.28								
			or			1	1	1	1	2	2	2	
b	3554)	09-374	CYLINDER, GRADUATED, Laboratory, Polypropylene, 500-ml: graduated in 5-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±1.1 ml. (as Nalgene cat. K-961 #3662)	each	3.60								
bcp	3555)	09-370	CYLINDER, GRADUATED, Laboratory, 1000-ml: graduated in 10-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±5.0 ml; borosilicate glass. (as AHT cat.61 p.370 #4409-1)	each	2.34								
			or			-	-	1	1	2	3	3	
bcp	3556)	09-374-10	CYLINDER, GRADUATED, Laboratory, Polypropylene, 1000 ml: graduated in 10-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±2.0 ml. (as Nalgene cat. K-961 #3662)	each	4.75								
p	3557)	46-245	CYLINDERS, EQUAL VOLUME, Assorted: Set of 6 metal cylinders (copper, lead, brass, iron, zinc and aluminum), 38 mm x 9.5 mm diameter. (as PH P8334 p. 190)	set	2.98	-	-	-	1	1	1	1	For exercises with vernier and micrometer calipers; for measurement of density, specific gravity and specific heat. See also Item 3746, Equal Weight Cylinders.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
c	3558)	09-374-60	DESICCATOR, PLAIN, Scheibler: I.D. 150 x 150 mm, with porcelain plate and knob cover; heavy molded soda glass. (as Fisher cat.63 p.360 #8-595/8-595A)	each	6.15	-	-	-	-	3	3	3	For use in laboratory procedures where samples, residues etc. must be kept in moisture-free atmosphere.
b	3559)	46-250	DESICCATOR, VACUUM, Scheibler: internal Ø 25 cm, with perforated zinc disc, and cover ground to fit, with tubulure in centre; soda glass. (as B.& T p.83 #B29/0430 and B29/0430/1)	each	16.10	-	-	-	1	2	2	2	
p	3560)	46-252-10	DISC, SIREN, Seebeck's: metal, with four concentric rows of equidistant holes and toothed edge; with tapered spindle; complete with blowpipe. (as PH P9906 p.239)	each	8.15	-	-	-	-	1	1	1	To show relation of pitch to frequency. Can be rotated by small electric motor or hand rotator.
p	3561)	46-252	DISC, COLOR, Newton's: 18.5 cm diameter, seven spectrum colors; with adaptor for attachment to motor or rotator. (as PH P8824 p.230 and GG p.125 #L54-768)	each	2.00	-	-	-	1	1	1	1	To demonstrate color phenomena. Can be rotated by small electric motor or hand rotator.
c	3562)	09-374-65	DISH, CRYSTALLIZING, with Spout, approx. Ø 10 cm x 5 cm high: capacity approx. 250-300 ml; flat bottom; borosilicate glass. (Crystallizing Basin) (as KK p. 1115 #901 585)	each	.46	6	6	12	12	24	24	24	For production of crystals from solutions.
b	3563)	46-255	DISH, CULTURE, PETRI, 100 x 15 mm O.D. top dish: top and bottom; fire polished beaded rims; borosilicate glass.	each	0.36	-	-	4	6	12	12	12	For growing various cultures.
bc	3564)	09-374-70	DISH, EVAPORATING, Porcelain, 70 ml: with spout; 75 mm diameter, 30 mm high; glazed throughout. (Evaporating Basin) (as AHT cat.61 p.382 #4480)	each	0.35	6	6	12	36	36	36	36	
bcp	3565)	46-255-15	DISH, EVAPORATING, Porcelain, 120 ml: with spout; 90 mm diameter, 37 mm high; glazed throughout. (Evaporating Basin) (as AHT cat.61 p.382 #4480)	each	.60	3	3	4	6	6	6	6	For evaporation of liquids.
c	3566)	46-255-18	DISH, EVAPORATING, Porcelain, 250 ml: with spout; 115 mm diameter, 45 mm high; glazed throughout. (Evaporating Basin) (as AHT cat.61 p.382 #4480)	each	0.80	1	1	2	2	2	2	2	

