

Types of objective test items and their construction

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This workbook is intended to illustrate some of the different types of objective test items and to provide practice in their construction.

You will be shown examples of the different test items and learn some of the pitfalls which exist in objective test construction.

At intervals throughout the workbook you will be asked to answer questions based on material previously covered. By careful reading you should be able to respond correctly before looking back to check your answers.

Types of objective test item

1. Introduction

Writing any type of examination question requires skills of the highest order.

- 1.1 The first essential is a very good knowledge of the subject to be tested.
- 1.2 The second essential is the important skill of the perfect, unambiguous communication which is demanded of an objective test item-writer.
- 1.3 The next essential quality is the capability to accept criticism without emotional reaction. The fact is that test items are prepared for communication to many different minds. Clear and accurate communication is likely to occur between the item-writer and only a few of the candidates. It is for this reason, above all others, that objective test items must be submitted to criticism by several other persons in the hope that the communication of the test item may be improved for a larger group of candidates.
- 1.4 In addition, the best item-writers will probably have experience of teaching the subject to candidates at the same level as those expected to sit the test.
- 1.5 Finally the item-writer must be ready to absorb and work within the objectives which are to be tested. This will involve:
 - (i) A clear appreciation of instructional skills.
 - (ii) A thorough knowledge of the appropriate syllabus.
 - (iii) An ability to judge whether a question is easy, average or difficult for a given group of candidates.

2. Short-answer items

- 2.1 The short-answer item is the only objective item type that requires the candidate to supply, rather than select, the answer. Its make-up consists of a question or incomplete statement to which the candidate responds by providing the appropriate words, numbers or symbols.

2.2 Examples

What is the **first** thing you must do if your vehicle breaks down on a motorway? _____

It is against the law to sound your horn in built up areas, between ____ pm and ____ am.

2.3 Rules for constructing short-answer items

- (i) State the item so that only a single brief answer is possible.

What appears to be a simple clear question to the item-writer can frequently be answered in many different ways.

- (ii) Start with a direct question and switch to an incomplete statement only when greater conciseness is possible.

The use of a direct question increases the likelihood that the problem will be clearly stated and that only one answer will be appropriate. Also incomplete statements tend to be less ambiguous when based on problems that were first stated in question form.

- (iii) The words to be supplied should relate to the main part of the statement.

Leave blanks only for key words or statements. Avoid asking the candidates to supply such words as 'the' and 'an'.

- (iv) Place the blanks at the end of the statement.

This permits the student to read the complete problem before he comes to the blank. If possible do not vary the length of space according to the answer, so that clues to the length of answer required are given.

- (v) Keep sentences short and unambiguous.

- (vi) For numerical answers indicate the degree of precision expected and the units in which they are to be expressed.

This will clarify the task to the student and make scoring easier. Where the learning outcome requires students to know the type of unit in common use and the degree of precision expected, this rule must of course be discarded.

- 2.4** There are two major problems in constructing short-answer items. First it is extremely difficult to phrase the question or incomplete statement so that only one answer is correct. Second, there is the problem of spelling. If credit is given only when the answer is spelled correctly, the poor spellers will be prevented from showing their true level of achievement. On the other hand, if attempts are made to ignore spelling during the whole process, there is still the problem of deciding whether the badly spelled word represents the intended answer.

- 2.5** Due to the weaknesses mentioned above, the short-answer item should be reserved for those special situations where supplying the answer is a necessary part of the learning outcome to be measured - for example, where problems are used requiring computational solutions, or where the intent is to have the students 'recall' the information, or where a selection-type item would make the answer obvious.

2.6 Examples	Comment
1. The person responsible to the Managing Director for departmental budgets is _____	Satisfactory
2. To find the split half reliability of a test you correlate the odd numbered questions with the _____ numbered questions.	Poor. The candidate needs only a hazy knowledge of the subject to make the correct response.
3. What is the square root of 16?	Satisfactory
4. What are the incorrect responses in a multiple-choice item called?	Poor. The correct answer is 'Distractors' but any number of answers might equally well be defended, eg incorrect alternatives, wrong answers, decoys, foils, etc.

