

TEACHER'S NOTES

Using Mathematics 3 (Acc 3)

As stated in the Higher Still Arrangements document all content should be within a context and it is suggested that contexts be varied. An attempt has been made to provide a variety of contexts, within all the outcomes, which will be familiar to most students.

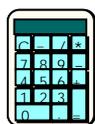
It is also stated in the Arrangements that students should experience calculations without a calculator. There is an increasing emphasis in all mathematics courses on mental and pencil and paper calculations, indeed external examinations at all levels of Standard Grade and Higher Still will have a non-calculator paper. There is no external assessment at Access level and the internal assessment allows access to a calculator. It is therefore up to teachers in the classroom to ensure that all students are able to perform simple calculations without a calculator. If, in the case of multiplication and division, some students have difficulty remembering their tables, it is expected that they will have access to a multiplication square.

The support material is designed to be teacher-led. Although worked examples have been included, there is no intention that the material should be used for individualised learning. It is unlikely that in most mainstream secondary schools there will be a class which contains only students working at Access 3 level. These students are more likely to be within a class working at Intermediate level or perhaps a Standard Grade class. In this case, it is suggested that, wherever possible, use should be made of cooperative teaching to ensure that students working at Access 3 are able to be supported within the classroom.

At all times students should be encouraged to set out working, i.e. to show clearly the operation which was used. Activities should be tailored to suit the experience of the individual.

For many students, it is the language of mathematics which is the barrier to learning, e.g. 'how much', 'find the total', 'the sum', all mean to add. A Wordbank has been included to try to help students through the language barrier. A list of terms has been provided along with the appropriate operation. The list is not exhaustive.

Symbols have also been used to assist students:



the calculator symbol indicates when a calculator should be used;



the reading symbol and a **different font** indicate when some advice/help is being given



the writing symbol indicates when students are expected to write.

In outcome 1 some students may still require to use concrete materials. This should be encouraged where teachers feel that it will reinforce the concept. Students will need to be reminded how to interpret the calculator display. A wall chart showing common fraction and percentage equivalencies may also be useful.

In outcome 2 students will require to be taught how to draw and interpret the various types of graphs. Teachers should stress the importance of title and labels and the correct positioning of scales on the axes. All activities of data collection and display should be tailored to suit the experience of individual students. Exercise 5 is optional and contains no new content. If students are to complete Exercise 5, teachers will need to organise the collection of information over a period of a few weeks prior to students tackling the work. This is an optional exercise and the class teacher should decide whether or not it is appropriate for their students. Worksheet 4 directs students to “ask the teacher what to do next” allowing teachers the choice of completing Exercise 5 or moving directly to Exercise 6. It is expected that some of the work on route planning is done using local maps and that some graph work will be based around the collection of data in other areas of the curriculum, such as Science and Social Subjects. Exercise 7 provides some extension work and Exercise 8 would benefit from group discussion.

In outcome 3 the emphasis should be on practical work wherever possible. Students should have access to a shape stencil for use in the tiling exercises. If stencils are not available then the shape template included should be copied onto stiff cardboard and a stencil or shape templates made from it for student use. It is suggested that students should have the opportunity to handle everyday solids such as drink cans, shoe boxes etc., to deconstruct packages to see their nets and to construct cubes and cuboids from their nets.

In outcome 4 diagrams are provided of different number lines allowing practice of reading scales, but the emphasis should again be on developing the practical skill of reading the scales on everyday measuring devices e.g. kitchen scales, thermometers and measuring jugs. Again, wherever possible, work should link in with other areas of the curriculum and should use local maps etc. to cover the content of interpreting scales on maps and plans.

An attempt has been made to make the contents ‘neutral’ and thereby allow the resource to be used in all types of centres, not just schools. However, this was not always possible and centres other than schools may have to adapt some questions.

Assessment

It is expected that the approach to assessment at Access 3 level is outcome by outcome. Outcome assessments take the form of a closed book test. There is no specified time limit for each assessment. It is expected that teachers will use their professional judgement for each individual student.

Students are not required to demonstrate competence across outcomes, although the opportunity should be taken to assess outcomes together where this would be appropriate and would not place the student at a disadvantage. For example, if two outcome assessments are short then it could be more practical to assess them together.

It is assumed that students will have access to a calculator. Students who are used to working with concrete material or a multiplication square should be allowed to do so if teachers feel that it would be beneficial.

Further advice on assessment is given within the National Assessment Bank for Using Mathematics 3 (Acc 3).