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
b	3568)	46-256	DISSECTING SET, for the use of the teacher, comprising: 1 fine dissecting forceps, pointed 15 cm, DR-020 1 blunt dissecting forceps, pointed, 12.5 cm, DR-030 2 blunt seeker, S/S, DR-460 1 straight dissecting scissors, S/S, 11.5 cm, DR-322 1 curved dissecting scissors, S/S, 12.5 cm, DR-332 1 large scalpel, S/S; length of blade 5.7 cm, DR-230 1 section razor, C/S, one flat surface, DR-500 Complete with canvas hold-all. (as GK 1964 cat. p.212/214)	set	9.05	1	1	1	1	1	1	1	S/S: Stainless Steel C/S: Carbon Steel See also Razor Strop, Item 3690.
b	3569)	46-257	DISSECTING SPIKE: blade 5 cm long, wooden knob handle. (Dissecting Awl; Dissecting Pin) (as GG cat. 64 p. 847 #S53-120)	each	.21	2	4	6	8	10	12	12	For pegging out specimens on dissecting boards.
p	3570)	46-259	DYNAMO/MOTOR MODEL: complete with pair of terminals, 2.5V lamp, pulley wheel for belt drive, keeper for magnet, spare pair of commutator brushes. For use on 4-6V D.C. when used as motor. On base. (as GG cat.64 p.166 #I83-290)	each	3.15	-	-	1	1	1	1	1	To study fundamental principles of electric motors and generators.
c	3571)	46-264	ELECTROLYSIS APPARATUS, HOFFMANN: consisting of 3 communicating glass tubes in "H" formation; two limbs graduated and provided with stopcock, third (center) limb topped with liquid reservoir; supplied with interchangeable carbon and platinum electrodes each mounted in rubber stopper with lead wire sealed into glass tube attached. Complete with suitable clamps for attachment to stand; without stand. (Gas Voltameter) (as PH C2136 p.141)	each	20.00	-	-	-	1	1	1	1	To provide quantitative means of demonstrating electrolytic decomposition of water. Fits on Support Stand, Item 3692.
c	3572)	46-264-2	- Electrodes, spares for above: set comprising 2 each carbon and 2 each platinum, mounted in suitable India-rubber bung. (as PH C #2140 and 2142 p.141)	set	4.76	-	-	-	1	1	1	1	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3573)	46-264-12	ELECTROMAGNETIC INDUCTION STUDY OUTFIT, Gilley: consisting of: - 2 ea. 4 cm form-wound induction coil mounted on base block; leads brought out to clips - 1 ea. soft iron core, U-shaped - 1 ea. soft iron armature, square - 1 ea. soft iron core, cylindrical - 2 ea. soft iron core, half-cylindrical - 2 ea. cardboard, slotted Complete with instructions. (as WELCH 1963 p.224 #2400)	set	11.00	-	-	-	1	1	1	1	For showing self-induction, mutual induction, transformer principle and lines of force. Use with galvanometer, dry cell, magnetic compass, permanent magnet, iron filings.
c	3574)	46-269-75	FLASK, BOILING, 250 ml: flat bottom, vial mouth; borosilicate glass. (Florence Flask) (as AHT cat.61 p.476 #5324)	each	0.78	3	3	3	12	24	36	36	
c	3575)	09-378	FLASK, BOILING, 500 ml: flat bottom, vial mouth; borosilicate glass. (Florence Flask) (as AHT cat.61 p.476 #5324)	each	0.77	3	3	3	12	12	24	24	
c	3576)	46-270	FLASK, BOILING, 200 ml: round bottom, vial mouth; borosilicate glass. (Balloon Flask) (as AHT cat.61 p.478 #5332)	each	0.78	3	3	3	12	12	24	24	
cp	3577)	09-379-14	FLASK, BOILING, 500 ml: round bottom, vial mouth; borosilicate glass. (Balloon Flask) (as AHT cat.61 p.478 #5332)	each	1.05	3	6	6	12	24	36	36	
c	3578)	09-379-16	FLASK, BOILING, 1000 ml: round bottom, vial mouth; borosilicate glass. (Balloon Flask) (as AHT cat.61 p.478 #5332)	each	1.35	-	-	1	1	2	2	2	
c	3579)	09-387	FLASK, CONICAL, Erlenmeyer, 250 ml: narrow (vial) mouth; borosilicate glass. (as AHT cat.61 p.480 #5342)	each	0.40	3	3	3	24	36	60	60	
bp	3580)	46-270-12	FLASK, CONICAL, Erlenmeyer, 250 ml: wide mouth; borosilicate glass.	each	0.52	2	2	4	8	12	24	24	
c	3581)	46-270-25	FLASK, DISTILLATION, 250 ml: cylindrical neck, vial mouth, with side tube approx. 77 mm below top of neck at angle of 75°; borosilicate glass. (as AHT cat.61 p.484 #5397)	each	1.55	-	-	-	2	2	3	3	
c	3582)	46-270-28	FLASK, DISTILLATION, 500 ml: cylindrical neck, vial mouth, with side tube approx. 77 mm below top of neck at angle of 75°; borosilicate glass. (as AHT cat.61 p.484 #5397)	each	1.75	-	-	-	2	2	3	3	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
c	3583)	09-398	FLASK, FILTERING, 1000 ml: borosilicate glass, heavy wall with side tubulation. (as AHT cat.61 p.487 #5430-B)	each	2.40	-	-	-	-	1	2	2	For suction filtering; used with filter pump, Items 3657 and 3658.
b	3584)	46-270-50	FLASK, VACUUM: 1 pint (1/2 litre); silvered borosilicate glass, in metal container; with stopper and screw cap. ("Thermos" Flask) (as B & T cat.62 p.113 #B36/1920)	each	0.96	-	-	-	3	3	3	3	For use in maintaining temperature of contents.
p	3585)	46-270-54	FLASK, VACUUM, Dewar: cylindrical, wide mouth, silvered borosilicate glass, i.l. 200 mm, i.d. 50 mm; without container. (as GK p.812 #VC-500)	each	2.33	-	-	-	-	8	8	8	For use in storing liquefied gases and maintaining temperature of contents.
c	3586)	09-399-20	FLASK, VOLUMETRIC, 250 ml within ±0.20 ml: borosilicate glass, with polyethylene stopper; calibrated to contain, at 20°C; one mark. (as Fisher cat.63 p.460 #10-199)	each	1.26	3	3	6	12	12	24	24	For preparing standard volumetric solutions or for diluting solutions to accurately measured volumes.
c	3587)	09-399-30	FLASK, VOLUMETRIC, 1000 ml within ±0.60 ml: borosilicate glass, with polyethylene stopper; calibrated to contain, at 20°C; one mark. (as Fisher cat.63 p.460 #10-199)	each	2.42	1	1	1	2	3	4	4	
bc	3588)	09-457	FUNNEL, LABORATORY, Glass, Ribbed, 175 mm diameter: capacity about 1000 ml; resistance glass. (as AHT cat.61 p.516 #5584)	each	1.30	-	-	-	1	2	2	2	
bc	3589)	09-450	FUNNEL, LABORATORY, Glass, Plain, 65 mm diameter x 65 mm stem; beaded rim; capacity about 60 ml: borosilicate glass. (as AHT cat.61 p.515 #5573-B2)	each	0.35	4	4	4	6	6	6	6	
p	3590)	09-458	FUNNEL, LABORATORY, Polypropylene, Plain, 65 mm diameter: stem 10 mm diameter x 60 mm long; reinforced rim; capacity approx. 60 ml; autoclaveable. (as AHT cat.61 p.517 #5587-E)	each	0.26	3	3	3	8	12	24	24	
bc	3591)	09-460-5	FUNNEL, THISTLE HEAD, stem 10" long (25 cm), polyethylene head with separable straight polyproylene stem. (Thistle Tube) (as AHT 5645-P)	each	0.36	6	6	12	18	24	36	36	For funneling liquids; also used in experiments showing osmosis and movement of water through a stem.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3592)	46-295	GALVANOMETER, Moving Coil, with 2-1/2" dial and centre zero; calibrated in 30-0-30 divisions, with resistance of 26 ohms; sensitivity 22 micro-amps per division; mounted in 45° sloping bakelite case. (as GG cat. 64 p. 168 #L84-125)	each	11.10	-	-	1	1	1	1	1	For measurement of small electric currents.
cp	3593)	46-297	GAS LAWS APPARATUS: for Boyle's Law, Charles' Law and Vapour Pressure experiments. Consisting of wooden stand with scale 1 m long graduated in cm and mm; adjustable mercury reservoir; graduated gas burette with ground glass stopcock; air thermometer bulb on bracket; vapour pressure tube with two stopcocks and funnel; pointers; pressure tubing. Supplied without mercury. (Jolly's Apparatus) (as PH P6272 p.24)	each	37.45	-	-	-	1	1	1	1	For demonstration of laws governing pressure, volume and temperature relationships of gases.
bcp	3594)	09-467	GAUZE, WIRE, With Asbestos Centre, 6" x 6" (15 x 15 cm); tinned iron wire, with turned edges; asbestos disc approx. 4" (100 mm) diameter. (as AHT cat.61 p.1029 #9995)	each	0.10	6	12	18	24	30	36	36	
c	3595)	46-308	GENERATOR, GAS: borosilicate glass, ground-in stopcock, stoppered bottom tubulure, safety funnel fitted with rubber bung; min. cap. 1 litre. (Kipp's Apparatus) (as B & T p.118 #B38/0150)	each	13.44	-	-	-	1	1	1	1	To deliver continuous supply of gases as produced by reaction of liquid solution on solid chemical.
p	3596)	46-310	GENERATOR, STEAM: copper, with handle; cap. 1 litre (2 pints). (as PH P8328 p.190)	each	4.87	-	-	-	-	1	1	1	To provide source of steam for study of thermometry, linear expansion, heat of vaporization and specific heat measurements. See also Item 3680.
bcp	3597)	09-515	HOLDER, EXTENSION CLAMP, Nonswivel Type: die cast aluminum alloy; for support rods up to 5/8" (16 mm) diameter. (Bosshead) (as Gallenkamp p.791 #SM610)	each	0.72	6	12	18	24	30	30	30	For Extension Clamp, Item 3534.
p	3598)	46-320	HOLDER, LENS: polished wood, on base with V-slot. (as GK p.570 #OP-140)	each	0.56	2	2	4	6	8	8	8	To accommodate Lenses, Items 3613/3614.
p	3599)	80-405-2	HYDROMETER, Battery Acid: with numerical graduations, temperature correction scale and non-stick float. (Accumulator Hydrometer) (as Sears Spr/Sum 64 cat. p.1109 #28K7134)	each	1.53	-	-	1	1	1	1	1	
p	3600)	80-405-4	HYDROMETER, Battery Alkali: with numerical graduations, temperature correction scale and non-stick float. (Accumulator Hydrometer)	each	1.53	-	-	1	1	1	1	1	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3601)	46-323	HYDROMETER, Heavy Liquids: Sp. Gr. and Bé. Scales, range 1.00-2.00° in 0.01° Specific Gravity and 0-70° in 1° Baumé; plain laboratory grade, calibrated at 60°F (15.5°C); glass, approx. 30 cm long. (as CENCO p. 261 #16800)	each	1.95	-	1	1	1	1	1	1	
p	3602)	46-323-7	HYDROMETER, Light Liquids: Sp. Gr. and Bé. Scales, range 0.600-1.000° in 0.005° Specific Gravity and 100-10° in 1° Baumé; plain laboratory grade, calibrated at 60°F (15.5°C); glass, approx. 30 cm long. (as CENCO p. 261 #16805)	each	1.95	-	1	1	1	1	1	1	Hydrometers (Items 3601, 3602, 3603): for measurements of specific gravity and/or density of liquids.
p	3603)	46-323-10	HYDROMETER, Universal: Sp. Gr. and Bé. Scales, range 0.70-2.00° in 0.10° Specific Gravity and 70-10° and 0-70° in 1° Baumé; plain laboratory grade, calibrated at 60°F (15.5°C); glass approx. 40 cm long. (as CENCO p. 261 #16810)	each	3.20	-	1	1	1	1	1	1	
p	3604)	46-323-20	HYGROMETER, Wet and Dry bulb, Mason, Fahrenheit: 20°-120°F in 1°F; complete with rustproof case, clip-in-tube, zinc scale, fixing screws, hygrometric tables, six spare wicks, detailed instructions. (as GK p. 444 #HV-100)	each	3.36	1	1	1	1	1	1	1	For determination of relative humidity. See also Item 3748, Centigrade Hygrometer.
p	3605)	46-330	INCLINED PLANE APPARATUS, Simple: Hardwood, 24" x 3" x 3/4" (50 x 7.5 x 2 cm); base with cutaway to allow cord to hang freely; hinged plane with aluminum pulley, diameter 1-1/8" (Ø 29 mm), and lower face stepped to accommodate wood block for setting at angles between approx. 24° and 45°; with cylindrical metal roller and scale pan. (as GG p. 48 #L22-130)	each	9.10	1	1	1	1	1	1	1	For demonstrating uniform motion and uniformly accelerated motion; for determining mechanical advantage and efficiency of inclined planes and coefficient of friction; and for experiments on composition and resolution of forces exerted on a body.
bc	3606)	09-527-40	JAR, BELL: I.D. 13 cm diam. x 25 cm high, tubulated at top: ground bottom flange; borosilicate glass. (as PH C302 p. 30)	each	3.10	1	1	2	2	2	2	2	Bell Jars: for covering instruments or apparatus used in study of effects of air pressure and for covering plants in moisture studies.
p	3607)	09-527-42	JAR, BELL: I.D. 15 cm diam. x 30 cm high, tubulated at top: ground bottom flange; borosilicate glass. (as PH C302 p. 30)	each	4.30	1	1	1	1	1	1	1	
p	3608)	09-527-44	JAR, BELL: I.D. 17.5 cm diam. x 25 cm high, tubulated at top: ground bottom flange; borosilicate glass. (as PH C302 p. 30)	each	4.80	1	1	1	1	1	1	1	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
bc	3609)	50-210	JAR, GLASS (Preserving Jar); with metal screw cover; capacity 1/2 pint (0.24 litre).	each	0.08	12	12	12	12	24	24	24	For use as Gas Jars, Specimen Jars, Storage Jars. See also Items 3779, 3780 and 3781.
bc	3610)	50-205	JAR, GLASS (Preserving Jar); with metal screw cover; capacity 1 pint (0.47 litre).	each	0.10	12	12	12	12	24	24	24	
b	3611)	07-460	KNIFE BLADE, SURGICAL, Detachable, No. 10: for use with No.3 Knife Handle. Package of 6. (as ALOE cat.189 p.474 #B1037)	pkg.	0.18	4	6	9	12	24	36	36	Components of small (1" - 25 mm) Dissecting Scalpel.
b	3612)	07-450	KNIFE HANDLE, SURGICAL, No.3. (as ALOE cat.189 p.475 #B1036)	each	0.35	4	6	9	12	24	36	36	
p	3613)	46-452	LENS, Plano-concave, Ø 50 mm, f/20 cm: optically worked glass, moulded edges. (as GK p.570 #OP-126)	each	1.02	2	2	4	6	8	8	8	For study of light; to demonstrate image formation.
p	3614)	46-452-2	LENS, Plano-convex, Ø 50 mm, f/20 cm: optically worked glass, moulded edges. (as GK p.570 #OP-124)	each	1.02	2	2	4	6	8	8	8	
p	3615)	46-466-86	MAGNET, Bar, 10 cm: 6% chrome steel; in pair with soft iron keepers. (as PH P6500 p. 32)	pair	0.70	1	1	2	4	6	6	6	
p	3616)	46-466-88	MAGNET, Bar, 15 cm: 6% chrome steel; in pair with soft iron keepers. (as PH P6500 p. 32)	pair	0.95	-	1	1	1	1	1	1	
p	3617)	46-466-90	MAGNET, Cylindrical, 10 cm long: 15 % cobalt steel, Ø 6 mm; in pair. (as PH P6508 p.32)	pair	0.61	-	1	1	1	1	1	1	
p	3618)	46-466-92	MAGNET, Horseshoe, 10 cm long: 6% chrome steel, with keeper. (as PH P6524 p.35)	each	0.28	2	2	2	2	2	2	2	
p	3619)	46-466-94	MAGNET, U-shaped, Large: overall height 10 cm, pole distance 4 cm or between removable pole pieces 2.7 cm; powerful. (as GK p.469 #MA-530)	each	13.30	-	-	-	-	-	1	1	For testing model armature winding made by students, etc.
b	3620)	09-554	MAGNIFIER, DOUBLE, FOLDING, Pocket: 5X x 10X; two lenses 25 mm and 20 mm diameter combined in bakelite mounting. (as CA cat.107 p.88 #A1333)	each	0.70	36	36	36	36	36	36	36	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
b	3621)	46-468-90	MAGNIFIER, on Adjustable Stand: 5X lens 27 mm diameter on adjustable telescopic arm extendable 75-120 mm supported on heavy base; friction adjustments with locking screws. (as GK p. 471 #MA-470 with #MA-794)	each	3.36	1	1	2	2	3	3	3	
p	3622)	46-473	MERCURY RESERVOIR, 250-ml capacity; heavy glass. (Leveling Bulb) (as GK p. 503 #MF-920)	each	0.68	-	-	1	2	2	2	2	