2.7 When judging the quality of short-answer items use the following check-list.

1. Is the item realistic and practical?
2. Is the language appropriate for the level of the candidate?
3. Does the item require greater knowledge than most students could be expected to possess?
4. Does the item contain details which might reveal the correct response to the candidates?
5. Is the item free from ambiguities?
6. Is there only one correct answer?

Now write two or three short-answer items in the space provided below. Apply the check-list to your items. If you are satisfied, ask a colleague to apply the check-list to the items.

3. True/false

- 3.1** The true-false item is simply a statement which the candidate must judge as true or false. There are modifications of this basic form in which the student must respond yes or no, agree or disagree, right or wrong, fact or opinion, etc. Such variations are usually given the more general name of 'alternative-response' items. In any event, this item-type is characterised by the fact that only two responses are possible.

3.2 Examples

Are the following statements **true** or **false**.
Record your answer by placing a tick in the appropriate box.

It is forbidden to overtake any vehicle within the area of the zig-zag lines before a zebra crossing.

Ice on the road can sometimes be detected by a change of tyre noise.

True	False

3.3 Rules for constructing true-false items

- (i) Include only one central significant idea in each statement.

The main point of the item should be an important one, and it should be in a prominent position in the statement. The true-false decision should not depend on some subordinate point or trivial detail. The use of several ideas in each statement should generally be avoided because these tend to be confusing and are more apt to measure reading ability than the intended knowledge outcome.

- (ii) Word the statement so precisely that it can be judged unequivocally true or false.

True statements should be true under all circumstances, and yet free of qualifiers (words such as, may, possible, etc.) which might provide clues. This requires the use of words which are definite and precise, and the avoidance of such vague terms as 'seldom', 'frequently', and 'often'. Can you see why the second example in 3.2 above is poor? The same care must be taken of course, when preparing false items so that their falsity is not too readily apparent from the differences in wording.

- (iii) Keep the statements short and use simple language structure.

Short simple statements will increase the likelihood that the point of the item is clear, and that passing or failing it will be determined by the student's knowledge. As noted earlier, long involved statements tend to measure reading comprehension, which, of course, defeats the intended purpose of the measurement.

- (iv) Use negative statements sparingly and avoid double negatives.

Negative statements are frequently misread as positive statements because the 'no' or 'not' is so easily overlooked. Negative words should be underlined or put in capital letters. Double negatives are confusing, and such statements can usually be restated in positive form. (See 3.7 example 2).

- (v) Avoid extraneous clues to the answer.

There are a number of words which provide verbal clues to the truth or falsity of an item. Statements which include such absolutes as 'always', 'never', 'all', 'none', and 'only' tend to be false. By the same token, statements with qualifiers like 'usually', 'may', and 'sometimes' tend to be true. The length and complexity of the statement might also provide a clue. True statements tend to become longer and more complex than false ones because of the need for qualifiers.

- (vi) The item should be plausible enough to deceive the student whose knowledge is incomplete.

- 3.4** Contrary to popular belief, the true-false item is one of the most difficult items to construct. In most areas of knowledge, the more important statements must be qualified to make them absolutely true and the qualifiers provide obvious clues.
- 3.5** Since only two choices are possible, the uninformed student has a 50-50 chance of guessing the correct answer. This limits the range of scores on the test, and thus reduces its effectiveness as a measuring instrument.
- 3.6** Despite the limitations of the true-false item, there are situations where it should be used. Whenever there are only two possible responses, the true-false item, or some adaptation of it, is likely to provide the most effective measure. The best procedure is to use true-false items only when the multiple choice form of item is inappropriate.

