-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- **7180010** **-Session-1990-91**
-Superclass- **RB**

-Title- **USING BASIC NUMBER SKILLS**

-DESCRIPTION-

Purpose

This module is designed to develop the student's skills and confidence in handling numbers.

Preferred Entry Level

No formal entry requirements.

Outcomes

The student should:

1. interpret numbers;
2. add numbers;
3. subtract numbers;
4. multiply numbers;
5. divide numbers.

Assessment Procedures

Acceptable performance in the module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.

The following abbreviations are used below:

PC Performance Criteria
IA Instrument of Assessment

Note: The Outcomes and PCs are mandatory and cannot be altered. The IA may be altered by arrangement with SQA. (Where a range of performance is indicated, this should be regarded as an extension of the PCs and is therefore mandatory.)

OUTCOME 1 INTERPRET NUMBERS

PCs

(a) The oral expression of a written digital whole number is correct in terms of the digits and their place values.
(b) The written digital expression of a whole number given orally is correct.
(c) The oral expression of a written digital number given to two decimal places is correct in terms of the digits and their place values.
(d) The written digital expression of a number given orally to two decimal places is correct.
(e) The written digital expression of an amount of money given in words is correct.
(f) The written expression of an amount of money given in digital form is correct.

IA Short Answer

The student will be required to undertake five Short Answer questions for each Performance Criterion.

The numbers used in each question should not exceed five digits. In Performance Criteria (e) and (f), the number of pence in the amount should, in two questions, be less than ten. In addition, in Performance Criterion (f), two questions should involve numbers expressed to only one decimal place.

The student will be required to complete 4 out of 5 questions correctly in each case.

Satisfactory performance will be achievement of all the Performance Criteria.

OUTCOME 2 ADD NUMBERS

PCs

(a) The addition of whole numbers is correct.
(b) The addition of numbers expressed to two decimal places is correct.
(c) The addition of a combination of whole numbers and numbers expressed to up to two decimal places is correct.

IA Calculation Exercise

The student will be required to:

(i) add three whole numbers, each calculation involving both internal carry and generation of a new column, the answer being of no more than five digits.
(ii) add three numbers expressed to two decimal places; each calculation involving carrying from decimals to whole numbers, the answer having no more than five digits.
(iii) add three numbers, at least one of which is a whole number and at least one of which is expressed to two decimal places. The numbers should not be presented as a column addition. The answer should have no more than five digits.

Five calculations will be undertaken for each of (i), (ii) and (iii). The student will be required to complete 4 out of 5 calculations correctly in each case.

Satisfactory performance will be achievement of all the Performance Criteria.

OUTCOME 3 SUBTRACT NUMBERS

PCs
(a) The subtraction of whole numbers is correct.
(b) The subtraction of numbers expressed to two decimal places is correct.
(c) The subtraction of numbers which are expressed to different numbers of decimal places is correct.

IA Calculation Exercise

The student will be required to:

(i) subtract whole numbers, each with no more than five digits and each calculation involving at least one decomposition/borrowing, the answer to be positive.
(ii) subtract numbers expressed to two decimal places, each calculation involving at least one decomposition/borrowing which in two cases should cross the decimal point, the answer to be positive.
(iii) subtract numbers expressed to O,1 or 2 decimal places, two calculations involving the smaller number being expressed to at least one more decimal place than the larger number, the answer to be positive.

Five calculations will be undertaken for each of (i), (ii) and (iii). The student will be required to complete 4 out of 5 calculations correctly in each case.

Satisfactory performance will be achievement of all the Performance Criteria.

OUTCOME 4 MULTIPLY NUMBERS

PCs

(a) The multiplication of whole numbers is correct.
(b) The multiplication of two numbers, one of which is expressed to one or two decimal places and the other which is a whole number, is correct.
(c) The multiplication of two numbers, both expressed to one decimal place, is correct.

IA Calculation Exercise

The student will be required to:

(i) multiply numbers of at least two digits to produce an answer of no more than five digits.
(ii) multiply together a whole number and a number expressed to one or two decimal places having at least two digits, the answer being no more than five digits. On two occasions, the whole number should be multiplied by the other number.
(iii) multiply together two numbers expressed to one decimal place, the answer not being more than five digits.

Five calculations will be undertaken for each of (i), (ii) and (iii). The student will be required to complete 4 out of 5 calculations correctly in each case.

Satisfactory performance will be achievement of all the Performance Criteria.

OUTCOME 5 DIVIDE NUMBERS

PCs

(a) Division by a single digit whole number is correct.
(b) Division by the number 10 is correct.
(c) Division by the number 100 is correct.
(d) The calculation of 1/2 and 1/4 of a whole number is correct.

IA Calculation Exercise

The student will be required to:

(i) for PC (a), divide numbers up to four digits with O or 1 decimal place, the answer being exact up to two decimal places.

(ii) for PC (b), divide numbers up to four digits with O or 1 decimal place.

(iii) for PC (c), divide numbers up to four digits with O, 1 or 2 decimal places.

(iv) for PC (d) divide numbers of up to four digits, the answer not being an exact whole number but being exact up to two decimal places eg. include 94.2 divided by 4 = 23.55 but exclude 94.21 divided by 4 = 23.5525.

Five calculations will be undertaken for each of (i), (ii), (iii) and (iv). The student will be required to complete 4 out of 5 calculations correctly in each case.

Satisfactory performance will be achievement of all the Performance Criteria.

The following sections of the descriptor are offered as guidance.
They are not mandatory.

CONTENT/CONTEXT

In this module, calculators should only be used to check calculations. They should not be used for summative assessment.

Corresponding to Outcomes 1-5:

Contexts chosen should be related to the interests of the students. Use of calculators is strongly recommended. Practical counting materials should be used wherever necessary to assist the acquisition of fundamental concepts of numbers.

1. Contexts should involve (a) situations where the student would naturally read aloud a number which was written down and (b) situations where the student would have to write down a number which had been stated orally.

   Examples of (a) could include:

   - reading numbers and money aloud from a newspaper, such as the attendance at a football match and the prices quoted in advertisements;
   - reading the numbers and money in receipts, bills, catalogues and holiday brochures;
   - reading items from hobby magazines relevant to the student.

   Examples of (b) could include:

   - writing down dictated numbers prior to carrying out addition or other calculations;
   - writing down an amount of money stated in person, on television or over the telephone;
   - writing down a reference number, telephone number, or street number.

2-5. Some calculations (a) should be presented in the format of the calculation, others (b) should be presented as explicit instructions and some (c) should be given in context.

Examples of (a)

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   472
  5.27        87
+ 0.56       -46
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Examples of (b)

Add together 472, 5.27 and 0.05
find one half of 420
Subtract 47 from 86

Contexts for (c) could include:

- purchase of items from a catalogue
- calculation of sporting statistics
- checking of bills and receipts.

In each case, the nature of the calculations should be made clear.

SUGGESTED LEARNING AND TEACHING APPROACHES

For the students to grow in confidence, opportunities for regular practice in the basic skills must be provided. Skills should be exercised as often as possible in simple, problem solving situations and not exclusively in a mechanical context.

To provide stimulation and motivation, a variety of learning situations should be created. Examples could exploit number puzzles, calculator games, computer programs and games and problems closely related to the needs of life and work.

The student should maintain a folio/log of completed work in which relevant information is included.