p	3623)	46-473-2	MERCURY TROUGH, Porcelain: cap. 4 pounds (1.8 kg) mercury. (as B & T p.162 #B48/0090)	each	1.30	-	-	-	1	1	1	1	Capacity = approx. 135 ml.
b	3624)	09-601	MICROSCOPE, Student's: with exceptionally stable base, operating on a wide rack and pinion, coarse and fine focusing adjustments; the fine focusing has a range of 2 mm, each revolution moving the tube 0.1 mm, large plain stage 110 mm x 110 mm, always exactly horizontal, with slide clips, with an inclined removable monocular body rotable throughout 360°, high precision triple revolving nosepiece with clickstops, Abbe condenser with numerical aperture of 1.20, iris diaphram, plane-concave mirror in fork mount, full adjustable, complete in hardwood cabinet and plastic cover, with equipment as specified below: - Achromatic objective 10X/0.24 - Achromatic objective 40X/0.65 - Huygenian eyepiece 10X (as VARIMEX #MS-2, Poland)	each	38.02	-	1	2	6	10	12	12	
p	3625)	46-476-80	MIRROR, CONCAVE, Spherical, 5 cm diameter: f=15 cm; glass, optically worked; silvered back; unmounted. (as PH P8532 p. 201)	each	0.88	2	2	2	4	6	8	8	
p	3626)	46-476-82	MIRROR, CONCAVE, Spherical, 10 cm diameter: f=25 cm; glass, optically worked; silvered back; unmounted. (as PH P8532 p. 201)	each	2.00	-	-	-	-	1	1	1	
p	3627)	46-476-84	MIRROR, CONVEX, Spherical, 5 cm diameter: f=15 cm; glass, optically worked; silvered back; unmounted. (as PH P8534 p. 201)	each	0.84	2	2	2	4	6	8	8	
p	3628)	46-476-86	MIRROR, CONVEX, Spherical, 10 cm diameter: f=25 cm; glass, optically worked; silvered back; unmounted. (as PH P8534 p. 201)	each	2.10	-	-	-	-	1	1	1	
p	3629)	46-476-96	MIRROR CLIP: metal, for supporting mirrors from 25-63 mm wide. (as GG p.100 #L51-632)	each	0.14	6	6	6	12	12	12	12	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3630)	46-476-90	MIRROR, PLANE, 15 x 15 cm: glass; protected silvered back; unmounted. (as PH P8518 p.200)	each	0.28	2	2	2	4	4	4	4	
p	3631)	46-476-92	MIRROR, PLANE, 7.5 x 2.5 cm: glass; protected silvered back; unmounted. (as PH P8518 p.200)	each	0.10	6	6	6	12	18	24	24	
c	3632)	09-560	MORTAR AND PESTLE, Glass, 4-oz (120 ml): approx. 4" (10 cm) O.D.; heavy clear glass, sturdy pourout, wide base. (as AHT cat.61 p.699 #7300)	each	1.00	1	1	2	2	3	3	3	
p	3633)	46-480	MOTOR, ELECTRIC, 4-6 volt AC/DC, series wound, laminated field magnet, tri-pole laminated armature, carbon brushes, fitted with reversing switch. (as GG p.167 #L83-300)	each	3.22	-	-	1	1	1	1	1	For operating light demonstration models.
p	3634)	46-489-90	NEEDLE, COMPASS, MAGNETIC: length 10 cm, diamond shape, steel with agate bearing; adjustable brass stand with accurately ground steel pivot. (as PH P6580 with P6588 p.40)	each	3.82	1	1	1	1	1	1	1	
b	3635)	46-489-92	NEEDLE, DISSECTING: s/s, in hardwood handle, without ferrule. (as B & T p.582 #D6/0080)	doz.	0.84	1	2	3	4	5	6	6	
p	3636)	46-490	NEEDLE, KNITTING, Steel, 25 cm long approx.; both ends pointed. (Steel Wire) (as GG p. 145 #L71-910)	doz.	0.35	1	1	1	1	2	2	2	For model motor axles, magnetizing, etc.
b	3637)	46-562	PAN, DISSECTING, Wax Lined: metal, 7-1/4" wide x 11-1/4" long x 1-1/4" deep (185 x 285 x 32 mm); with special wax. (as Welch p.644 #8251)	each	1.75	1	2	2	3	4	4	4	For small dissections, handling of specimens, organs etc.
b	3638)	46-562-2	- WAX, Dissecting Pan Filler: black, resistant to seasonal variations in temperature.	lb.	0.85	1	2	2	3	4	4	4	Initial supply.
p	3639)	46-590-15	PENDULUM BALLS, Drilled, Assorted: Brass; set of three, diameters 12, 18 and 25 mm. (Pendulum Bobs) (as GG p. 51 #L23-125)	set	0.84	1	2	4	5	8	8	8	Dynamics. For study of conservation of momentum and projectile motion.
p	3640)	46-592	PIN, OPTICAL: plated steel, length 2-1/2" (64 mm). (as GG p.103 #52-430)	doz.	0.10	1	1	2	3	4	6	6	For experiments in light.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
b	3641)	46-592-4	PINS, Entomological, white, plated brass: 1/2 oz. each of following lengths: 23, 30, 35, 15 mm; in packet. (as B & T p.710 #K1/0080)	pkt.	1.65	1	1	2	2	2	2	2	For mounting insects.
c	3642)	09-679-10	PIPETTE, VOLUMETRIC, 10 ml: tolerance ±0.04 ml; one mark; borosilicate glass. (Bulb or Transfer Pipette) (as AHT cat.61 p.774 #8159 A2)	each	1.11	1	1	1	2	2	2	2	To measure and transfer liquids from one container to another.
cp	3643)	09-679-20	PIPETTE, VOLUMETRIC, 25 ml: tolerance ±0.06 ml; one mark; borosilicate glass. (Bulb or Transfer Pipette) (as AHT cat.61 p.774 #8159 A2)	each	1.15	6	6	12	24	24	36	36	
c	3644)	46-592-10	PIPETTE, VOLUMETRIC, 50 ml: tolerance ±0.10 ml; one mark, borosilicate glass. (Bulb or Transfer Pipette) (as AHT cat.61 p.774 #8159-A2)	each	1.50	1	1	1	2	2	2	2	
c	3645)	46-595	PLATE, COBALT GLASS, 5 x 2.5 cm: plane surfaces. (Flame Test Glass; Blue Glass) (as GG p.502 #S25-960)	doz.	1.16	-	-	-	1	3	3	3	For examination for potassium in presence of sodium, etc.
c	3646)	46-595-2	PLATE, GLASS, 20 x 20 cm: 6 mm thick, ground one side. (as AHT cat. p.802 #8276)	each	1.10	1	1	2	2	2	2	2	
b	3647)	46-595-4	PLATE, GLASS, 30 x 30 cm: 6 mm thick.	each	0.70	3	3	3	6	6	6	6	For use as Bell Jar Plate.
bc	3648)	46-595-6	PLATE, GLASS, 75 x 75 mm: 3 mm thick, ground one side, plain edges. (as CENCO p.205 #17735-2)	doz.	0.55	1	1	1	1	2	2	2	May be used as Gas Jar covers.
b	3649)	46-595-8	PLATE, GLASS, 100 x 100 mm: 3 mm thick, ground one side, plain edges. (as CENCO p.205 #17735-3)	doz.	1.00	2	4	6	8	10	12	12	
p	3650)	46-603	PLUG SWITCH, One-Way: two lacquered glass blocks fitted with terminals and mounted on bakelite base; tapered brass key with fluted rectangular top.	each	2.85	2	2	2	6	8	8	8	
p	3651)	99-290	PRISMS, optical glass, 2" long, set of 2 including one each of the following: a) equilateral (Childcraft 2P (46-636) 143) b) right-angle (Childcraft 2P (46-637) 142)	set	1.48	1	1	4	6	8	12	12	To demonstrate dispersion of light; for measuring critical angle and observing total internal reflection.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3652)	46-644-94	PULLEY, Rod Mounted: 25 mm diameter; aluminum; wide groove; plain bearing; in metal frame fitted to Ø 10 mm x 150 mm metal rod. (as PH P10150 p.260)	each	2.52	-	-	1	1	1	1	1	Mechanics: statics. Can be clamped to retort stand using Bosshead (Item 3597).
p	3653)	46-644-96	PULLEY, Clamp Mounted: 50 mm diameter; brass; wide groove; plain steel bearing; in iron frame for mounting on bench or wall, clamping to drawing board or table, or fitting on retort stand. (as PH P10154 p. 261)	each	3.64	-	-	-	1	1	1	1	Mechanics: statics.
p	3654)	46-645	PULLEY, Single Sheaf, 50 mm diameter: Aluminum; wide groove; plain bearing; in aluminum frame with hooks. (as PH P10138 p.260)	each	0.84	2	2	4	8	12	12	12	Mechanics: statics.
p	3655)	46-647	PULLEY, Double Sheaf, 50 mm diameter: Aluminum; wide grooves; plain bearing; in aluminum frame with hooks. (as PH P10138 p.260)	each	1.61	2	2	2	4	6	6	6	Mechanics: statics.
p	3656)	46-649	PULLEY, Triple Sheaf, 50 mm diameter: Aluminum; wide grooves; plain bearing, in aluminum frame with hooks. (as PH P10138 p.260)	each	2.10	1	1	2	2	4	6	6	Mechanics: statics.
c	3657)	46-653	PUMP, FILTER, Glass: University College pattern; water jet type. (Aspirator) (as B & T p. 106 #B35/0200)	each	1.09	1	1	1	1	1	1	1	For producing a partial vacuum.
bc	3658)	09-683-02	PUMP, FILTER, Laboratory: water jet type; molded polyethylene, with non-return valve, side arm with removable hose connection, removable discharge tubing, and faucet adapter for unthreaded faucets; operates efficiently on water pressures of 11 p.s.i. (.77 kg/cm^2) or more; free air flow approx. 4 litres per minute. (Aspirator) (as AHT cat.61 p.473 #5287 with 5289)	each	2.20	1	1	1	1	1	1	1	
p	3659)	46-653-3	PUMP, FORCE, Demonstration Model: glass; unmounted. (as PH P10276 p.273)	each	4.20	-	-	-	1	1	1	1	Mechanics of fluids.
p	3660)	46-653-6	PUMP, LIFT, Demonstration Model: glass; unmounted. (as PH P10272 p.273)	each	3.50	-	-	-	1	1	1	1	Mechanics of fluids.
cp	3661)	09-780	RACK, TEST TUBE, Wood, 12 tubes: single deck; two rows of 22 mm diameter holes. (as AHT cat.61 p.954 #9503)	each	0.43	2	4	8	18	24	36	36	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3662)	46-654	RAY TRACK and COLOR MIXING APPARATUS: die-cast ventilated lamphousing, 6" x 2-3/4" x 2-1/2" (15 x 9 x 6.35 cm); open front, vertical internal grooves to accommodate slit plate and cylindrical lens; complete with metal plate having single and triple slits, a 6V, 24W, S.B.C., line filament lamp, lampholder with 3 ft. (90 cm) twin flex and instruction diagram. Complete with 3 primary and 3 secondary color filters, 57 x 54 mm. (Ray Box) (as GG pp. 103/104 #L52-440, L52-442/25)	set	6.34	-	-	-	-	8	8	8	Reflection and refraction of light. Related accessories: mirrors, prisms and lenses.
p	3663)	46-658	RESONANCE TUBE, Ø 3.4 cm x 120 cm long: glass; annealed ends; for resonance experiments. Tube only. (as Welch p.338 #3304)	each	1.25	-	-	-	-	2	2	2	
c	3664)	46-660	RETORT, Tubulated, 100 ml: with ground-in glass stopper, handmade, borosilicate glass. (as GK p.697 #RP-020)	each	1.64	-	1	1	2	3	3	3	For distillation.
c	3665)	46-660-2	RETORT, Tubulated, 250 ml: with ground-in glass stopper, handmade, borosilicate glass. (as GK p.697 #RP-020)	each	2.05	-	1	1	2	3	3	3	
p	3666)	46-661	RHEOSTAT, Sliding Contact, Tubular, 11 ohms, 4 amps.: fitted with 3 terminals for series and potentiometer use, and arranged for bench or wall mounting. Size 6" x 1-1/4" (15 x 3 cm). (as Nicolson p.120 #N7/1925-a)	each	6.50	-	-	-	-	4	4	4	For controlling current by means of variable resistances.
p	3667)	46-661-2	RHEOSTAT, Sliding Contact, Tubular, 38 ohms, 2.8 amps.: fitted with 3 terminals for series and potentiometer use, and arranged for bench or wall mounting. Size 8" x 1-5/8" (20 x 3.5 cm). (as Nicolson p.120 #N7/1925-e)	each	7.00	-	-	-	-	2	2	2	
p	3668)	46-662	RING, Soft Iron, 10 cm diameter, 7 cm I.D., 7 mm thick. (as GG p. 145 #L71-840)	each	0.70	-	-	-	1	1	1	1	For magnetic field demonstration. Used with suitable insulated wires to make Faraday's Ring or Hysteresis Coil.
p	3669)	51-610-4	RIVETS, Flat Head, Assorted: set of 3 lbs. (1.5 kg); equal parts copper, steel and aluminum; length 10 mm, width of head 4 mm. (as Manufrance p.569 #33-1488C, 1472B, 1480C)	set	3.00	-	-	-	3	3	3	3	For specific heat experiments.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
cp	3670)	09-686	RODS, STIRRING, Flint Glass, Assorted: fire polished ends. Set of 24 including 6 each of the following sizes: 3mm diameter x 125mm long) 5 150) total, 5 200) 24 rods. 6 250)	set	0.42	1	1	2	3	4	4	4	Alternatively, UNICOPCAT #09-687 (7 mm glass rods) may be preferred.
p	3671)	46-725-	RULE, WOOD, Half-Metre; vertical reading central set of figures; divided in cm and mm on both edges. (Half-Metre Stick) (as B & T p.208 #B71/0105)	each	1.20	1	1	2	6	8	12	12	
p	3672)	46-725-2	RULE, WOOD, Metre: Vertical reading central set of figures; divided in cm and mm on both edges. (Metre Stick) (as B & T p.208 #B71/0106)	each	0.75	1	1	2	6	8	12	12	
p	3673)	46-765-14	SCALE PAN: aluminum, Ø 7.5 cm, with cords and brass suspending hook. (as PH P10234 p.269)	each	0.49	4	6	6	8	10	12	12	
	...		(SCALPEL, Dissecting: see Knife Blade and Handle, Surgical, Items 3611 and 3612.)										
bcp	3674)	09-689	SHARPENER, CORK BORER: for borers up to 15/16" (23.5 mm) diameter; solid brass cone in wooden handle with strong steel knife. (as AHT cat.61 p.333 #4074-A)	each	1.15	1	1	1	1	1	1	1	For use with Cork Borer Set, Item 3515.
b	3675)	09-690	SLIDE, MICROSCOPE, Plain, Clinical Grade, 75 x 25 mm: ground edges; thickness 0.96 - 1.06 mm; non-corrosive, half white. Box of 72, tropical packing. (as CA cat.107 p.70 #A-1450)	box	.41	-	1	1	2	2	2	2	For Cover Slips, see Item 3544.
c	3676)	46-814	SPATULA, Bone: length 5" (12.5 cm). (as B & T p.171 #B60/0120)	each	0.33	-	6	6	12	18	24	24	
p	3677)	46-817	SPECIFIC GRAVITY SPECIMENS: set of ten specimens, each about 1 cubic cm, consisting of iron, brass, aluminum, hard rubber, fiber, marble, sealing wax, coal, wood and cork. (as Welch p.89 #1137)	set	1.50	-	-	-	1	1	1	1	For demonstrating specific gravity or density.
c	3678)	46-820	SPOON, DEFLAGRATING, with Shield: steel cup, iron rod; brass shield and socket fitted with cork. (as PH C850 p.61)	each	.35	2	2	3	6	6	6	6	For burning or vaporizing.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3679)	46-830	STEAM ENGINE, Model: brass boiler 3-1/2" x 1-1/2" (9 x 4 cm) on steel base plate, complete with burner and funnel for filling boiler. (as PH P8389 p.196)	each	4.10	-	-	1	1	1	1	1	
p	3680)	46-830-10	STEAM TRAP, all glass: length of cylinder 12.5 cm. (Water Trap) (as PH P8160 p.176)	each	0.79	-	-	-	-	1	1	1	Related item: Steam Generator, Item 3596.
c	3681)	01-675	STILL, WATER, Electric, 1.7 litres per hour: complete with 1 spare heating element. For operation on 220 volts AC. (Rating: 1500 watts) (as Manesty Model OB)	each	63.00								If electrical specifications differ, specify when requisitioning, and do not cite this warehouse code number.
			or			-	-	-	-	-	1	1	
c	3682)	01-680	STILL, WATER, B.T.L. simple pattern, output approx. ½ GPH, fuel heated: complete with suitable kerosene burner (#C32/030, B18/152, C32/0030, B1820). With spare parts for kerosene burner B18/1520/1, B18/152, each set comprising: - 6 nipples - 2 pkts. cleaning needles - 1 pump leather - 1 filler cap washer - 1 nipple key (as B & T p.505)	each	31.75								Water stills are for producing chemically pure distilled water for general laboratory use.
p	3683)	27-837	STOP WATCH: 30 minutes, in tenths of seconds.	each	10.00	-	-	-	-	1	1	1	
bcp	3684)	09-722	STOPPERS, CORK, XXX Quality, Assortment A: regular lengths; 7 each sizes 3 to 15 and 9 each of size 16. Bag of 100.	bag	1.50	1	1	1	1	2	2	2	