3.7 Examples	Comment
1. The square root of 0.9 is 0.3. TRUE/FALSE	Satisfactory. Note that this is a common fallacy.
2. Correction for guessing is NOT a practice which should NEVER be used. TRUE/FALSE	Poor. Double negative makes the statement confusing. Note use of capital letters.
3. Older people are more difficult to train, are less adaptable to change, and are too old to learn. TRUE/FALSE	Poor. Too many ideas in the statement.
4. A test CANNOT be reliable unless it is valid. TRUE/FALSE	Satisfactory. The terms 'reliable' and 'valid' when used in this context are often confused.

3.8 When judging the quality of **true/false** items use the following check-list.

1. Is the item realistic and practical?
2. Does the item contain one central significant idea?
3. Is the item clearly true or clearly false to the able candidate?
4. Is the language appropriate for the level of the candidate?
5. Does the item contain extraneous clues to the correct answer?
6. Could the learning outcome to be measured be better tested with a different form of test item?

Now write two or three **true/false** items in the space provided below. Apply the check-list to your items. If you are satisfied, ask a colleague to apply the check-list to the items.

Progress test number one

(based on Sections 1, 2 and 3 of this booklet)

Are the following statements **True** or **False**? Record your answer in the appropriate box.

1. The short-answer item is the only objective item type that requires the candidate to supply, rather than select, the answer.

True	False

2. When providing space for the answer to a short-answer item the space should vary according to the length of the answer.

True	False

3. List **three** of the essential qualities required by a writer of objective test items.

- (i) _____
- (ii) _____
- (iii) _____

4. List **three** of the items from the check-list used to check the quality of short-answer items.

- (i) _____
- (ii) _____
- (iii) _____

5. List **three** of the items from the check-list used to check the quality of **true/false** items.

- (i) _____
- (ii) _____
- (iii) _____

6. List **three** words which are liable to provide verbal clues when writing **true/false** items.

- (i) _____ (ii) _____ (iii) _____

You can check your answers by referring to the back of this sheet.

Answers to progress test number one

1. **True** see para 2.1
2. **False** see para 2.3 (iv)
3. **Any three** see paras 1.1, 1.2, 1.3, 1.4, 1.5
4. **Any three** see para 2.7
5. **Any three** see para 3.8
6. **Any three** see para 3.3 (v)

4. Multiple-choice items

- 4.1** It is probably true that the multiple-choice test, with a minimum of four choices, is the most widely used instructionally respectable form of objective testing. Even subsets of “knowledge” such as terminology, conventions of the subject, methods of procedure or simple facts can be tested by sensitively prepared multiple-choice tests. This versatility enables the test constructor and the item-writers to operate upon one standard form of item and yet test all the various qualities as required by the instructional objectives.
- 4.2** The multiple-choice item consists of a stem, which presents a problem situation, and several alternatives, which provide possible solutions to the problem. The stem may be a question or an incomplete statement. The alternatives include the correct answer and several plausible wrong answers, called distractors. Their function is to distract those students who are uncertain of the answer.
- 4.3** The following items illustrate the use of both the question-form and the incomplete-statement form of multiple-choice item.

Incomplete-statement

A tachometer indicates

- A. road speed
- B. oil pressure
- C. engine speed
- D. battery charge

Question

What does a tachometer indicate?

- A. Road speed
- B. Oil pressure
- C. Engine speed
- D. Battery charge

Note in these examples that both stems pose the same problem. The question form is easiest to write and forces the item-writer to pose a clear problem but tends to result in a longer stem. An effective procedure for the beginner is to start with a question, and to shift to the incomplete statement only if greater conciseness can be obtained.

The alternatives in the above examples contain only one correct answer and the distractors are clearly incorrect.

- 4.4** Another type of multiple-choice item is the best-answer form in which the alternatives are all partially correct but one is clearly better than the others.

Example

A recall situation is **best** tested by a

- A. multiple-choice type test.
- B. short-answer type test.
- C. true/false type test.
- D. matching type test.

This type is used for more complex achievement, such as where the student must select the best method for doing something, the best reason for an

action, or the best application of a principle. Thus, whether the correct-answer or best-answer form is used will depend on the learning outcomes to be measured. Since any test is likely to contain items of both types, it is important that the directions tell the student to select the **best** answer.

