PART 4

REVISION GUIDANCE

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PART 4 INTRODUCTION

WHEN SHOULD WE DO REVISION?

Many topics in mathematics are interlinked and depend on previous knowledge and skills. Revision needs to be a continuous process, not merely pre-test cramming. The planning structure recommended by the National Numeracy Strategy includes revisiting work during the year. Revision can take the form of quickly recapping a topic before moving on to new work. It is also possible to use the oral mental work in some lessons to keep basic mathematical facts and techniques on the boil.

YEAR 7 PROGRESS TEST

Schools should enter all pupils who did not achieve Level 4 at age 11 for the Year 7 progress test. In 2001, the progress test was the same test as the 2001 Key Stage 2 National Curriculum test in mathematics. Teachers in Key Stage 3 may not be familiar with this test, although there are some similarities with the Key Stage 3 test in mathematics.

The progress test will be taken in May. The test consists of a mental arithmetic test delivered from an audiotape and two written papers. Calculators are not permitted on written paper A, but can be used on written paper B.

Both written tests cover National Curriculum mathematics Levels 3 to 5.

QCA ANALYSIS OF PUPILS' PERFORMANCE IN RECENT KEY STAGE 2 TESTS

QCA have analysed pupils' performance on National Curriculum tests to identify the most common errors made by pupils who were awarded Level 3 on Key Stage 2 tests. In order to help these pupils attain Level 4 in mathematics, Year 7 teachers need to concentrate on the following topics.

MENTAL ARITHMETIC

- mental addition and subtraction of two- and three-digit numbers
- calculations involving the conversion of metric units
- multiplication by 10 and 100, and questions such as '60 × 40'

USE OF LANGUAGE

- continual revision of the use of mathematical vocabulary; many pupils, for example, did not know perimeter, pentagon, prime and parallel
- word problems in written and verbal format

NUMBER AND ALGEBRA

- writing large numbers, and ensuring a sound understanding of place value
- presenting calculations in both horizontal and vertical formats
- a mix of questions, both numerical and in context
- multiplication as the inverse of division
- division questions involving remainders

- 'open' number sentences involving division, such as 527 ÷ ? = 31, and knowing that dividing by the 'answer' gives the missing term
- decimals beyond the contexts of money and measures
- percentage as the number of parts per hundred, for example that 40% means 40 parts per hundred, and that this is equivalent to the fraction 40 over 100
- estimating answers prior to calculating
- encouraging pupils to use jottings to support calculations

MEASURES, SHAPE AND SPACE

- calculations involving seconds, minutes and hours
- the accurate use of rulers and protractors
- reading numbers and measurements from scales
- solving harder area problems beyond counting squares; pupils need to know, for example, that the area of a right-angle triangle is half that of a rectangle

HANDLING DATA

- interpreting and using information from tables or charts

USE OF CALCULATORS

- deciding which mathematical operation and method of calculation (mental, written or calculator) to use to solve problems
- keying in numbers that have been converted to a decimal, such as those involving time

GENERAL

- encouraging pupils to explain and refine their thinking

These objectives have all been built into Springboard 7, and teachers need to take every opportunity to reinforce this learning.

PREPARATION FOR THE PROGRESS TEST

There will be some significant differences in Year 7 pupils' preparation in the run-up to the progress test when compared with those in Year 6. In Key Stage 2, for example, pupils have a dedicated daily mathematics lesson throughout the year. This will probably not be the case in Key Stage 3. It is therefore essential that past work is revised regularly. It is also probable that mathematics teachers do not teach other subjects, giving fewer opportunities to make links with mathematics at other times of the week. Finally, at Key Stage 2 all pupils are preparing for the same test. This is less likely to be the case in Year 7 classes.

Always paying attention to the following points will help you in your teaching and the pupils in their learning.

- Use direct teaching to emphasise specific aspects of mathematics

  This includes telling pupils how to interpret a graph; explaining new ideas and mathematical vocabulary; demonstrating how to use a protractor correctly; instructing pupils in how to carry out a new method of calculation; and using appropriate resources to help pupils visualise ideas and develop concepts.

- Play a central role as teacher

  You need to engage pupils in discussion, encouraging them to describe strategies that they use and to compare them with the strategies of others.

- Consolidate mental calculation both orally and recorded in written form

  You can use a 10-minute oral mental session in lessons to practise recall and application of number facts. In some lessons you should set aside a substantial part of the time to teach and practise mental strategies.

- Ensure that pupils understand and use mathematical vocabulary

  You should make sure pupils have a good grasp of mathematical vocabulary and notation. Pupils should understand key mathematical words and symbols and use them correctly in oral and written work. You will find the booklet *Mathematical Vocabulary* helpful: your school received copies of this booklet in March 1999 at the same time as the *Framework for teaching mathematics from Reception to Year 6.*

- Give pupils practice at interpreting questions

  You should focus on both the mathematical vocabulary and the language typically used in mathematics questions. Pupils need to be taught how to tackle word problems set in context, and to recognise which mathematical operations are required.

- Use errors from previous work as key teaching points

  This technique is the key to assessing what pupils know, and in planning subsequent work to move learning forward and raising standards. Talk about common errors with pupils.

- At the end of each lesson, emphasise the main learning points and assess pupils' progress

  Work with pupils to sort out misconceptions and identify progress, to summarise the key facts and ideas and what needs to be remembered. Discuss the next steps, and set work to do at home.

- Teach pupils to check the accuracy of their results

  Show pupils calculations that are clearly wrong. Encourage them to approximate, and to say why the calculations are wrong.

Throughout the year, you should:

- give pupils practice at working test questions from previous Key Stage 2 tests (some are included in the assess and review materials in part 3 of Springboard 7);
- ask pupils which topics they feel most confident about and least confident about, and practise the latter;
- and give pupils practice in completing work within a restricted period of time.

To make sure that your pupils are able to perform to their full potential in a test, check that they are aware of the need to:

- listen carefully to the tapes of mental tests and make sure that the correct box on the answer sheet is used to record answers to the questions;
- try as many questions as possible on the written tests, emphasising that they may be able to do some of the later questions on a paper even if they find some earlier questions difficult;
- show appropriate working in questions, remembering that a mark can often be obtained by showing the method or mathematical operation used;
- use calculation methods with which they are confident;
- use a calculator on Paper B when it is quicker and appropriate to do so;
- and always check their work.

Springboard 7 contains examples of previous Key Stage 2 mental tests and written questions at the end of each half term. At the end of the second term you should use last year's end of Key Stage 2 test to review progress and to identify misconceptions, which must be addressed quickly.

Previous tests are available on the Testbase CD produced by QCA/Testbase and published by Testbase/Stanley Thornes.

They are obtainable from:
Testbase
PO Box 208
Newcastle on Tyne
NE3 1FX
Tel 0870 9000 402.

The CD is free, but registration codes are required. Each key stage subject costs £25.

A limited number of copies of previous tests are available from:

QCA Publications
PO Box 99
Sudbury
Suffolk
CO10 6SN
Tel 01787 884444
Fax 01787 312950

Using these materials can help pupils to see what they know and can do, review and extend their learning towards Level 4, give them experience of the types of questions included in the tests and help them become familiar with the format and timing of the tests.