Size	Top Diameter	Bottom Diameter		Length
3	14 mm	11 mm	x	19 mm
4	16	12	x	20
5	17	13	x	22
6	19	15	x	24
7	21	16	x	25
8	22	17	x	27
9	24	18	x	29
10	25	20	x	31
11	27	21	x	31
12	29	22	x	31
13	30	24	x	31
14	32	25	x	31
15	33	27	x	31
16	35	27	x	38

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
bcp	3685)	46-831	STOPPERS, CORK, XXX Quality, Assortment B: regular lengths; 8 each sizes 12 to 20, 22, 24 and 12 each size 26. Bag of 100.	bag	3.00	1	1	1	1	2	2	2	

Size	Top Diameter	Bottom Diameter		Length
12	29 mm	22	x	31 mm
13	30	24	x	31
14	32	25	x	31
15	33	27	x	31
16	35	27	x	38
17	36	28	x	38
18	38	31	x	38
19	40	32	x	38
20	41	34	x	38
22	44	36	x	38
24	47	40	x	38
26	51	43	x	38

Code	Item#	Whse.#	Description	Unit	Price $	7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
c	3686)	46-831-10	STOPPERS, RUBBER, 1-Hole, Assorted Sizes 1-6: Size 1 has 4 mm diameter hole; other sizes have 5 mm diameter holes. (as CENCO cat.J-300 p.210 #18153-4)	lb.	1.25	1	1	1	1	2	2	2	Average number of stoppers per pound ranges from 36 to 44, depending on size.
c	3687)	46-831-12	STOPPERS, RUBBER, 2-Hole, Assorted Sizes 1-6: Size 1 has 4 mm diameter holes; other sizes have 5 mm diameter holes. (as CENCO cat.J-300 p.210 #18153-5)	lb.	1.25	1	1	1	1	2	2	2	
c	3688)	09-725	STOPPERS, RUBBER, Solid, Assorted Sizes 00-9: including - 6 each sizes 00,0,1 - 4 each sizes 2,3,4,5,5½ - 2 each sizes 6,6½,7,8,9 (total, 48 stoppers, approx. 1-1/2 lb. or 680 g)	pkg.	1.76	1	1	2	3	3	3	3	
c	3689)	46-831-14	STOPPERS, RUBBER, Solid, Assorted Sizes 4-8: including - 12 each sizes 4,5,5½,6,6½ - 6 each sizes 7 and 8 (total, 84 stoppers, approx. 2½ lbs or 1.2 kg)	pkg.	3.00	-	-	-	-	1	1	1	
b	3690)	46-831-25	STROP, RAZOR: oiled hide, double-sided, wooden handle, in case. (as B & T p.571 #D4/0150)	each	2.80	1	1	1	1	1	1	1	Useful in stropping Section Razor, a component of Item 3568.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
cp	3691)	09-767	SUPPORT STAND, Burette: black enameled cast iron base 13" x 7" (325 x 175 mm) with plated steel support rod 24" high x 1/2" diameter (60 cm x Ø12.5 mm) with threaded end with lock nut; without burette clamp. Supplied knocked down. (Burette Stand) (as Fisher cat.63 p.906 #14-668)	each	1.20	2	3	3	18	18	18	18	See Item 3533 for Burette Clamps.
bcp	3692)	09-710	SUPPORT STAND, Laboratory Apparatus, Medium, with 3 Ring Supports: enamelled cast iron base approx. 5" x 8" x 1" (125 x 200 x 25 mm); plated steel support rod 20" high x 3/8" diameter (50 cm x Ø 9.5 mm) with threaded end with lock nut; complete with 3 enamelled cast iron supports with screw clamps; diameters of rings - 2", 3", 4" (50, 75, 100 mm). Supplied knocked down. (Ring Stand; Retort Stand) (as AHT cat.61 p.931 #9342)	each	2.78	2	6	12	18	24	30	30	
p	3693)	07-845	SYRINGE, HYPODERMIC, LUER, 10 ml: graduated in 0.2 ml; all glass, centre tip. (as Aloe cat.189 p.442 #A636C)	each	0.36	1	1	1	1	1	1	1	
p	3694)	46-860	TANK, GLASS, cap.1 gallon (4 litres): 8" long x 6" wide x 6" deep (20 x 15 x 15 cm); all clear glass, molded in one piece. (Gas Trough) (as PH B3850 p.52)	each	2.60	1	1	2	2	4	6	6)	May be used interchangeably as Gas Trough or Aquarium. See also Aquarium, Item 3482.
b	3695)	46-860-2	TANK, GLASS, cap.1½ gallon (6 litres): 10" long x 7" wide x 7" deep (25 x 18.5 x 18.5 cm); all clear glass, molded in one piece. (Aquarium) (as PH B3850 p.52)	each	3.25	1	1	2	3	4	4	4)	
p	3696)	51-865	TAPE, INSULATING, vinyl or rubber; 3/4" wide; roll of approx. 50 ft.	roll	0.38	-	-	1	1	1	1	1	Initial supply.
p	3697)	46-865	TELEPHONE SET: including electromagnetic receiver, carbon transmitter, connecting cord and plugs; induction coil on base plate with binding posts; all wiring exposed. Battery operated; without batteries. (as La Pine p.110 #2-6650)	set	5.00	-	-	1	1	1	1	1	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3698)	46-866	TERMINALS: set comprising the following: - 2 Brass Terminals #25 (2 BA), with screws and 4 washers each; - 2 Brass Terminals #12 (4 BA), with screws and 4 washers each; - 4 Spade Terminals, plated brass; - 4 wander plugs, insulated heads, including 2 red and 2 black; - 4 crocodile clips, with terminal and parallel wire contacts in jaws. (as PH P6836/44/50/60, pp.55-56)	set	5.55	-	-	1	1	1	1	1	Electricity
cp	3699)	46-867	TEST TUBE, 150 x 25 mm O.D.: without lip; borosilicate glass. (Boiling Tube) (as AHT cat.61 p.944 #9540)	doz.	1.44	2	3	5	8	11	15	15	
c	3700)	09-793	TEST TUBE, 75 x 12 mm O.D.: without lip; borosilicate glass. (as AHT cat.61 p.944 #9540)	doz.	0.36	1	2	13	26	42	48	48	
bp	3701)	09-800	TEST TUBE, 150 x 16 mm O.D.: without lip; borosilicate glass. (as AHT cat.61 p.944 #9540)	doz.	0.60	1	1	1	2	3	3	3	
p	3702)	04-810	THERMOMETER, CLINICAL, ORAL, Fahrenheit: 95-110°F; lens front; cylindrical bulb. In case. (as ALOE cat.189 p.438 #A153)	each	0.19	1	1	1	2	3	3	3	
			or										
p	3703)	04-815	THERMOMETER, CLINICAL, ORAL, Centigrade: 35-43°C; lens front; cylindrical bulb. In case. (as ALOE cat.189 p.438 #A153)	each	0.20								
c	3704)	46-870-2	THERMOMETER, LABORATORY: 0° to +360°C in 2° divisions: mercury in glass; engraved stem 6-7 mm O.D., length approx. 300 mm; calibrated for partial immersion. Tolerance ±5° over total range. (as AHT cat.61 p.957 #9525)	each	1.37	-	-	-	-	2	2	2	To determine the temperature of any medium, within the operating range of the thermometer.
bcp	3705)	09-830	THERMOMETER, LABORATORY: -10°C to +110°C in 1° divisions: mercury in glass; engraved stem 6-7 mm O.D., length approx. 300 mm; calibrated for partial immersion. Tolerance ±1° over total range. (as AHT cat.61 p.957 #9525)	each	0.85	6	6	12	18	24	36	36	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			B A S I C (cont'd)										
p	3706)	46-874	THERMOMETER, MAXIMUM/MINIMUM, Six's, Fahr.: spirit/mercury filled tube mounted on -10 to +130°F x 2° scale on zinc frame; complete with magnet for resetting metal cursors. (as GG p. 70 #L31-595)	each	2.80	1	1	1	1	1	1	1	To show current air temperature and also to indicate the lowest and highest temperatures reached during a selected interval. See also Item 3749.
p	3707)	46-882-4	THERMOMETER, Ungraduated, Mercury Filled: stem range 0-100°C. (Thermometer Tube) (as GG p. 80 #L41-900)	each	0.72	-	-	-	-	12	12	12	
bc	3708)	46-882-15	TILE, PORCELAIN, white, 10 x 10 cm: glazed on both sides; for comparing colors. (as B & T p.207 #B69/0010)	each	0.66	6	6	12	12	24	36	36	
bc	3709)	09-837	TONGS, CRUCIBLE, Laboratory, 9" (225 mm): double bent; black oxidized steel; riveted joint.	each	.29	2	4	8	12	18	24	24	
c	3710)	09-845	TRIANGLE, Pipestem, 5 cm sides of smooth pipeclay, on tinned iron wire. (as USBECK #2211)	doz.	.54	1	1	1	2	3	3	3	For supporting crucibles on Laboratory Tripod.
bcp	3711)	09-850	TRIPOD, LABORATORY, Iron, 3" (75 mm) I.D. at top; 6" (150 mm) high; baked enamel finished; suitable for alcohol lamps or low burners. (as AHT cat.61 p.988 #9730)	each	.44								
			or			2	4	8	12	24	36	36	
bcp	3712)	09-851	TRIPOD, LABORATORY, Iron, 4" (10 cm); 9" (22.5 cm) high. I.D. 3½" (9 cm), O.D. 4¼" (11 cm), at top. For Bunsen Burner.	each	.62								
c	3713)	46-884-2	TROUGH, GAS, Stoneware, Ø 25 cm x 12.5 cm high: hard salt glaze, flange top and bottom. (Pneumatic Trough) (as PH C1578 p.107)	each	3.50	-	-	2	2	4	6	6	See also Glass Tanks, Items 3694 and 3695. Gas Troughs are used for collecting gases by displacement of water.
c	3714)	46-884	TROUGH, GAS, Glass, Ø 30 cm x 12.5 cm high: ground top edge, flat bottom; stout clear crystal glass. (Pneumatic Trough) (as PH C1580 p.107)	each	5.88	1	1	2	2	4	6	6	
c	3715)	46-884-19	TUBE, COMBUSTION, I.D. 20 mm x 300 mm long: plain borosilicate glass.	each	0.70	-	6	6	6	12	12	12	
c	3716)	46-884-21	TUBE, DRYING, U-Shaped, Plain: 100 x 15 mm, height x diameter; clear glass. (Absorption Tube) (as B & T p.85 #B30/0010)	each	0.16	-	-	6	12	24	24	24	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
c	3717)	46-884-23	TUBE, GAS MEASURING, With Stopcock, 25 ml in 0.1 ml divisions: glass. (Gas Burette) (as PH C1372 p. 87)	each	2.35	-	-	-	2	2	2	2	
b	3718)	46-884-27	TUBE, SPECIMEN, Glass, 50 x 12 mm: straight side, flat bottom; with polyethylene push-in stopper. Carton of 125 tubes. (as GK p.789 #TW-600)	box	1.41	1	1	1	1	1	1	1	
b	3719)	46-884-29	TUBE, SPECIMEN, Glass, 75 x 19 mm: straight side, flat bottom; with polyethylene push-in stopper. Carton of 125 tubes. (as GK p.789 #TW-600)	box	3.06	1	1	1	1	1	1	1	
p	3720)	46-884-31	TUBE, THREE-LIMBED, Glass: glass limbs approx. 7.5 cm long. (T-piece, for Hare's Apparatus) (as PH P6256 p. 20)	each	0.63	3	3	3	6	8	12	12	Hare's Apparatus is used for determination of relative specific densities or specific gravities of liquids.
bp	3721)	46-884-36	TUBING, CAPILLARY, FLINT GLASS, I.D. 1 mm ±0.25 mm, O.D. 5-6 mm; 150-cm (5-ft.) lengths; approx. 8 m (26 ft.) per lb. (as GK p.792 #TX265)	lb.	1.40	1	1	1	1	1	1	1	Items 3721, 3722 and 3723: For equipment setups requiring glass tubing. Many other laboratory and demonstration uses.
bcp	3722)	09-875	TUBING, FLINT GLASS, Assorted: package of approximately 5 lbs. (2.25 kg) consisting of: a) 10 to 12 ft. (3 to 3.5 m) in each diameter: 3 mm, 4 mm, 5 mm, 9 mm, 10mm, 11mm and 12mm b) 20 ft. (6 m) in each diameter: 6 mm, 7 mm, and 8 mm.	pkg.	1.20	1	1	1	1	2	2	2	Item 3722; supplied in 4-5 ft (1.2-1.6 m) lengths. Tolerance: 0.5 mm of rated diameter. Wall thicknesses: for 3 / 4 mm diam tubing-0.70 mm; " 5 / 6 mm " " -1.05 mm; " 7 / 8 mm " " -1.10 mm; " 9 / 10 mm " " -1.15 mm; " 11 / 12 mm " " -1.20 mm
b	3723)	46-884-38	TUBING, FLINT GLASS, 20 mm O.D. ±1 mm: wall thickness 1.2 mm ±0.15 mm. 18" (45 cm) long. (as AHT cat.61 p.566 #6080)	lb.	0.40	-	-	1	2	3	4	4	
cp	3724)	46-884-41	TUBING, NEOPRENE, I.D. 5 mm x 1.5 mm wall. (as B & T p.217 #B75/0247)	foot	0.09	6	6	10	15	20	30	30	
b	3725)	09-880	TUBING, RUBBER, 1/4" I.D. x 1/8" wall (6.3 x 3.17 mm): for gas and water connections. (as AHT cat.61 p.835 #8830)	foot	0.06	5	10	10	10	10	10	10	
p	3726)	46-886	TUNING FORKS, Unmounted, Set of 4: pitch C^1, E, G, C^2; frequencies 256, 320, 384, 512 cps; blued steel; 10 cm long. (as PH P9940 p.243)	set	5.60	-	1	1	2	3	4	4	Sonics. cps = cycles per second. See also Resonance Apparatus, Item 3663.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools)(cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
p	3727)	46-902-12	VOLT-AMMETER, DC: Range 0 to minimum 10 volts in 1/5 volt divisions, 0-35 amperes in 1 amp. divisions; pocket type, corrosion and impact-resistant case; complete with lead wire. (as CENCO cat.J-300 p.748 #82475)	each	3.60	-	-	-	-	8	8	8	Battery Test Meter. Also used for testing electrical circuits.
bc	3729)	09-888	WATCH GLASS, size 3" (76 mm) ground edges. (as Clay Adams, USA No. A1499)	doz.	0.84	1	1	2	3	4	6	6	For use in weighing samples of materials and for covering funnels or beakers.
p	3730)	46-902-50	WEIGHTS, SLOTTED BRASS, 250-g Set: Comprising one 50-g hanger; nine 20-g, one 10-g, and two 5-g weights. (as PH P10186 p.264)	set	4.45	1	1	2	4	6	8	8	
bcp	3731)	46-902-54	WEIGHTS, STUDENT'S BALANCE: 1 to 100 g; lacquered brass pieces; in polished wooden box with hinged lid. (as PH C88 p. 15)	set	4.75	-	-	-	4	8	8	8	
p	3732)	46-905-6	WIRE, CONSTANTAN, Bare, S.W.G. 24 (0.56 mm): reel of 1/4 lb. (113 g). (approx. 57 yd/52 m) (as GG p.219)	reel	1.30	-	-	-	-	1	1	1)	
p	3733)	46-905-8	WIRE, CONSTANTAN, Bare, S.W.G. 26 (0.45 mm): reel of 1/4 lb. (113 g). (approx. 85 yd/77 m) (as GG p.219)	reel	1.50	-	-	-	-	1	1	1)	Constantan is an alloy of 55-60% copper and 45 or 40% nickel, also known as Eureka.
p	3734)	46-905-10	WIRE, CONSTANTAN, Bare, S.W.G.32 (0.27 mm): reel of 1/4 lb. (113 g). (approx. 235 yd/215 m) (as GG p.219)	reel	1.60	-	-	-	-	1	1	1)	
p	3735)	46-905-12	WIRE, COPPER, D.C.C., S.W.G. 22 (0.70 mm): in 1-lb. (454 g) reel. (as PH P6868 p.57)	lb.	1.99	1	1	1	1	1	1	1	Initial supply. D.C.C. = Double Cotton Covered.
p	3736)	46-905-14	WIRE, COPPER, D.C.C., S.W.G. 26 (0.45 mm): in 1-lb. (454 g) reel. (as PH P6868 p.57)	lb.	2.41	-	-	-	-	1	1	1	Initial supply.
p	3737)	46-905-18	WIRE, FLEXIBLE, 3-core: rubber-sheathed cores, glazed cotton braided; each core 23 strands 36 S.W.G., 5 amps. (Circular "Flex") (as PH P6904 p.59)	yard	0.23	-	-	4	8	12	24	24	For heavy-duty power transmission.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC (cont'd)										
cp	3738)	46-905-25	WIRE, NICKEL-CHROMIUM, Bare, S.W.G. 26 (0.45 mm): 80/20; reel of 1/4 lb. (113 gm). (as AHT cat.61 p.703 #7435)	reel	2.20	-	-	-	-	1	1	1	Nichrome or Chromel wire. 1/4 lb. (113 g) = approx. 115 yd/105 m.
cp	3739)	46-905-27	WIRE, NICKEL-CHROMIUM, Bare, S.W.G. 32 (0.27 mm): 80/20; reel of 1/4 lb. (113 gm). (as AHT cat.61 p.703 #7435)	reel	3.20	-	-	-	-	1	1	1	
p	3740)	46-908	ZINC ROD with Terminal, for Leclanché cell. (as PH P6728 p.44)	each	0.33	-	-	-	8	12	16	16	Spares for Item 3531.

NOTE: Basic Items are continued on the following page under the heading "BASIC: ADDENDA". This grouping represents items which were cleared or added after the main bulk of List Q had been prepared, when it was too late to incorporate additions within the alphabetical/numerical sequence already assigned. Total costs for all Basic Items in List Q, including those in the Addenda, are presented at the close of the Addenda.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			BASIC: ADDENDA										
cp	3741)	46-100-27	BOTTLE, Specific Gravity, 50 ml, unadjusted: drilled stopper. (Density Bottle; Pyknometer) (as B & T p. 81 #B28/0030)	each	0.53	-	-	-	6	12	18	18	
c	3742)	09-214	BOTTLE, WIDE MOUTH, ROUND, SCREW CAP, Polypropylene, 8 oz. (250 ml): with polypropylene screw cap. (as Nalgene cat. K-961 #2105)	each	0.33	6	6	12	12	24	24	24	
p	3743)	46-149-50	BULB, FLASHLAMP: round focusing type, M.E.S. cap, 2.5 volts. (as PH P6918 p. 60)	each	0.09	6	6	6	8	10	10	10	
p	3744)	46-149-52	- LAMPHOLDER: M.E.S., for above bulb, on bakelite base. (as PH P6972 p. 62)	each	0.12	6	6	6	8	10	10	10	
bc	3745)	46-240-6	CRUCIBLE, Porcelain: glazed inside and outside, squat form "A", No. 00, cap. 15 ml, with lid. (as PH C742 with C744 p. 56)	doz.	2.94	-	1	1	2	3	3	3	For heating small quantities of material, e.g. for determining ash content.
p	3746)	46-246	CYLINDERS, EQUAL WEIGHT, Assorted: Set of 6 metal cylinders (copper, tin, lead, brass, iron and zinc) each weighing 100 g ±1 g. (as PH P8336 p. 190)	set	2.87	-	-	-	1	1	1	1	Specific Heat Cylinders. See also Item 3557.
p	3747)	46-301	GAUZE, Copper Wire: 16 holes per cm; piece 30 x 30 cm.	each	1.00	-	-	-	1	1	1	1	For conductivity experiments.
p	3748)	46-323-19	HYGROMETER, Wet and Dry Bulb, Mason, Centigrade: 0°-50°C in 1°C; complete with rust-proof case, clip-in-tube, zinc scale, fixing screws, hygrometric tables, six spare wicks, detailed instructions. (as GK p. 444 #HV-101)	each	3.36	1	1	1	1	1	1	1	See also Item 3604, Fahrenheit Hygrometer.
p	3749)	46-874-1	THERMOMETER, MAXIMUM/MINIMUM, Six's, Celsius: spirit/mercury filled tube mounted on -20 to +50°C x 1° scale on zinc frame; complete with magnet for resetting metal cursors. (as GG p. 70 #L31-596)	each	2.80	1	1	1	1	1	1	1	Alternate for Item 3706.
			Total Costs, Basic Items, List Q:			$ 343. to 351.	$ 489. to 499.	$ 737. to 754.	$ 1606. to 1636.	$ 2572. to 2620.	$ 3067. to 3170.	$ 3071. to 3173.	

(The reason for the range between lower and higher figures is that certain choices are offered, e.g. fuel-heated vs. electrically-heated models, glass vs. polypropylene, battery- vs. mains-operated, etc.) The higher figures are cited in Tables I and II of Annex L)

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			OPTIONAL										
c	3761)	46-002	ABSORPTION TOWER, I.D. 5 cm x 25 cm high: borosilicate glass; moulded outlet at bottom, ground inside. (Drying Tower or Cylinder) (as GK p.12 #AB-520)	each	2.31	-	-	-	-	2	2	2	
p	3762)	46-004	ACCUMULATOR, Alkaline Type, Nickel-Cadmium; 3.6 Volts: 3 cells; cap. 10 amp/hrs at 5 hr rate; with terminal nuts, connectors and container of electrolyte.(Storage Battery; "NIFE" or Ni-Cad Battery) (as B & T p. 36 #B5/0110)	each	11.20	-	-	1	4	8	8	8	A long-life battery. For alternate type of battery see Item 3767.
b	3763)	46-008	AERATOR PUMP UNIT: consisting of compressor, circulator, aerator, bottom filter; for operation on 220 V. 50/60 cycles AC. (as Aquariums, Inc., N.J., USA; Vanguard #100 and Wil-Nes #105)	each	4.51	-	-	1	1	1	1	1	For use with Aquarium, Item 3482.
b	3764)	09-878	- TUBING, LATEX RUBBER, for above: 3/16" I.D. x 1/16" wall (4.8 x 1.6 mm); piece 5 ft. (1.5 m) long.	piece	0.20	-	-	1	1	1	1	1	For connecting aerator and filter.
b	3765)	46-019	ANATOMY CHART, Human Body; Felt (Flannelgraph Type): colored; approx. 170 x 70 cm, mounted on rods, complete with movable anatomical parts. (Istrex "Pelican" or equal)	each	40.00	1	1	1	1	1	1	1	Widely used as a substitute for the more expensive, bulky and fragile anatomical models and skeletons.
c	3766)	46-053	ATOMIC MODELS, Set: comprising 85 differently colored hard plastic balls representing carbon, nitrogen, oxygen, sulfur, hydrogen, halogens and metals, and 60 steel wire springs for valency bonds; in box. (as GK 1963 cat. p.26 #AV-700)	set	6.70	-	-	-	1	1	1	1	For three-dimensional representation of formulae in study of fundamentals of chemistry.
p	3767)	80-004-3	ACCUMULATOR; Lead-Acid Type, Multi-Plate, 2 Volts: single cell, in glass container with carrying handle; 60 amp/hrs at 20 hr rate.(Storage Battery, vehicle type) (as B & T p. 36 #B5/0100 CZG6)	each	7.00	-	-	-	-	1	1	1	
c	3768)	46-072-8	BELLOWS, Foot Operated: bellows chamber 25 cm wide; overall dimensions 15" x 12" x 7" (37.5 x 30 x 17.5 cm); diameter of air inlet 5/8" (16 mm). With one spare rubber disc. (as GK p.62 #BK-620)	each	22.00	-	-	-	-	-	1	1	Gives steady air pressure; suitable for glassblowing.
bc	3769)	46-100	BOTTLE, ASPIRATOR, Polyethylene, 5000 ml: with polyethylene screw cap and serrated outlet tube near bottom for 1/4" (6.3 mm) I.D. rubber tubing. (as AHT cat. 61 p. 103 #2237-P)	each	3.50	-	-	1	1	1	1	1	For use as elevated reservoir for solutions, to permit gravity flow. See also Filter Pump, Items 3657 and 3658.