- 4.5** The above examples also illustrate the use of four alternatives. Multiple-choice items typically include four or five choices. The larger number will, of course, reduce the student's chances of obtaining the correct answer by guessing. It is frequently difficult to obtain five plausible choices, however, and an item is not improved by adding an obviously wrong answer merely to obtain five alternatives. There is no reason why the items in a given test all need to have the same alternatives. Some might contain four and some five, depending on the availability of plausible distractors.

4.6 Rules for constructing multiple-choice items

- (i) Design each item to measure an important learning outcome.

Avoid testing for unimportant details, unrelated bits of information, and material that is irrelevant to the desired outcomes. Resist the temptation to increase item difficulty by resorting to the more obscure and less significant items of knowledge. Remember that each test item is expected to call forth student behaviour which will serve as evidence concerning the extent to which the instructional objectives have been achieved.

- (ii) Present a single, clearly formulated problem in the stem of the item.

The task set forth in the stem should be so clear that it is understood without reading the alternatives.

- (iii) State the stem of the item in simple, clear language.

The problem in the stem of a multiple choice item should be stated as precisely as possible and be free of unnecessarily complex wording and sentence structure. Complex sentence structure may make the item more a measure of reading comprehension than of the intended knowledge outcome. Another common fault in stating multiple choice items is to load the stem down with irrelevant and, thus, non-essential material.

- (iv) Put as much of the wording as possible in the stem of the item.

Avoid repeating the same material over again in each of the alternatives. It is of course, impossible to streamline all items, but economy of wording and clarity of expression are important goals to strive for in test construction.

- (v) State the stem of the item in positive form, wherever possible.

The use of negatively stated item stems all too often results from the ease with which such items can be constructed, rather than from the importance of the learning outcomes measured. Being able to identify

answers which do **not** apply provides no assurance that the student possesses the desired knowledge.

- (vi) Emphasise negative wording whenever it is used in the stem of an item.

There are instances when the use of negative wording is basic to the measurement of an important learning outcome. For example:

Knowing that you must **not** cross the street against a red light.

or

Knowing that you should **not** mix certain chemicals together.

are so important that they might be directly taught and directly tested. Where negative wording is used in the stem of an item, it should be placed near the end of the statement and emphasised by underlining or capital letters.

- (vii) Make certain that the intended answer is correct or clearly best.

When the correct-answer form of multiple-choice item is used, there should be only one correct answer and it should be unquestionably correct.

- (viii) Make all alternatives grammatically consistent with the stem of the item and parallel in form.

The correct answer is usually carefully phrased so that it is grammatically consistent with the stem. Where the item writer is apt to slip is in writing the distractors. Unless care is taken to check them against the wording in the stem and the correct answer, they may be inconsistent in tense, article, or grammatical form. A general step that can be taken is to avoid using the article 'a' or 'an' at the end of the stem of the item.

- (ix) Avoid verbal clues which might enable students to select the correct answer or to eliminate an incorrect alternative.

One of the most common sources of extraneous clues in multiple-choice items is to be found in the wording of the item. Here is a list of some of the verbal clues commonly found in items :

- (a) similarity of wording in both the stem and the correct answer,
 - (b) stating the correct answer in textbook language or stereotyped phraseology,
 - (c) stating the correct answer in greater detail,
 - (d) including absolute terms in the distractors
- (enables candidates to eliminate them as possible answers, because such terms are commonly associated with false statements, e.g. always, never, none, all, only).

(x) Make the distractors plausible and attractive to the uninformed.

The distractors in a multiple-choice item should be so appealing to the student who lacks the knowledge called for by the item that he selects one of the distractors in preference to the correct answer. The art of constructing good multiple-choice items depends heavily on the skillful development of effective distractors. There are a number of things that can be done to increase the plausibility and attractiveness of distractors. These are summarised below :

- (a) use the common misconceptions, or common errors of candidates as distractors.
- (b) state the alternatives in the language of the student.
- (c) use 'good' sounding words (eg accurate, important, etc.) in the distractors, as well as the correct answer.
- (d) make the distractors similar to the correct answer in both length and complexity of wording.
- (e) use extraneous clues in the distractors, such as stereotyped phrasing, scientific sounding answers, and verbal associations with the stem of the item. But don't overuse these clues, and beware of trick questions.
- (f) make the alternatives homogeneous. The difficulty of an item can be controlled by making the alternatives more homogeneous, ie making the candidate make finer discriminations.

