

The National Numeracy Strategy

SAMPLE
YEAR
BOOSTER
LESSONS

6

Mathematics booster lessons
for Year 6

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Introduction

BOOSTER LESSONS

SAMPLE YEAR 6 BOOSTER LESSONS

This book contains 12 sample lesson plans for you to use with Year 6 booster groups. They are designed to reflect the mathematical content and approaches to teaching that have proved particularly helpful to children who need intensive targeted support to reach level 4 in the Key Stage 2 national tests.

Experience has shown that many children currently operating just under level 4 in Year 6 can make the progress required to catch up, and that booster classes can help you to provide the necessary help and support. It is crucial for these children to reach the expected standard before entering secondary school if they are to fulfil their potential in the subject and succeed in GCSE mathematics.

LESSON PLANS

All lessons follow the three-part model developed by the National Numeracy Strategy. The plans list teaching objectives, vocabulary, resources, teaching points and key questions. Each lesson ends with a key statement for children to remember. There is a substantial proportion of direct teaching in which children are expected to participate.

All the general principles of effective mathematics teaching apply to these lessons. Some elements are specially important for booster classes: a step-by-step approach; built-in consolidation and frequent summaries; the expression of the same mathematical ideas in a variety of ways; the reinforcement of key mathematical vocabulary; and encouraging children to spell out and articulate their mathematics. Less emphasis than usual is given to differentiation as the lessons are targeted at a specific group in Year 6. This doesn't mean that the pitch of the lessons is automatically right for your group of children. You will need to adjust them according to your children's current attainment levels, their progress and the responses they make.

CONTENT

The materials provide considerable support in the areas covered but will not do all your preparation for you. If you follow them, they will give you a firm structure to guide your teaching. The mathematical content of the sample lessons focuses on identified areas of weakness in the upper years of Key Stage 2, particularly word problems, the use of calculators, fractions, decimals and percentages, and ratio and proportion.

Some of the lessons follow on from each other. There are two lessons on money and two on time. Most lessons provide opportunities for children to consider whether to use a calculator and to practise calculator skills, especially in the context of word problems. It is essential that children can use a calculator effectively and accurately if they are to tackle the B paper of the Key Stage 2 national test with success.

You should note that these materials **do not** aim to provide a comprehensive catch up programme. They are no more than the sample lesson plans they claim to be. You are the best person to decide what will work best with the children you teach.

Lesson Objectives

Lessons 1 - 3

and links with the *Framework*

Key objectives in the *Framework* are in **bold red type**.

Information about how yearly teaching programmes relate to the National Curriculum levels can be found on page 42 of the Introduction to the *Framework*.

Objectives for the main part of each lesson

Linked to the Y5 teaching programme

Working towards these objectives from the Y6 teaching programme

1 **Order of operations**
 Begin to select the correct key sequence to carry out calculations involving more than one step.

Develop calculator skills and use a calculator effectively. Begin to select the correct key sequence to carry out calculations involving more than one step, for example, $8 \times (37 + 58)$.

Develop calculator skills and use a calculator effectively. Start to use the memory and select the key sequence to carry out calculations involving more than one operation including brackets.

2 **Inverse operations**
 Use inverse operations

 Decide whether to do a calculation in your head, on paper or with a calculator.

Check with the inverse operation when using a calculator.

 Choose and use appropriate number operations to solve problems, and appropriate way of calculating – mental, mental with jottings, written methods, calculator.

Check with the inverse operation when using a calculator.

 Choose and use appropriate number operations to solve problems, and appropriate way of calculating – mental, mental with jottings, written methods, calculator.

Have a feel for the approximate size of an answer and check it.

Develop calculator skills and use a calculator effectively. Have a feel for the approximate size of an answer, and check it by performing the inverse calculation or by clearing and repeating the calculation.

Develop calculator skills and use a calculator effectively. Have a feel for the approximate size of an answer after a calculation, and check it appropriately.

3 **Rounding and approximations**
 Use vocabulary of estimation and approximation

Use the vocabulary of estimation and approximation

Use the vocabulary of estimation and approximation.

Estimate by approximating then check the result.

Estimate calculations by approximating (round to nearest 10 or 100), then check result.

Estimate calculations by approximating (round to nearest 10, 100 or 1000), then check result.

Use trial and improvement methods.

Lesson Objectives

Lessons 4 – 6

and links with the *Framework*

Key objectives in the *Framework* are in **bold red type**.

Objectives for the main part of each lesson

Linked to the Y5 teaching programme

Working towards these objectives from the Y6 teaching programme

4 Fractions and decimals

Recognise the equivalence between decimal and vulgar fractions.

Relate fractions to their decimal representations.

Recognise the equivalence between the decimal and fraction forms of one half, three quarters and tenths and hundredths.

Recognise the equivalence between the decimal and fraction forms of one half, one quarter, three quarters, one eighth, and tenths, hundredths and thousandths. Begin to convert a fraction to a decimal using division.

Order a set of decimal numbers.

Order a set of numbers or measurements with the same number of decimal places.

Order a revised set of numbers or measurements with up to three decimal places.

Develop calculator skills effectively.

Develop calculator skills effectively.

Develop calculator skills effectively.

5 Percentages

Divide whole numbers by 10.

Understand percentages as the number of parts in every 100.

Express simple fractions, such as $\frac{1}{2}, \frac{1}{4}, \frac{3}{4}$ as percentages.

Express simple fractions such as one half, one quarter, three quarters, one third, two thirds, and tenths and hundredths, as percentages.

Express one half, one quarter, three quarters and tenths and hundredths, as percentages.

Find percentages of quantities.

Find simple percentages of small whole-number quantities.

Begin to understand percentage as the number of parts in every 100 and find simple percentages of small whole-number quantities.

6 Calculators and money

Key in amounts of money and interpret the outcome of calculations involving money.

Develop calculator skills and use a calculator effectively. Key in and interpret the outcome of calculations involving sums of money.

Develop calculator skills and use a calculator effectively. Key in and interpret money calculations.

Lesson Objectives

Lessons 7 - 12

and links with the Framework

Key objectives in the Framework are in **bold red type**.

Objectives for the main part of each lesson

Linked to the Y5 teaching programme

Working towards these objectives from the Y6 teaching programme

7 **Money problems**
 Familiarise children with the procedure to solve money word problems.

Identify and use appropriate operations (including combinations of operations) to solve word problems involving numbers and quantities based on 'real life' money or measures, using one or more steps. **Explain methods and reasoning.**

Use all four operations to solve simple word problems involving numbers and quantities based on 'real life' money and measures, using one or more steps. **Explain methods and reasoning.**

8 **Scale**
 Solve simple problems involving ratio and proportion.

Solve simple problems using ideas of ratio and proportion.

Solve simple problems involving ratio and proportion.

9/10 **Time 1 & 2**
 Solve simple word problems involving time, initially one step.

Use all four operations to solve simple word problems involving numbers and quantities based on measures (including time), using one or more steps. **Explain methods and reasoning.**

Identify and use appropriate operations (including combinations of operations) to solve word problems involving numbers and quantities based on measures (including time), using one or more steps. **Explain methods and reasoning.**

Use a calculator effectively.
 Solve simple word problems involving the calendar.

Develop calculator skills and use a calculator effectively.

Develop calculator skills and use a calculator effectively.

11/12 **Proportion 1 & 2**
 Solve simple problems involving proportion.

Solve simple problems using ideas of ratio and proportion.

Solve simple problems involving ratio and proportion.