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			OPTIONAL (cont'd)										
c	3770)	09-191	BOTTLE, DROPPING, Polyethylene, cap. 4 oz.: (120 ml) fitted with elongated nozzle. (Indicator Bottle) (as B & T p.55 #B15/0650)	each	0.15	-	-	6	6	12	18	18	For dispensing small quantities of liquids.
c	3771)	46-100-14	BOTTLE, GAS WASHING, Dreschel, 250 ml: borosilicate glass; domed interchangeable ground-in head. (as GK p. 411 #GF-520)	each	2.20	-	-	2	4	6	8	8	
c	3772)	09-193-13	BOTTLE, NARROW MOUTH, ROUND, SCREW CAP, POLYPROPYLENE, 1/2 gallon (2000 ml): with polypropylene screw cap. (Winchester Bottle) (as Nalgene cat.K-961 #2203)	each	2.15	1	1	3	6	9	12	12	For storage of corrosive chemicals or reagents.
c	3773)	46-150	BURNER, BUNSEN, Bottled Gas: 11 mm diameter tube, with air regulator collar; mounted on enamelled base. (as GK p. 95 #BX-055)	each	1.30	2	2	4	6	12	24	24	Where gas is not available, requisition Item 3774. Where coal gas rather than bottled butane or propane type gas is available, requisition Item 3808. For still other types of gas, requisition suitable burners, giving full specifications.
			or										
cp	3774)	09-250	BURNER, VAPORIZED KEROSENE, Vertical: pressure type; fitted with safety device; 1 pint (570 ml) capacity; brass. (Kerosene Blow Lamp) (as B & T 1962 cat. p.66 #B18/1580)	each	5.55	2	2	4	6	12	24	24	Items 3773, 3774: For producing small, high-temperature flame for glassblowing and general laboratory use.
p	3775)	46-218-10	COIL, SOLENOID, Mounted: comprising coil of insulated copper wire wound on fibre tube 15 cm long, 3 cm in diameter; mounted, with binding posts, on wooden base. (Helix; Magnetizing Coil; Demagnetizing Coil) (as WELCH p.190 #1865)	each	7.75	-	-	-	-	-	1	1	For demonstrating electromagnetic effects such as induction, right-hand rule and effect of iron core.
c	3776)	46-270-60	FLASK, VOLUMETRIC, 2000 ml within ±1.0 ml: borosilicate glass, with polyethylene stopper; calibrated to contain at 20°C, one mark. (as Fisher cat.63 p.460 #10-199)	each	3.40	-	-	-	1	2	3	3	
bc	3777)	46-275	FUNNEL, LABORATORY, Polyethylene, 20 cm diam: ribbed; stem approx. 9 cm long. (Filter Funnel) (as GG p. 510 #S26-760)	each	0.70	-	-	-	-	2	2	2	
c	3778)	46-275-5	FUNNEL, SEPARATING, Spherical, cap.100 ml: standard ground joint neck and stopper with air vent; borosilicate glass.	each	1.95	-	-	-	1	2	2	2	For separation of two layers of immiscible liquids.
bc	3779)	50-210	JAR, GLASS (Preserving Jar): with metal screw cover; capacity 1/2 pint (0.24 litre).	doz.	0.96	1	1	2	2	3	3	3	For use as Storage Jars, Specimen Jars. See Item 3609 & 3610.
bc	3780)	50-205	JAR, GLASS (Preserving Jar): with metal screw cover; capacity 1 pint (0.47 litre)	doz.	1.00	1	1	1	2	2	2	2	
bc	3781)	50-211	JAR, GLASS (Preserving Jar): with metal screw cover; capacity 1 quart (0.95 litre).	doz.	1.56	1	1	1	1	1	1	1	

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			OPTIONAL (cont'd)										
c	3782)	46-334	JUG, MEASURING, Polyethylene, cap. 2 litres: with handle and P.V.C. measuring stick, graduated in mls. (as B & T p.135 #B41/4665)	each	2.80	1	1	1	1	1	1	1	
b	3783)	30-304	KNIFE, Pruning: curved 3" (8 cm) blade; folding type. (as CASE #61011)	each	1.00	1	1	1	1	1	1	1	
cp	3784)	09-551	LAMP, ALCOHOL, Brass, 5-oz (150 ml): with ratchet feed, wick and extinguishing cap; leakproof; approx. 3½" (88 mm) bottom diameter x 3½" (88 mm) high. Supplied with six spare 6-mm diameter wicks. (as Fisher cat.63 p.139 #4-235)	each	1.15	2	2	4	6	12	24	24	
p	3785)	46-475	MICROMETER, Screw Gauge, 0-25 mm x 0.01 mm chromium-plated scale: enamelled steel frame, with ratchet and locknut. (as GK p.413 #GJ-200)	each	7.70	-	-	-	-	1	1	1	For accurate measurements in experiments involving small displacements.
b	3786)	09-608	MICROSCOPE ILLUMINATOR, Substage: Simple Pattern, with pin and clip attachment to microscope base, 15 watt (no transformer). With 2 spare 15 watt, 110 volt lamp bulbs. For 110 volt, AC operation. (as Olympus Model LSK, Tokyo)	each	4.40	-	1	2	6	10	12	12	For use with Microscope, Item 3624. To be requisitioned only when needed and where electricity is available.
			or										
b	3787)	09-609	MICROSCOPE ILLUMINATOR, Substage: Simple Pattern, with pin and clip attachment to microscope base, 15 watt (no transformer). With 2 spare 15 watt, 220 volt lamp bulbs. For 220 volt AC operation. (as Olympus Model LSK, Tokyo)	each	4.40								
b	3788)	46-795	SLIDE, MICROCULTURE, One Concavity: 75 x 25 x 1.2-1.5 mm thick; polished edges. (Hanging Drop Slide; Excavated Slide) (as GK p.433 #HJ-750)	doz.	1.20	-	-	-	1	1	1	1	
p	3789)	46-558	ORGAN PIPE, Demonstration: with graduated polished wooden piston giving diatonic scale; 55 cm long. (as PH P9994 p.246)	each	11.75	-	-	-	-	-	1	1	To demonstrate change in pitch due to change in effective length of closed pipe, and effect of changing from open to closed pipe.
c	3790)	46-561	PAIL, POLYETHYLENE, 8 litres, graduated: with cover and bail handle.	each	2.30	1	1	1	1	1	1	1	
b	3791)	46-562-12	PARCHMENT PAPER: in sheets 62.5 x 62.5 cm. (as GK cat.14 p.60 #BL-485)	doz.	0.70	1	1	1	1	1	1	1	For Osmosis experiments.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th QD	11th QE	12th QF	13/14th QG	Notes
			OPTIONAL (cont'd)										
b	3792)	46-611	POTOMETER, Farmer: complete. (as GK cat.14 p.60 #BL-600)	each	4.25	-	-	-	-	1	1	1	For measurement of transpiration rates of plants.
b	3793)	20-745	SHEARS, POULTRY: with spring, approx. 10-1/2" long (26.67 cm).	each	6.66	-	-	-	-	1	1	1	For use as Bone Cutting Forceps.
b	3794)	03-610	SHEETING, PLASTIC: vinyl, 8-gauge (0.2 mm), 36" (91 cm) wide.	sq.yd.	0.16	1	1	1	1	1	1	1	
p	3795)	46-810-35	SONOMETER, 2-wire pattern: with long movable bridge, sounding box, 1 m paper scale, pulley and wrest pin for the wires, complete; and additionally 1 set of s/s wires of different diameters, looped ready for use. (as PH P9926 and P9928 p.242)	each	18.95	-	-	-	-	-	1	1	Sonics: for studying the laws of vibrating strings.
bc	3796)	01-655	STERILIZER, HOT AIR, Electrically Heated, Small: approx. 10" high x 12" wide x 10" deep (25 x 30 x 25 cm); steel frame with 1/4" (6.3 mm) hard asbestos walls; maximum temperature 180°C, gravity convection; complete with two shelves, bimetallic thermoregulator, thermometer, pilot light, cord and plug. To be supplied with one spare thermometer and one spare set of heating elements. For operation on 220 volts AC. (Rating: 660 watts) (Hot Air or Dry Air Oven) (as ALOE cat.189 p.377 #63220)	each	30.50	-	-	-	-	-	1	1	Where local electrical characteristics are other than 220 volts AC, DO NOT requisition item by Stock Number but spell out the details of local current and voltage.
c	3797)	46-871	THERMOMETER, LABORATORY, -10°C to +55°C in 0.2° divisions: mercury in glass; engraved stem 5-6 mm O.D.; lens front. (as GK p.763 #TJ-260)	each	2.15	-	-	-	1	2	3	3	
bcp	3798)	09-834	TIMER, INTERVAL: spring wound; dial graduated to 60 minutes in 1 minute intervals; with signal bell. (as AHT cat.61 p.295 #3651-G)	each	3.90	1	1	1	1	1	1	1	Interval time clock.
cp	3799)	46-884-15	TUBE, Boyle's Law, J-shaped: one end closed, limbs 95 cm and 25 cm long. (as PH P6260 p.21)	each	.84	-	-	-	1	1	1	1	See also Gas Laws Apparatus, Item 3593.
p	3800)	46-884-17	TUBE, Cardboard, 100 cm x Ø 5 cm, fitted with corks: for rough determination of Joule's Equivalent. (as PH P8358 p. 193)	each	0.91	-	-	-	-	-	6	6	To demonstrate mechanical equivalent of heat.
b	3801)	46-901-75	VASCULUM: aluminum inside, stove enamelled black outside, complete with brown webbing straps, 325 x 165 x 65 mm. (as GK p.65 #BL-300)	each	5.15	-	-	-	1	1	1	1	For field use in collecting plant or animal specimens.

List Q: SCIENCE (Physics, Chemistry, Biology or Natural Science) (Secondary Schools) (cont'd)

Code	Item#	Whse.#	Description	Unit	Price $	Quantities suggested for schools of various levels. 7th QA	8th QB	9th QC	10th J	11th QE	12th QF	13/14th QG	Notes
			OPTIONAL (cont'd)										
b	3802)	09-888-12	WATCH GLASS, Size 6" (152 mm), ground edges. (as Clay-Adams #1499)	each	0.14	2	4	6	8	10	12	12	
p	3803)	46-902-60	WHEATSTONE BRIDGE, 50 cm: 4 gaps with boxwood rule, 22 s.w.g. Constantan wire, mahogany base, knife edge jockey and three additional terminals for battery connection. (as PH P7504 p.101)	each	14.00	-	-	-	-	-	2	2	Resistance Bridge; for determination of specific conductance or resistivity in electrical experiments.
bcp	3804)	NS	FILMS, 8 mm Loop, Single-Concept Type, Silent: of choice.	each	8.00*	-	-	-	-	15	15	15	Requests for Films, Filmstrips, Slides and Charts should be accompanied by detailed information as to the type, size, language, source of supply and cost. For comments regarding these items see paragraphs 159, 160, 166.
			or										
bcp	3805)	NS	FILMS, 16 mm: of choice.	each	60.00*	-	-	-	-	2	2	2	
bcp	3806)	NS	FILMSTRIPS or SLIDES: of choice; as follows: -Filmstrips, averaging approx. 30 views per strip, at approx. $4.00 per strip; or -Slides, within the same total cost as the filmstrips; or -Filmstrips and Slides, within the same total cost as the filmstrips.	set	40.00*	1	1	1	1	1	1	1	
bcp	3807)	NS	CHARTS, of choice.	each	10.00*	4	4	6	6	8	10	10	
			OPTIONAL: ADDENDA										
c	3808)	46-149-95	BURNER, BUNSEN, Coal Gas: 11 mm diameter tube, with air regulator collar, mounted on enamelled base. (as GK p. 95 #BX-050)	each	0.60	2	2	4	6	12	24	24	Alternative to Item 3773.
p	3809)	46-902-15	VOLT-AMPERE-OHM METER, AC/DC: voltage scale 0-150 and 0-300; ampere scale 0-15; ohm scale 0-5 megohms; pocket size, impact-resistant case, with test leads. Uses standard flashlight batteries. (as Lafayette Radio Electronics cat. 620 p. 205 #TE-513)	each	16.00	-	-	1	1	1	1	1	For testing electrical circuits. Also used as Battery Test Meter.

For laboratory tools (workshop), please see Paragraphs 197/199.

*(Average price)

SECONDARY SCHOOLS: HEALTH (HYGIENE)

202) The teaching of Health-Care or Hygiene as a separate subject occurs in secondary schools as well as in primary schools in many developing countries. Where this subject is included in the curriculum of a secondary school and requests are made for equipment in regard to it, reference should be made to the comments contained in the introductory notes to the subject in the Primary Schools Section (Section 1), which apply equally to secondary schools.

203) The continued teaching of this subject in secondary schools is also brought in incidentally, in the teaching of such subjects as Biology and the various divisions of Home Economics, equipment for which is contained in Lists N and Q.

204) As is pointed out in the introductory notes to this subject in the Primary Schools Section, the teaching of Health-Care and Hygiene will have a reduced impact on the pupils if the lessons taught are not seen to be put into practice in the running of the school and in care of the health of the pupils while they are at school.

205) The list that follows therefore contains a few basic items of equipment commonly needed in recording the growth and health of pupils and in first-aid. It will be noted that these items are included under the heading "optional". The reason is that they should be requested only if there is a reasonable certainty that they will be properly used and that, in the case of the instruments for first-aid use, a supply of the requisite expendable materials, such as bandages, safety-pins and disinfectants can be assured by the school or local authorities.

206) In the case of schools wishing to obtain reference books on Health and Health Education for the use of teachers, attention is drawn to the fact that the World Health Organisation of the United Nations prepares lists, which can be obtained through UNICEF Headquarters, of suitable books on these subjects published in a variety of languages. Up to three books for each school may be selected and requested for supply from these lists.

207) Attention is also drawn to the fact that the World Health Organisation is prepared to supply to schools which require it, its monthly publication "World Health", free of charge. Applications for the regular supply of this magazine should be made directly to the "Director, Division of Public Information, World Health Organisation, Geneva".