(xi) Vary the relative length of the correct answer to eliminate length as a clue.

There is a tendency for the correct answer to be longer than the alternatives because of the need to qualify statements to make them unequivocally correct. In some cases, it is more desirable to make the alternatives approximately equal in length, by adjusting the distractors rather than the correct answer.

(xii) Avoid use of the alternative "all of the above" and use "none of the above" with extreme caution.

When the item-writer is having difficulty in locating a sufficient number of distractors, he frequently resorts to the use of "all of the above" or "none of the above" as the final option. These special alternatives are seldom used correctly and almost always render the item less effective than it would be without them. The inclusion of "all of the above" as an option makes it possible to answer the item on the basis of partial information. The alternative "none of the above" is probably most widely used with computational problems when these are presented in multiple-choice form.

(xiii) Vary the position of the correct answer in a random manner.

The correct answer should appear in each alternative position approximately an equal number of times, but it should not follow a

pattern that may be apparent to the person taking the test. When the alternative responses are numbers, they should always be placed in order of size, preferably in ascending order. This will eliminate the possibility of a clue, such as the correct answer being the only one that is not in numerical order.

- (xiv) Control the difficulty of the item either by varying the problem in the stem or by changing the alternatives

It is usually preferable to increase item difficulty by increasing the level of knowledge called for or by making the problem more complex.

- (xv) Make each item independent of the other items in the test.

Occasionally information given in the stem of one item will help in answering another item. This can best be remedied by a careful review of the items before they are assembled into a test.

- (xvi) Use an efficient item format.

The alternatives should be listed on separate lines, under one another, like the examples in this section. This makes the alternatives easy to read and compare. The use of letters in front of the alternatives is preferable to using numbers. This avoids possible confusion, when numerical answers are used in an item. When writing the item, follow the normal rules of grammar. If the stem of the item is a question, each alternative should begin with a capital letter and end with a full stop or other termination punctuation mark. The full stop should be omitted with numerical answers, however, to avoid confusing them with decimal points. When the stem is an incomplete statement, each alternative should begin with a lower-case letter and end with whatever terminal punctuation mark is appropriate.

- 4.7** The above sixteen rules for constructing multiple-choice items are stated rather dogmatically, to aid the beginner. As experience in test construction is obtained, it will soon be noticed that there are exceptions to some of the rules and that minor modifications may be desirable in others. Until such experience is gained, however, the novice will find that following these rules will assist him to produce items of an acceptable quality.

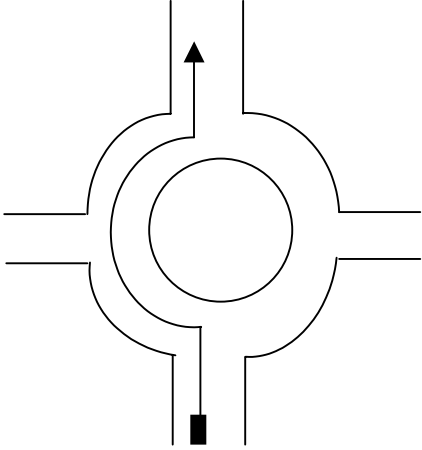
4.8 Examples

Comment

1. The paucity of probable but incorrect statements that can be related to a central idea pose a problem when constructing which one of the following types of test items ?
 - A. Short-answer
 - B. True/false
 - C. Multiple-choice
 - D. Essay

Poor. The stem of the item should be stated in simple, clear language.

Examples	Comment
<p>2. In objective testing, the term objective</p> <ul style="list-style-type: none"> A. refers to the method of identifying the learning outcomes. B. refers to the method of selecting the test content . C. refers to the method of presenting the problem. D. refers to the method of scoring the answers. 	<p>Poor. Put as much of the wording as possible into the stem. eg In objective testing, the term objective refers to the method of</p> <ul style="list-style-type: none"> A. identifying B. electing C. presenting D. scoring
<p>3. The recall of factual information can be best measured with</p> <ul style="list-style-type: none"> A. matching items. B. multiple-choice items. C. short-answer items. D. essay questions. 	<p>Satisfactory.</p>
<p>4. Which one of the following would you first consult to locate research articles on achievement testing ?</p> <ul style="list-style-type: none"> A. Journal of Educational Psychology B. Journal of Educational Measurement C. Journal of Consulting Psychology D. Review of Educational Research 	<p>Poor. The word research in both stem and the correct answer is apt to provide a clue to the uninformed candidate.</p>
<p>5. Achievement tests aid students to improve their learning by</p> <ul style="list-style-type: none"> A. encouraging them all to study hard. B. informing them of their progress. C. giving them all a feeling of success. D. preventing any of them from neglecting their assignments. 	<p>Poor. Including absolute terms (eg all, any of them) in the distractors enables candidates to eliminate them as possible answers, because such terms are commonly associated with false statements.</p>

Examples	Comment
<p>6. The function of a tachometer is to</p> <ul style="list-style-type: none"> A. indicate the engine speed in rpm. B. indicate road speed in mph. C. it indicates oil pressure in lbs/sq. in. D. shows whether or not the battery is charging. 	<p>Poor. Distractors C and D as worded do not fit the grammar of the stem.</p>
<p>7. On a 1" OS map a path is shown as a</p> <ul style="list-style-type: none"> A. single broken line. B. two parallel broken lines. C. dots and dashes. D. unbroken line. 	<p>Poor. Alternative A is the only one grammatically correct. It is usually unwise to complete a stem with the words 'a' or 'an'.</p>
<p>8.</p>  <p>You are about to enter a roundabout at 6 o'clock and wish to go forward from it at the second turning at 12 o'clock. You should</p> <ul style="list-style-type: none"> A. use left flasher entering the roundabout, then right, then left at the exit before the one to be taken. B. use left flasher all the way through. C. use left flasher at the exit before the one to be taken. D. use no flashers whatsoever. 	<p>Satisfactory. Perhaps a little too wordy. Note the use of diagram or sketch to provide reinforcement to stem.</p>

4.9 When judging the quality of multiple-choice items use the following check-list.

1. Is the item realistic and practical?
2. Does the item contain one central significant idea?
3. Is it written in simple, clear language appropriate for the level of the candidate?
4. Is there as much wording as possible in the stem of the item?
5. Is the stem stated in a positive form?
6. If negative wording has been used, has it been emphasised adequately?
7. Is the correct answer, unquestionably correct?
8. Are all the alternatives grammatically consistent with the stem of the item?
9. Does the item contain extraneous clues to the correct answer?
10. Are the distractors plausible to the uninformed candidate?
11. If the alternative "none of the above" has been used, has it been used correctly?
12. Is each item in the test independent of other items in the same test?

Now write two or three multiple-choice items in the space provided. Apply the check-list to your items. If you are satisfied, ask a colleague to apply the check-list to the items.

Progress test number two

(based on Sections 1, 2, 3 and 4 of this booklet)

Instructions:- Each question has a number of alternative answers **only one of which is correct.**

You are required to select the correct alternative.

Record your answer by placing a tick in the appropriate box.

1. The stem of a multiple choice item

<input type="checkbox"/>	A. answers the question.
<input type="checkbox"/>	B. provides the answer.
<input type="checkbox"/>	C. asks the question.
<input type="checkbox"/>	D. provides the distractors.
<input type="checkbox"/>	E. Provides the responses.