List R: HEALTH (HYGIENE) (Secondary Schools)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested for 1 secondary school: Qty. RA	Cost $	Notes
		OPTIONAL					
3901)	06-100	CHART, VISION TEST, Snellen: Alphabet/Illiterate; printed on one side with Snellen alphabet letters and on reverse side with astigmatic dial and illiterate E, distances marked in both feet and metres; 15-guage (.38 mm) white, washable vinyl plastic card 11" x 21½" (28 x 44 cm) with eyelet on top for hanging. (Eye Chart)	each	1.10	1	1.10	For testing the vision of pupils, when required. It should be used only by persons who have been instructed in its proper use.
3902)	(17-183: English) (17-183-2: French)	CHARTS, Health Education, Selection: illustrating causes of disease, carriers of disease, prevention of disease, habits of personal hygiene, etc., in language of choice. (see Note at right)	each	2.00	4	8.00	These charts should be related to local conditions and needs, and the legends on them should, if possible, be in the language of the pupils or in a language intelligible to them. It is for this reason that it is considered that they should be left to local choice. Full details of the charts including cost and source of supply should accompany requests for these items. The unit price shown is thought to be a fair average price.
3903)	07-210	FORCEPS, DRESSING, 6" (15 cm): spring type; serrated rounded tips; stainless steel. (Thumb Forceps, Dissecting Forceps)	each	.35	2	.70	For use in first-aid. This item should be requested only if a regular local supply of bandages, disinfectants, etc. can be assured.
3904)	01-470	SCALE, BATHROOM, AVOIRDUPOIS, Capacity 280 lbs: with carrying handle, white.	each	5.94	1	5.94	For use in recording the weights of pupils.
		or					
3905)	01-465	SCALE, BATHROOM, METRIC, Capacity 120 kgs. x ½ kilo calibration: with carrying handle; white.	each	5.94	1	5.94	
3906)	07-700	SCISSORS, BANDAGE, Lister, 7¼" (182 mm): with flattened probe end on lower blade; stainless steel. (Bandage Shears)	each	.80	2	1.60	For use in first-aid. This item should be requested only if a regular local supply of bandages, disinfectants, etc. can be assured.
3907)	06-900	TAPE, MEASURING, STEEL, 6-ft. (2 m): calibrated in inches and centimetres; spring rewind; nickelled steel case. (Tape Measure)	each	.25	1	.25	For use in recording the heights and other physical measurements of pupils.
3908)	04-815	THERMOMETER, CLINICAL, ORAL, Centigrade: 35-43° C; lens front; cylindrical bulb. In case.	each	.20	2	.40	
		or					
3909)	04-810	THERMOMETER, CLINICAL, ORAL, Farenheit: 95-110° F; lens front; cylindrical bulb. In case.	each	.20			
3910)	...	BOOKS, Reference, Selection: in the fields of hygiene, school health and health education methods. (see Note at right)	each	(5.00)	(3)	(15.00)	To be selected from a list of suitable books prepared and kept currently up to date by WHO, and available from UNICEF, New York, as document SUNO-19. Books may be selected from this list up to a maximum total cost of about $15.00 per school.

SECTION 3

TEACHER-TRAINING INSTITUTIONS AND COURSES FOR PRIMARY AND SECONDARY SCHOOL TEACHERS

TEACHER-TRAINING INSTITUTIONS AND COURSES FOR PRIMARY AND SECONDARY SCHOOL TEACHERS

208) In paragraphs 15 and 16 of the General Introduction reference is made to the wide variety of levels of teacher-training which exist in developing countries. It is not the function of the guide lists - nor would it be proper for them - to single out levels or lengths or types of course as being ones at which it is suggested that developing countries should aim. It is recognized that different courses are established in different countries to meet the differing needs of those countries. In the notes and lists that follow therefore the requirements of as many different varieties as possible will be considered (excluding the training of "vocational" or "technical" teachers, which does not come within the scope of these lists).

209) It will be seen that the terms "primary" and "secondary" are not used in connection with the various courses. The reason is that, as is pointed out in the General Introduction, these terms have widely differing connotations, and their use here might be misleading. For example, a teacher whose training might qualify him to be a "secondary" school teacher in one country might qualify him to be no more than a "primary" school teacher in another, according to the differing divisions of the school system.

210) As is pointed out in paragraphs 15 and 16 of the General Introduction, the normal procedure in almost all, if not all, teacher-training courses, other than those taken after university graduation, is for the students to continue with their "academic" (general educational) studies, sometimes specializing in the subject or subjects of their choice, in addition to their theoretical and practical pedagogic work. In general about half the time of the course is taken up with further general education and about half with pedagogic work (including teaching practice).

211) In the equipping of teacher-training institutions and courses, therefore, provision normally has to be made both for equipment with which the teachers-in-training can pursue their "academic" studies and for equipment required for their pedagogic work. The latter consists mainly of audio-visual aids and materials for making them.

212) This part of the guide list therefore is divided into the following sections:

"Academic" Equipment	Paragraphs 213 - 229
General Equipment	Paragraph 230
Audio-Visual Aids	Paragraphs 231 - 248; List S
"Workshop" Equipment	Paragraphs 249 - 252; List T
Home Economics	Paragraph 253

Attention is drawn to the fact that the equipment contained in these lists is applicable to refresher, as well as to initial, courses of training.

TEACHER-TRAINING: "ACADEMIC" REQUIREMENTS

213) To ascertain what equipment is required for the "further education" or "academic" part of any particular course the following three questions have to asked:

(i) What is the standard of entry or, more specifically, how many years of schooling are the students required to have completed before they enter the course?

(ii) How long is the course?

(iii) What subjects is it intended to include in the "academic" part of the course?

214) The answer to the first of these questions will indicate the level from which the course will start - i.e., the beginning of the year following that which the students are required to have completed before entry.

215) The answer to the second of these questions will indicate the length of time which may be expected to be spent in further general education or "academic" work - i.e., about half the length of the course, the other half being devoted to pedagogic work and teaching practice (see paragraph 210 above).

216) The length of time to be devoted to "academic" work added to the level from which the course will start will indicate the highest level of academic work, in terms of ordinary years of schooling, provided by the course. Reference to the appropriate columns in the Secondary School lists for the subjects to be studied will indicate equipment which may be selected for request.

217) If the level indicated is beyond the highest level of schooling for which columns are contained in the lists, it means that such studies will be beyond the range of normal UNICEF assistance. If they are considered as a special case, special lists will have to be submitted (see paragraph 18 of the General Introduction).

218) This may appear complicated but the following examples should make it very simple.

219) Example 1. The course to be considered for assistance is for students who have completed eight (8) years of schooling. The course is two (2) years in length. The academic subjects to be studied cover the whole range of secondary school subjects.

220) As the standard for entry is the completion of the eighth year of schooling, the academic part of the course may be expected to begin at the level of the ninth year of ordinary schooling. As the course is of two years, only about one year's academic study will be completed, the rest of the time being devoted to pedagogic work. The highest level reached will therefore be the equivalent of about the end of the ninth year of schooling. Selection of equipment should be made from the items listed in the ninth year columns in all the Secondary School subject lists.

221) Example 2. The course to be considered for assistance is for students who have completed nine (9) years of schooling. The course is of three (3) years' length. The academic subjects to be studied cover the whole range of secondary school subjects.

222) As the standard for entry is the completion of the ninth year of schooling, the academic part of the course may be expected to begin at the level of the tenth year of ordinary schooling. As the course is of three years, about one and a half year's academic study will be completed, the rest being devoted to pedagogic work. The highest level reached will therefore be equivalent to about the middle of the eleventh year of ordinary schooling. Selection of equipment should be made from the items listed in the eleventh year columns in the Secondary School subject lists.

223) Example 3. The course to be considered for assistance is for students who have completed the twelfth year of schooling. The course is of two years' length. The academic subjects to be studied are Mathematics and General Science.

224) As the standard of entry is the completion of the twelfth year of schooling, the academic part of the course may be expected to begin at about the level of the thirteenth year of ordinary schooling. As the course is of two years, only about one year's academic study will be completed. Selection of equipment should therefore be made from the items listed in the thirteenth year columns of the Mathematics and Science lists in the Secondary School Section.

225) Example 4. A course of four years for students who have completed the thirteenth year of schooling and containing further education in various academic subjects.

226) As the academic studies would be of post-secondary or university level they would be beyond the purview of these lists (see paragraph 18 of the General Introduction) and would not normally be considered for UNICEF assistance. (In cases where they may be considered for assistance, special lists would have to be submitted.) Such a course might however ordinarily be considered for assistance in respect of audio-visual aids (see List S).

227) In the case of courses which contain no further academic studies, obviously no equipment for such studies will be needed. Such courses may however be considered for assistance in respect of audio-visual aids.

228) Sometimes small teacher-training units are attached to secondary schools and are able to make use of facilities of the secondary schools for the academic parts of their courses without the need for further "academic" equipment. This should be borne in mind in dealing with requests for such units.

229) It will be seen that in the notes above on ascertaining equipment for the "academic" parts of courses, by reference to the appropriate "years of schooling" columns in the Secondary School lists, the words "selected from" (the relevant column) have been used in each case. The reason is that, as explained in the introductory notes to the Secondary School Section, paragraphs 103 and 104, each column contains the requirements not only of that year but also of the previous two or more years. All the items and quantities listed therefore may not be required for a comparatively short course at a teacher-training institution.

TEACHER-TRAINING: GENERAL EQUIPMENT

230) For recommendations as to general equipment for teacher-training institutions and courses reference should be made to paragraphs 108-110 and List J in Section 2, "Secondary Schools". Selection should be made from that list on the same basis of calculation as for "Academic Equipment" (see paragraphs 213-229 above).

TEACHER TRAINING: AUDIO-VISUAL AIDS

231) In the list that follows, suggested items and quantities are shown for two groups of teacher-training institutions or courses, Group A and Group B;

Group A comprising institutions and courses with an "academic" top level equal to the tenth year of schooling and above (see paragraphs 213-216) and

Group B comprising institutions and courses with an "academic" top level of the ninth year of schooling and below (see paragraphs 213-216).

232) The reason for grouping institutions by "academic" level rather than by any other criterion is that a teacher-in-training will clearly not require, either for his "academic" instruction or for his practical teaching work, equipment intended for use beyond the "academic" level which he himself will have reached by the end of the course.

233) It will be seen that the main part of the list is the same for both groups, as it is considered that the items contained in it may be required by teacher-training institutions of whatever level. It is only in the optional part of the list that differentiation between the two groups is made.

234) Quantities. The quantities shown are based on estimated requirements of a teacher-training institution of about 200 students. For numbers appreciably above or below that, proportionate increases or reductions should be made in the case of basic items 3932/3939 and 3943/3945. Requests for increases in other items, in cases of institutions with over 200 students, will have to be considered in the light of representations made. In this first issue of the list the quantities suggested are necessarily tentative only, as the amount of time devoted to training in the making and use of audio-visual aids varies considerably in different countries.

235) Notes on items which perhaps call for further comment are as follows:

236) Flannelette or Winceyette (Item 3934): In some countries a locally-made rough home-spun cloth (such as Khaddar in India), suitable for flannelgraph purposes, is obtainable at considerably less cost than the material shown under this item. In this case the material under this item should not be requested.

237) Gum (Item 3935): In the case of countries in which a suitable locally-made gum or glue is readily available at less cost, requests for this item should not be made.

238) Screens (Items 3945, 3975): The two types of screen, front-projection and rear-projection, are included, the latter as an "optional", because the students may require to be instructed in the use of both and because both may be required by the staff of the teacher-training institution in teaching the students. If, however, only one type is really required, only the one should be requested.

239) Attention is again drawn to the fact that where there are suitable walls available, the expense of front-projection screens can be saved by painting the walls with white matte paint and using them as screens. The painted area should normally not be less than about 50" x 50".

240) Radio-receiving Set (Item 3971): This should be requested only if the teachers-in-training are likely to be required to use radio-receiving sets in the schools in which they will be teaching (see comments on these items in the introductory notes to the Audio-Visual Aids lists in the Primary and Secondary Sections) and if there are suitable educational broadcasts which can be heard at appropriate times at the teacher-training institution itself.

241) Record Players (Items 3972/3974): These should be requested only if an adequate supply of records, relevant to the curricula of the teacher-training institution itself or of the schools in which the teachers are to teach, is available.

242) With the immense range of what can be considered properly relevant, to the teaching, for example, of music of various types and to the teaching of various languages, it is not thought practicable to produce a guide list of recommended records, and it is felt that the choice and supply of records can, more reasonably, be left to the country itself.

243) Kerosene-Operated and Sunlight-Powered Projectors (Items 3968/3969): These items are included in case they may be supplied to the schools in which the teachers-in-training are likely to teach and where it is desired, therefore, to train them in their use. Another reason for their inclusion is that, in some teacher-training institutions, experimental work is done, and it may be desired to experiment with these types of projectors with a view to their possible introduction into schools. A further reason is that one or other of them might be required by a remote teacher-training institution, which has no electric mains supply or ready means of replacing or re-charging batteries, in place of the projectors shown in the main part of the list. Where none of these three conditions applies, these items should not be requested.

244) Projector, 16 mm Sound Film (Items 3966/3967): It will be seen from Lists L, O, and Q, in the Secondary Schools section, that this projector and films for it are suggested only for schools providing education up to the 11th year and above. It is considered therefore that this projector should not normally be requested for teacher-training institutions unless the students in them are receiving "academic" instruction up to and including the level of the 11th year of schooling or beyond, in subjects in which this form of projector can profitably be used, or unless they are being trained to teach up to those levels in such subjects. Films for use with the projector can then appropriately be requested under Lists L and Q (see paragraph 229).

245) Projector, 8 mm Silent Loop Film (Item 3965): Details of this projector and comments on it will be found in the introductory notes to the Audio-Visual Aids list in the Secondary Schools section, paragraphs 166-168.

246) Films for use with this projector can appropriately be requested under Lists L and Q (see paragraph 229).

247) Episcope, Photocopier and Overhead Projector (Items 3961, 3964, 3970): These are expensive items which should be requested only if it is certain that full and profitable use will be made of them. If an Episcope (Opaque Projector) is supplied, it is considered that an Overhead Projector and Photocopier should not normally be required and vice versa.

248) Episcope, Small (Item 3962): This is a small instrument which can be of help to teachers in making their own charts and drawings from books, diagrams, etc. It is too small for class use.

List S: AUDIO-VISUAL AIDS (Teacher Training)

Item#	Whse.#	Description	Unit	Price $	Qty. SB	Cost $	Qty. SA	Cost $	Notes
		BASIC							
3931)	26-045	BRUSHES, for Powder Paint: non-rusting seamless ferrules; set of six in the following shapes and sizes: Flat: sizes 4, 8, 12 Round: sizes 4, 8, 12	set	1.00	4	4.00	4	4.00	For use with powder paints, Item 3936, in making charts, flannelgraphs, etc.
3932)	25-840	CRAYONS: approx. 4¼" long x 7/16" diameter (11 cm x Ø 11 mm); non-smudge, non-toxic, wrapped; box of 8 in the following colours: red, orange, yellow, green, blue, purple, brown, black. (as "Crayola" or equal)	box	.20	15	3.00	15	3.00	Initial supply. For use in making charts, flannelgraphs, etc.
3933)	18-202	DUPLICATOR: simple clay-bed type; foolscap size. (as Matthews, Drew and Shelbourne)	each	6.00	2	12.00	2	12.00	For reproduction of maps, drawings, etc. This type of duplicator is similar to the ordinary hectograph, but cleaner to operate.
3934)	99-070	FLANNELETTE: 36" wide x 3 yards long (90 x 275 cm); heavy, rough, double napped; one piece in each of the following colours: black, dark green, navy blue, red. (Winceyette)	set	1.50	10	15.00	10	15.00	For flannelgraphs. Black (#18-280) Navy Blue (18-280-4) Dark green (18-280-8) Red (18-280-12)
3935)	26-275	GUM, Liquid: approx. 3 oz. (90 cc) bottle, with cap. (Mucilage)	doz.	2.40	5	12.00	5	12.00	Initial supply. Not to be requested if suitable locally-made gum is available.
3936)	26-560	PAINTS, Powder: set of eight 1-lb. (454 gm) tins in the following colours: scarlet, orange, yellow, green, ultramarine blue, brown, black, white.	set	5.00	2	10.00	2	10.00	Initial supply. These paints are to be mixed with water and are used for colouring charts, cut-outs, etc.
3937)	45-393	PANTOGRAPH: approx. 21" (53 cm) long, ratio of 25:1; hardwood; with 6 spare lead points. (as Beckley-Cardy cat.114A p.123 #47631)	each	2.25	12	27.00	12	27.00	For use in making enlargements or reductions.
3938)	18-510	PAPER, White: 30" to 36" (75 - 90 cm) wide; 54-lb. or 80 gm stock; unglazed, cartridge type; 25-yard (23 m) roll.	roll	1.50	8	12.00	8	12.00	Initial supply. For making charts, maps, etc.
3939)	18-512	PAPER, White, Thick: 12" x 18" (30 x 45 cm) sheets; approx. 300 gm or 175-lb. stock; light glaze; "Manila Tag"; package of 100.	pkg.	1.40	10	14.00	10	14.00	Initial supply. For making flip-charts etc.