2. Which of the following describes the question-form used in Question 1?

<input type="checkbox"/>	A. Multiple-choice short-answer.
<input type="checkbox"/>	B. Multiple-choice incomplete statement.
<input type="checkbox"/>	C. Multiple-choice question.
<input type="checkbox"/>	D. Multiple-choice best answer.

3. The lack of probable wrong answers will cause the greatest difficulty when constructing

<input type="checkbox"/>	A. short-answer items.
<input type="checkbox"/>	B. true/false items.
<input type="checkbox"/>	C. essay items.
<input type="checkbox"/>	D. multiple-choice items.

4. All of the following are desirable practices when preparing multiple-choice items **except**

<input type="checkbox"/>	A. stating the stem in positive form.
<input type="checkbox"/>	B. using a stem that could function as a short-answer item.
<input type="checkbox"/>	C. shortening the stem by lengthening the alternatives.
<input type="checkbox"/>	D. underlining certain words in the stem for emphasis.
<input type="checkbox"/>	E. making alternatives grammatically consistent with the stem.

5. Why should negative terms be avoided in the stem of a multiple-choice item?

<input type="checkbox"/>	A. They may be overlooked.
<input type="checkbox"/>	B. They tend to increase the length of the stem.
<input type="checkbox"/>	C. They make the construction of alternatives difficult.
<input type="checkbox"/>	D. They make the scoring more difficult.

6. The alternatives in a multiple-choice item should be

- | | | |
|--|----|----------------------------------|
| | A. | exactly the same length. |
| | B. | as equal in length as possible. |
| | C. | longer than the correct answer. |
| | D. | shorter than the correct answer. |

7. Which of these statements is most correct ?

- | | | |
|--|----|---|
| | A. | Five choices is better than four. |
| | B. | If you cannot find three plausible distractors make do with two. |
| | C. | Always include 'none of the above' as your last choice. |
| | D. | Offering choices means that the student does not need to waste time thinking. |

8. List **five** of the items from the check-list used to check the quality of multiple-choice items.

- (i) _____
- (ii) _____
- (iii) _____
- (iv) _____
- (v) _____

You can check your answers by referring to the back of this sheet.

Answers to progress test number two

1. **C** see para 4.2
2. **B** see para 4.3
3. **D** see paras 4.5, 4.6 (x)
4. **C** see paras 4.6 (iv), 4. 8 Example 2
5. **A** see para 3.3 (iv)
6. **B** see para 4.6 (xi)
7. **A** see para 4.5, see also 3.6, 4.6 (xii)
8. **Any five** see para 4.9

5. Matching items

5.1 The matching item is simply a modification of the multiple-choice form. Instead of listing the possible responses underneath each individual stem, a series of stems, called **premises**, is listed in one column and the **responses** are listed in another.

5.2 Example

Directions : Column 1 lists the names of some of the symbols found on a 1/50000 Ordnance Survey Map.

Column 2 lists a number of these symbols.

In the box provided write the letter of the symbol in column 2 which corresponds to each name in column 1.

COLUMN 1 (Names)

COLUMN 2 (Symbols)

1. Wind pump

A



2. Spot height

B



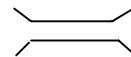
3. Church with tower

C



4. Triangulation pillar

D



5. Church with spire

E



F



6. Pylon

G



7. Bridge

H



1	2	3	4	5	6	7

5.3 In the example, it can readily be seen that seven separate multiple-choice items could have been used instead. Unless all of the responses in a matching item serve as plausible alternatives for each premise, the matching format is clearly inappropriate. In each subject-matter area there are relatively few situations where this condition can be met.

5.4 Rules for constructing matching items

- (i) Include only homogeneous material in each matching item.

In the example, we included only Ordnance Survey symbols and their names. Such homogeneity is necessary to make all responses plausible.

- (ii) Use a larger, or smaller, number of responses than premises, and permit the responses to be used more than once.

Both an uneven match and the possibility of using each response more than once reduces the guessing factor. Remember, correct use of the matching form requires that all responses serve as plausible alternatives for each premise. This of course, that each response is suitable for re-use within the same item.