List S: AUDIO-VISUAL AIDS (Teacher Training) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Qty. SB	Cost $	Qty. SA	Cost $	Notes
		BASIC (cont'd)							
3940)	18-010	PROJECTOR, 300 Watts, for slides 2" x 2" (5 x 5 cm): tropicalized, blower-cooled, aspheric condenser system, complete with 100 mm f/3.5 tropicalized lens, projection lamp, plus two spare projection lamps and 2.5 metres (8 ft.) flex; with filmstrip carrier for single and double frame (24 x 36 mm and 18 x 24 mm) horizontal and vertical pictures, and semi-automatic slide dispenser and magazine. For operation on 220 volts, 50/60 cycles, AC. (as CAPAC, Paris)	each	49.18	1	49.18	1	49.18	Items 3940, 3941, and 3942. These projectors should be requested only if full use is to be made of them and arrangements have been made for an adequate supply of slides and/or filmstrips.
		or			or		or		
3941)	18-020	PROJECTOR, 300 watts, for slides 2" x 2" (5 x 5 cm): tropicalized, blower-cooled aspheric condenser system, complete with 100 mm f/3.5 tropicalized lens, projection lamp plus two spare projection lamps and 2.5 metres (8 ft.) flex, with filmstrip carrier for single and double frame (24 x 36 mm and 18 x 24 mm) horizontal and vertical pictures, and semi-automatic slide dispenser and magazine. For operation on 110 volts, 50/60 cycles AC. (as CAPAC, Paris)	each	49.18	1	49.18	1	49.18	
		or			or		or		
3942)	18-015	PROJECTOR, 300 watts, for single and double frame (24 x 36 mm and 18 x 24 mm) filmstrips and 2" x 2" (5 x 5 cm) slides: complete with 5" (127 mm) coated projection objective f/3.5 anastigmatic lens and projection bulb lamp plus 2 spare projection lamps; blower-cooled. In carrying case. Complete with ~~2 spare bulbs~~ (lamps)-300 watts, 220 volts, and 2 spare bulbs (lamps)-100 watts, 12 volts. With semi-automatic slide dispenser. For dual operation on 220 volts 50/60 cycles AC or 12 volt car battery.	each	50.00	1	50.00	1	50.00	
3943)	51-685	SANDPAPER: 9½" x 10" (24 x 25 cm); 3 sheets of each of the following grits: "0", "F", "1", "1½"; package of 12 sheets.	pkg.	.11	10	1.10	10	1.10	Initial supply. For backing flannelgraph cut-outs.
3944)	26-730	SCISSORS, Teacher's: 8" (20 cm) long; sharp/sharp.	each	.84	25	21.00	25	21.00	For use in cutting paper, cardboard, flannelette, etc.
3945)	18-100	SCREEN, Projection: 47" x 47" (120 x 120 cm); fungus-proofed; matte white; portable.	each	9.44	1	9.44	1	9.44	This Screen is to be requested only if Item 3940, 3941, or 3942 is also requested.

List S: AUDIO-VISUAL AIDS (Teacher Training) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Qty. SB	Cost $	Qty. SA	Cost $	Notes
		BASIC (cont'd)							
3946)	26-870	TAPE, Cellophane: ½" wide x 1000" (13 mm x 25 m); self-adhesive; with dispenser.	each	.29	10	2.90	10	2.90	Initial supply.
3947)	45-800	THUMB TACKS: ½" diameter (Ø 13 mm), solid head; box of 100. (Drawing Pins)	box	.46	5	2.30	5	2.30	Initial supply. For affixing flannelgraphs, pictures, etc.
		- Winceyette: see Item 3934							
		TOTALS, List S, Basic Items.....				195.00		195.00	Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
		OPTIONAL							
3961)	18-003	EPISCOPE: 10" x 10" (25 x 25 cm) aperature; blower-cooled, 1000 watt lamp. For operation on 220 volts, 50/60 cycles. (Opaque Projector) (as "Opa-Scope" by Projection Optics Co.)	each	250.00	1	250.00	-	-	
3962)	18-003-2	EPISCOPE, Small: mains or battery operated; with two spare lamps. (as Dux)	each	16.00	2	32.00	2	32.00	
3963)	45-370	LETTERING SET: 4 Roman alphabets of capital letters from 1/4" to 7/8" (6 to 22 mm) high, 3 lower case alphabets, 4 sets of Arabic numerals from 0 to 9; clear plastic complete with two quick-drying paints and necessary accessories. (Stencilling Set) (as "Econosign", ESA Stationery cat. p.119 #3999)	set	8.70	3	26.10	3	26.10	
3964)	18-004-60	PHOTOCOPIER: for making paper prints and film transparencies, capable of copying from bound books; copies up to foolscap size. (as Contoura)	each	150.00	1	150.00	-	-	When requisitioning, specify voltage, cyclage, and current.
3965)	18-004-90	PROJECTOR, 8 mm Loop Film: /for short single-concept films./ (as Technicolor 500 Economy, with hold button) For operation on 220 volts 50 cycles A.C.	each	65.00	1	65.00	-	-	For explanatory notes on this Projector, see paragraphs 166/168.
		or							
3966)	18-005	PROJECTOR, 16 mm Film: magnetic-optical sound, built-in detachable speaker, matching speaker microphone; 1000-watt lamp; 100-ft. (30 m) cable; set of spare parts; in carrying case. For operation on 117 volts, 50/60 cycles. (as Bell and Howell Model 8302)	each	500.00	1	500.00	-	-	
		or							
3967)	18-007	PROJECTOR, 16 mm Film: magnetic-optical sound, built-in detachable speaker, matching speaker microphone; 1000-watt lamp; 100-ft. (30 m) cable; set of spare parts; in carrying case. For operation on 220 volts, 50/60 cycles. (as Bell and Howell Model 8302)	each	500.00	1	500.00	-	-	

List S: AUDIO-VISUAL AIDS (Teacher Training) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Qty. SB	Cost $	Qty. SA	Cost $	Notes
		OPTIONAL (cont'd)							
3968)	18-002	PROJECTOR, Filmstrip and Slide, Kerosene-Operated: complete with standard accessories and spare parts. (Diascope)	each	67.06	1	67.06	1	67.06	
3969)	18-024	PROJECTOR, Filmstrip and Slide, Sunlight-Operated: complete with shadow box and rear projection screen. (as Graflex, Rochester, N.Y.)	each	90.00	1	90.00	1	90.00	For use only in areas where there are long periods of sunlight for most of the year.
3970)	18-028	PROJECTOR, Overhead: 10" x 10" (25 x 25 cm) aperture: blower-cooled; 1200 lumens, with 14" (35 cm) f/3.5 lens; table model. (as Beseler Porta-Scribe Portable, Model 15710) For operation on 220 volts, 50/60 cycles.	each	175.00	1	175.00	1	175.00	For projecting transparencies only. Transparencies can be made with the photocopier, Item 3964.
3971)	NS	RADIO RECEIVER: table model; transistorized.	each	40.00	1	40.00	1	40.00	When requisitioning the Radio Receiver, Item 3971 specify the waveband(s) and whether for battery or mains operation. If for mains, specify the current, voltage and cyclage. Batteries do not store well and are not supplied by UNICEF. This item should be requested only if the conditions set out in paragraph 170 apply.
3972)	25-415	RECORD PLAYER: two-speed, 33 and 45 RPM; transistorized, battery-operated.	each	30.00	1	30.00	1	30.00	Batteries to be supplied locally.
		or							
3973)	25-155	RECORD PLAYER: four-speed including 78, 45, 33 and 16 RPM; monophonic, portable. For operation on 110/220 volts, 60 cycles.	each	20.00	1	20.00	1	20.00	For use only where electric supply is reliable. Note that cyclage is important in that it will determine the number of revolutions per minute and, consequently, the pitch.
		or							
3974)	25-156	RECORD PLAYER: four-speed including 78, 45, 33 and 16 RPM; monophonic, portable. For operation on 110/220 volts, 50 cycles.	each	20.00	1	20.00	1	20.00	
3975)	18-106	SCREEN, Rear-Projection: approx. image size 24" x 18" (60 x 45 cm).	each	50.00	1	50.00	1	50.00	For use, in particular, with the 8 mm Loop Film Projector, Item 3965, but can be used with other projectors.

List S: AUDIO-VISUAL AIDS (Teacher Training) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Qty. SB	Cost $	Qty. SA	Cost $	Notes
		OPTIONAL (cont'd)							
3976)	18-838	TAPE RECORDER, Portable, Battery-Operated: twin track; reel size 3" and 4" (76 and 100 mm); complete with microphone, reel with dual-purpose tape, empty reel and connecting cable. (as Philips EL#3586)	each	75.00	1	75.00	1	75.00	Batteries to be supplied locally.
		or			or		or		
3977)	18-840	TAPE RECORDER, Portable, Electric: two 5 1/4" speakers, 5 watt amplifier, takes reels up to 7" diameter, two-speed dual track recording, 7 1/2 ips, 3.75 ips, up to 4 hours recording/playback with thin base 2400' tape, 2 recording inputs - 1 for microphone, 1 for radio phonograph, 2 output jacks - 1 for external auxiliary speaker or monitoring earphones, 1 for external amplifier or public address system; single tone control knob for bass and treble; 5 pushbutton controls - record, play, rewind, forward and stop; recording level guide; program indicator; pause control, fast rewind and forward; on-off single volume control for record and play; durable aluminum and vinyl rugged case; 8 ft. power cord, ceramic microphone with cord; take-up reel and 1 reel of blank recording tape weight - 38 lb., H-10" x W-15" x D-16". For 115/220 volt, 50/60 cycle AC operation. (as Bell & Howell Model 785 X)	each	131.53	1	131.53	1	131.53	Items 3976, 3977 and 3978 These tape recorders are for use in language teaching.
		or			or		or		
3978)	18-842	TAPE RECORDER, Portable Electric: two 5 1/4" speakers, 5 watt amplifier, takes reels up to 7" diameter, two-speed dual track recording, 7 1/2 ips, 3.75 ips, up to 4 hours recording/playback with thin base 2400' tape, 2 recording inputs - 1 for microphone, 1 for radio, phonograph, 2 output jacks - 1 for external auxiliary speaker or monitoring earphones, 1 for external amplifier or public address system; single tone control knob for bass and treble; 5 pushbutton controls - record, play, rewind, forward and stop; recording level guide; program indicator; pause control fast rewind and forward; on-off single volume control for record and play; durable aluminum and vinyl rugged case; 8 ft. power cord, ceramic microphone with cord; take-up reel and 1 reel of blank recording tape wt 38 lb, H-10" x W-15" x D-16". For 220 volt, 50/60 cycle, AC operation. (as Bell & Howell Model 785 X)	each	134.82	1	134.82	1	134.82	

TEACHER TRAINING: "WORKSHOP" EQUIPMENT

249) In most teacher-training institutions the students are taught to make their own teaching aids to a greater or less degree. In some institutions this work is done with a few simple implements in a classroom; in others a room with rather fuller equipment is provided. This make-it-yourself attitude is one, it is suggested, very much to be encouraged. It can be stimulating to the teachers, it can result in the production of audio-visual aids with local appeal, which will be more interesting to the pupils, and it can save a very great deal of expense.

250) The list that follows contains tools for the equipping of a small workshop in cases where a room with tables or benches can be provided for the purpose. The quantities are based on the assumption that the workshop would not be used for practical work in large groups but that the teachers-in-training would work in it on their own individual pieces of equipment, after, where necessary, appropriate demonstration. In cases where lack of accommodation facilities, improvised or permanent, make it possible to use only a few of the items in the list, selection may be made accordingly.

251) Pre-requisite conditions for the supply of any or all the items in the list are that there should be an assured supply of the materials for which the tools are designed (for example, wood, solder, bits of tin and wire) and that there should be someone on the staff of the institution capable of looking after them and instructing the students in their use.

252) The list contains all the items in Guide List ISIS (and List C) for "Home Carpentry Hand Tools and Equipment", except for the substitution of two simpler vises for the one contained in that list. Added to it are about a dozen small items, almost all of which, apart from their use in making audio-visual aids, are specified in the UNESCO "Source Book for Science Teaching", as being necessary for the making and repair of science teaching equipment. The list, therefore, as it now stands, should be able to supply the tool needs of all the following three possible teacher-training institution requirements:

(a) Making of audio-visual aids;

(b) Making and Repair of science and other teaching equipment;

(c) The "Home Carpentry" part of the training of Home Economics teachers.

List T: WORKSHOP EQUIPMENT (Teacher Training)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested Qty. TA	Cost $	Notes
		BASIC					
4001)	40-160	BRACE, HAND: 10" (25 cm) sweep; with ratchet.	each	4.07	2	8.14	
4002)	99-200	- BIT, Auger, Woodworking: set of the following: 1/4" (6.35 mm) (40-090) 3/8" (9.5 mm) (40-091) 1/2" (12.7 mm) (40-092) 5/8" (15.9 mm) (40-093) 3/4" (19. mm) (40-094) 7/8" (22.23 mm) (40-095) 1" (25.4 mm) (40-096)	set	4.71	2	9.42	
4003)	40-098	- BIT, Countersink, Woodworking: 1/2" (12.7 mm) cutting edge; length 4" (10 cm).	each	.46	2	.92	
4004)	40-130	- BIT, Screwdriver: set of the following: 7/32" (5.56 mm) 1/4" (6.35 mm) 9/32" (7.1 mm)	set	.68	2	1.26	
4005)	40-172	BRADAWL: 2" (5 cm) blade; beech handle.	each	.17	4	.68	
4006)	99-216	CHISEL, Wood: set of the following: 1/4" (6.35 mm) (40-251) 1/2" (12.7 mm) (40-253) 3/4" (19. mm) (40-255) 1" (25.4 mm) (40-256) 1½" (38.1 mm) (40-258)	set	5.65	2	11.30	
4007)	40-289	CLAY MODELLING TOOLS: set of 9 shapes, 6" (15 cm) long; boxwood. (as DRYAD p.95 #M14/1)	set	1.20	4	4.80	
4008)	40-354	CUTTER, Glass: with tungsten carbide wheel. (as Sears p.948 #9K3796)	each	1.19	2	2.38	
4009)	40-380	DRILL, Hand: capacity 1/4" (6.35 mm); double pinion.	each	3.11	1	3.11	
4010)	40-105	- BIT, Drill Hand: set of 10 drills, to 1/4" (6.35 mm).	set	1.93	1	1.93	
4011)	99-230	FILE, Set of 4: length 10" (25 cm); - half-round, bastard cut (40-422) - round, bastard cut (40-435) - shoe rasp (40-444) - wood rasp, half-round, bastard cut (40-456)	set	2.26	2	4.52	
4012)	40-441	FILE, Round: length 6" (15 cm) smooth cut.	each	.26	2	.52	
4013)	40-454-4	FILE, Triangular: length 5" (13 cm) single cut, slim taper.	each	.30	2	.60	
4014)	51-357	GLUE, Urea Resin: water resistant; 5-lb. (2 kg) tin.	tin	3.40	1	3.40	Initial supply.

List T: WORKSHOP EQUIPMENT (Teacher Training) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Qty. TA	Cost $	Notes
		BASIC (cont'd)					
4015)	40-580	HAMMER, Nail: 16 oz. (456 gm); bell face, with curved claw. (Carpenter's Hammer; Claw Hammer)	each	.69	4	2.76	
4016)	40-600	HATCHET, Lath: 3-5/8" (92 mm) cut. (Half Hatchet)	each	2.93	1	2.93	
4017)	51-380	HINGES: assorted sizes, 4 lb. (1.8 kg) box.	box	1.65	1	1.65	Initial supply.
4018)	20-615	KNIFE, Utility: blade approx. 5" (13 cm); pointed end; wooden handle. (as DRYAD p.12 #T-12)	each	.60	2	1.20	
4019)	40-660	MALLET, Carpenter's: 1-lb. (454 gm) head; seasoned beech.	each	.52	2	1.04	
4020)	51-512	NAILS, Woodworking: large head, assorted sizes up to 2-1/2" (6 cm) long.	lb.	.22	4	.88	Initial supply.
4021)	40-722	PLANE, Smooth: 9" (23 cm) long, 2" (5 cm) cutter.	each	4.10	2	8.20	
4022)	40-765	PLIERS, Slip-Joint, Wire Cutting: 7-1/2" (19 cm) long; with 2 adjustments.	each	1.62	1	1.62	
4023)	40-775-40	PUNCH, Leather: adjustable for 6 holes. (as DRYAD p.78 #L30)	each	1.20	2	2.40	
4024)	40-789	RULE, Folding: 6 feet (2 m) long; graduated in inches and centimetres.	each	.85	2	1.70	
4025)	51-685	SANDPAPER: 9½" x 10" (24 x 25 cm); 3 sheets of each of the following grits: "0", "F", "1", "1-1/2"; package of 12 sheets.	pkg.	.11	2	.22	Initial supply.
4026)	40-796	SAW, Coping: length 12" (30 cm); blade length 6;1/2" (16 cm).	each	.69	2	1.38	
4027)	40-140	- BLADE, Coping Saw: length 6-1/2" (16 cm); package of 12 blades.	pkg.	.15	4	.60	
4028)	40-800	SAW, Cross Cut: length 20" (50 cm); ten points per inch (20 points/5 cm).	each	3.39	2	6.78	
4029)	40-790	SAW, HACK: length 10" to 12" (25 - 30 cm); adjustable.	each	1.53	2	3.06	
4030)	40-151-2	- BLADE, Hack Saw: length 12" (30 cm); 32 teeth per inch (64 teeth/5 cm); pakcage of 12 blades.	pkg.	.90	4	3.60	
4031)	40-802	SAW, Rip Cut: length 26" (66 cm); 5-1/2 points per inch (11 points/5 cm).	each	4.02	1	4.02	
4032)	40-803	SAW, Tenon: length 14" (40 cm), brass back. (Back Saw)	each	3.41	2	6.82	

List T: WORKSHOP EQUIPMENT (Teacher Training) (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested Qty. TA	Cost $	Notes
		BASIC (cont'd)					
4033)	40-832	SCREWDRIVER, Set of 5: standard, chrome or vanadium alloy steel blades; with plastic handles; in the following sizes: 8" x 3/8" - (203 x 9.6 mm) 6" x 5/16" - (152 x 8 mm) 4" x 5/16" - (102 x 8 mm) 3" x 1/4" - (76 x 6.35 mm) 1-3/4" x 1/4" - (44 x 6.35 mm)	set	3.06	2	6.12	
4034)	51-695	- SCREWS, Wood: assorted sizes up to 1½" (4 cm) long.	gross	.55	1	.55	Initial supply.
4035)	40-890	SNIPS, Tinner's, Straight: length 8" (20 cm) 3" (8 cm) cut.	each	1.51	2	3.02	
4036)	40-311	SOLDERING IRON, Copper, Pointed Head, 1 lb. (454 gm): complete with handle; non-electric.	each	1.45	2	2.90	
		or			or		Item 4038 Where the local electrical characteristics are other than those indicated for the item in the UNICEF warehouse, DO NOT requisition by Stock Number, but spell out the actual details of power available.
4037)	40-307	SOLDERING Iron, Electric: 5/8" (15.9 mm) copper tip, 200 watts; for continuous use. 220 volts, AC.	each	6.18	1	6.18	
4038)	40-875	SQUARE, Carpenter's, Combination: 90° and 45°; 9" 9" (23 cm) adjustable blade.	each	1.58	1	1.58	
4039)	51-750	STEEL WOOL: medium (00), 1-lb. (454 gm) package.	pkg.	.65	4	2.60	Initial supply.
4040)	40-897	STONE, Oil, Sharpening, Combination: 6" x 2" x 1" (15 x 5 x 2.5 cm)	each	1.02	2	2.04	
4041)	40-900	TAPE, Measuring, Steel: 10 feet (3 m); self - returning, graduated in inches and centimetres.	each	1.20	2	2.40	
4042)	40-939	VISE, Hand: 2" (5 cm) jaw.	each	1.60	2	3.20	
4043)	40-946	WRENCH, Crescent, Adjustable: length 8" (20 cm), rounded head.	each	2.39	2	4.78	
		TOTAL, List T, Basic Items.....				133.00	
						to	
						136.00	

TEACHER TRAINING: HOME ECONOMICS

253) For the requirements for the training of teachers in Home Economics, reference should be made to Guide List ISIS, which contains full details of equipment for this purpose.

SECTION 4

"PRODUCTION UNITS"

PRODUCTION UNITS

254) In some developing countries simple "production units" have been, or are being, set up to produce teaching aids, in the form of booklets, pamphlets, broadsheets, filmstrips, and, sometimes, recording tapes, with a local background and, in the case of the written and spoken word, in the local language.

255) The aim of these units is not to compete with or duplicate the production of commercial firms but to deal with subjects and approaches not ordinarily covered by commercial firms because of the limited market offered. Their purpose is to produce instructional material on subjects of mainly local interest or on subjects, which though they may be of wider interest, need a local background for their effective presentation. The structure and working of local government, in the field of Civics, and precautionary measures against common local diseases, in the field of Health Education, are typical examples within this range.

256) The first pre-requisite for the setting up of a production unit is that there should be available persons who are competent to write and edit the written publications and "produce" the filmstrip sequences. It is not sufficient just to have people who can write or people who can take photographs and develop and print films. Skilled editing in the case of printed matter and skilled choice of subjects and arrangement of sequences in the case of filmstrip production are essential if the results are to be worth while. This may appear obvious but it is sometimes overlooked.

257) In some countries the actual printing work and the making of the filmstrips can be undertaken by extensions of the Government Printing Presses and the photographic sections of the Government Departments of Information. In some countries too there are local commercial presses which can do the printing work as quickly and almost, if not quite, as cheaply, when capital costs are taken into consideration, as the production units. It has to be remembered that the products of simple production units can rarely compare in quality with those of professional establishments, and it is assumed that the possibility of using these other sources of production will have been fully explored before it is decided to set up a production unit.

258) A further pre-requisite, for the equipment suggested in this Section, is that the unit should be located in a centre where there is a reliable supply of electricity.

259) Though the equipping of simple production units is being dealt with in this educational guide list, the units need not - and it is uneconomical that they should - confine their interests to the requirements of schools alone. They can be of use also in other fields, such as the dissemination of social welfare, public health and agricultural instruction. The setting up of separate units for each of these spheres would clearly be a wasteful procedure, unless there were special circumstances which rendered such a separation necessary. The units may be regional or they may be territorial; in general, the larger the area with a common background and interests which the unit can cover, the more economical in its operation it can become.

The notes and lists that follow are divided into two parts:

Audio-Visual Aids:	List U
Printing:	List V

PRODUCTION UNITS - AUDIO-VISUAL AIDS

260) The main part of the list which follows is based on the recommendations contained in the UNESCO publication "Filmstrips: Use, Evaluation and Production" in the series of manuals on Adult and Youth Education. The Booklet, which it is suggested should be carefully studied, by anyone not otherwise fully familiar with the subject, before setting up a production unit for filmstrips, provides full illustrated information, in simple language, on the staffing required, procedures to be adopted and use of the various articles of equipment. This booklet can be obtained from UNESCO Headquarters in Paris and, in view of its availability, it is not thought necessary to produce further notes here.

261) The few items in the main part of the following list which are not specifically referred to in the booklet are thought to be sufficiently self-explanatory to need no further comment.

262) The Optional part of the list includes items for consideration in the case of units which wish to undertake sound-recording work also.

List U: PRODUCTION UNITS - Audio-Visual Aids

Item#	Whse.#	Description	Unit	Price $	Quantities suggested Qty. UA	Cost $	Notes
		BASIC					
4061)	18-001-60	CAMERA, for Filmstrip Production: with 28 mm f/3.5 four-element lens; fixed focus; takes single frame pictures; shutter speeds from 1/40th to 1/200th of a second; flash synchronized, automatic camera, built-in automatic exposure device. (as OLYMPUS Pen EE)	each	49.95	1	49.95	Fits on Copy Stand, Item 4066.
4062)	18-001-64	- FILTERS, for use with above camera: set of 3, including yellow, green and red; with adaptor ring for camera.	set	12.00	1	12.00	For use with black and white film outdoors.
4063)	18-001-68	- LENS, Close-up: for use with above camera.	each	4.95	1	4.95	
4064)	18-112-80	STAND, TRIPOD, Camera: pan head, 3 section, adjustable legs. (as Star #D 18)	each	15.95	1	15.95	
4065)	18-004-30	COPY LIGHTS, Set: with flexible arms with approx. 6" (15 cm) diameter reflectors; with 2 each No.1 Photo Flood Lamps, two spare lamps and clamp for copy stand.	set	18.00	1	18.00	
4066)	18-112-75	COPY STAND: 16" x 19" (40 x 48 cm) baseboard, 1½" diameter x 38" long (Ø 4 x 95 cm) metal upright post; sliding arm camera bracket. (as Potter Photographic Applications, Mineola, N.Y.)	each	14.95	1	14.95	
4067)	18-113	TANK, PHOTOGRAPHIC, for Black and White Film: combination developing, washing, fixing; stainless steel, cap. 15 oz. (450 ml), furnished with two reels for 20-exposure rolls of 35 mm film. Also accepts reels up to size 116 film. (as NIKOR model 33-20, Burke & James #8943-A)	each	16.00	1	16.00	
4068)	18-113-30	THERMOMETER, PHOTOGRAPHIC, Centigrade: Dial type, Weston; with stainless steel stem.	each	6.50	1	6.50	
		or					
4069)	18-113-32	THERMOMETER, PHOTOGRAPHIC, Fahrenheit: Dial type, Weston; with stainless steel stem.	each	6.50			
4070)	09-460	FUNNEL, Laboratory, Plain, Polypropylene, 100 mm diameter: stem 11 mm diameter x 95 mm long; reinforced rim; capacity approx. 230 ml. (as AHT cat. 61 p.517 #5587-E)	each	.56	2	1.12	

List U: PRODUCTION UNITS - Audio-Visual Aids (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested Qty. UA	Cost $	Notes
		BASIC (cont'd)					
4071)	09-370	CYLINDER, GRADUATED, Laboratory, 1000-ml: graduated in 10-ml intervals; single metric scale, calibrated to deliver; with pouring spout and hexagonal base; tolerance ±5.0 ml; borosilicate glass. (as AHT cat. 61 p.370 #4409-1)	each	2.95	1	2.95	
4072)	18-003-28	FILM DEVELOPING KIT, for Black and White Film (will provide direct-positive image): each kit provides solutions to develop approx. 15 rolls of 20-exposure film; supplied with direct-positive re-developer in carton of 10 packets, each packet sufficient for 16 oz. (500 ml) solution or 2 rolls of 20-exposure film.	kit	7.00	1	7.00	Initial supply. The re-developer provides replenishments for developer in original kit, which will normally have been exhausted first. Developing solutions are unstable and, once prepared, cannot be kept longer than approx. 10 days, even when stored in tightly stoppered containers.
4073)	18-004-72	PRINTER, 35 mm Strip: makes contact prints of negatives or paper on film; copies transparencies in black and white or color. (Burke and James)	each	49.50	1	49.50	
4074)	18-004-40	EXPOSURE METER: single built-in light scale, measures up to ASA 12,000. (as Sekonic Model L-86)	each	10.00	1	10.00	
4075)	18-003-15	FILM, 35 mm, Black and White: for both indoor and outdoor use; speed ASA 80; 20-exposure roll. (as Kodak FX 135-20)	roll	0.80	12	9.60	Initial supply.
4076)	09-834	TIMER, INTERVAL: spring wound; dial graduated to 60 minutes in 1-minute intervals; with signal bell. (as AHT cat.61 p.295 #3651-G)	each	3.90	1	3.90	
		TOTAL, List U, Basic Items.....				$222.	
		OPTIONAL					
4091)	18-113-2	TANK, PHOTOGRAPHIC, for Color Film: combination developing, washing, fixing; comprising set of 3 stainless steel tanks, cap. 15 oz. (450 ml) and two reels for 20-exposure rolls of 35 mm film. Also accepts reels up to size 116 film. (as NIKOR model 33-20, Burke & James #8943-A)	set	32.00	1	32.00	Optional in lieu of Item 4067 in situations where color film is to be processed. Also accommodates black and white film. All tanks and reels must be carefully washed after each use.

List U: PRODUCTION UNITS - Audio-Visual Aids (cont'd)

Item#	Whse.#	Description	Unit	Price $	Quantities suggested Qty. UA	Cost $	Notes
		OPTIONAL (cont'd)					
4092)	18-112	SPLICER, FILM, 35 mm: instant splicing block. (as Birns Cine Eqpt. Co. Model 2669)	each	12.00	1	12.00	
4093)	18-112-6	- TAPE, SPLICING, 35 mm, Mylar: double-sprocketed, 125 splices per roll.	roll	4.00	2	8.00	
4094)	18-003-17	FILM, 35 mm, Color, Daylight: speed ASA 64; for local processing; 20-exposure roll. (as Ektachrome EX-135)	roll	1.50	12	18.00	Initial supply.
4095)	18-003-19	FILM, 35 mm, Color, Indoor: speed ASA 125; for local processing; 20-exposure roll. (as Ektachrome EHB-135)	roll	1.50	12	18.00	Initial supply.
4096)	18-003-30	FILM DEVELOPING KIT for Ektachrome Film: comprises 2 units, each unit sufficient for 6-rolls of 20-exposure film.	kit	3.75	2	7.50	Initial supply. Developing solutions are unstable and, once prepared, cannot be kept longer than approx. 10 days, even when stored in tightly stoppered containers.
4097)	25-155	RECORD PLAYER: four speed including 78, 45, 33 and 16 RPM; monophonic, portable. For operation on 110/220 volts, 60 cycles.	each	20.00	1	20.00	
		or					
4098)	25-156	RECORD PLAYER: four-speed including 78, 45, 33 and 16 RPM; monophonic, portable. For operation on 110/220 volts, 50 cycles.	each	20.00			