- (iii) Specify in the directions the basis for matching and indicate that each response may be used once or more than once.

This will clarify the task for all candidates and prevent any misunderstanding. Care should be taken, however, not to make the directions too long and involved. Note the instructions given before the example in 5.2.

5.5 Examples

Comment

1. Match the units with the weapon calibres.

A. Missile Regiment	1. 175 mm
B. Heavy Regiment Royal Artillery	2. 7.62 mm
C. Field Regiment Royal Artillery	3. 155 mm
D. Medium Regiment Royal Artillery	4. 8 in
E. Infantry Battalion	5. 105 mm

Poor. Items are not homogeneous (infantry calibre should be easily guessed). The names Heavy and Medium are prompts. The lists are equal in length and so only four of the five need be known.

1	2	3	4	5

Examples

Comment

2. Match the correct road marking with the instruction to the driver. All these markings are located in the centre of the carriageway.



A. No crossing

B. Lane Line

C. Centre line

D. Warning line



A	B	C	D

Satisfactory. Perhaps the markings are not quite large enough

6. Multiple-response items

All the points that have been made about multiple-choice items apply to multiple-response items, except that instead of one of the alternatives being **correct or best**, two or more of the are **correct or best**.

The ideal in multiple-choice items is one of five alternatives being correct or best. In multiple-response it is two out of ten or three out of fifteen, and so forth.

They are only infrequently used, either because it is not possible to think of two or more correct or best answers, and/or the number of distractors required defeats the item writer. They can be a valuable addition to a test providing that it is made abundantly clear to the respondent that he has to choose more than one alternative. There are numerous instances of respondents failing to choose more than one alternative when asked to do so, and thus not demonstrating their learning. Usually this is because of poor written instructions in the test paper.

Example

The playwright William Shakespeare wrote:

- (a) The Maid's Tragedy;
- (b) Waiting for Godot;
- (c) The Lady's not for Burning;
- (d) As You Like It;
- (e) The Importance of Being Earnest;
- (f) Roar Like a Dove;
- (g) Under Milk Wood;
- (h) Romeo and Juliet
- (i) Butter in a Lordly Dish;
- (j) Whose Life is it Anyway?

✓
✓

Summary

The **advantages** of using multiple-response test items are that they:

- ◆ Are purely objective;
- ◆ Reduce guessing;
- ◆ Can be designed to test a variety of learning principles;
- ◆ Tend to be more reliable than some other item forms.

Their **disadvantages** are that they:

- ◆ Tend to develop items that measure facts alone;
- ◆ Make it difficult to construct enough plausible alternatives;
- ◆ Consume a lot of space.

Some **suggestions** for construction:

- ◆ The ratio of 2:10, 3:15 **correct or best** answers in relation to the total number of alternatives is recommended;
- ◆ Design alternatives so that most of them are plausible;
- ◆ Avoid:
 - Wording that serves as clues
 - Changes in parts of speech
 - Mixing singular and plural
 - The use of 'none of the above' or 'all of the above';
- ◆ Vary the position of the correct responses to avoid creating a pattern of correct answers;
- ◆ Make the alternatives as nearly equal in length as possible; be consistent; if the answer is a number, use all numbers and place them in sequence.

Some **guidelines** to use when judging the quality of multiple-response items:

- ◆ Is the item realistic and practical?
- ◆ Does the item contain one central significant idea?
- ◆ Is it written in simple clear language appropriate for the level of the respondent?
- ◆ Is there as much wording as possible in the stem of the item?
- ◆ Is the stem stated in a positive form?
- ◆ If negative wording has been used has it been emphasised adequately?
- ◆ Are the correct answers unquestionably correct?
- ◆ Are all the alternatives grammatically consistent with the stem of the item?
- ◆ Does the item contain extraneous clues to the correct answer?
- ◆ Are the distractors plausible to the uninformed respondent?
- ◆ If the alternative 'none of the above' has been used, has it been used correctly?
- ◆ Is each item in the test independent of other items in the same test?
- ◆ If numbers have been used are they in sequence?