

Section 2

Planning your support

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The *Sample medium-term plan: Year 7 intervention* is linked closely to the original Year 7 sample medium-plan for mathematics (DfES 0504/2001) which was part of the Key Stage 3 Strategy mathematics launch materials. The Year 7 intervention plan links the support objectives to the main teaching programme and matches more closely the needs of pupils **working at levels 3 and 4**.

- The focus is on Year 7 teaching objectives, interpreted at levels 3 and 4, with a few objectives drawn from the teaching programmes for Years 5 and 6.
- The teaching objectives have not been separated into oral and mental and main activities. Oral and mental work plays a part in all phases of the lesson and not just in the starter.
- Slight adjustments have been made to the time distribution; typically, time for number has been increased and that for algebra reduced.
- The plan ensures that key topics precede the Year 7 Progress test.
- Flexi-time has been introduced in the lead-up to the test to allow a revision period and extra consolidation.

The plan shows:

- progression in the teaching objectives for each strand of the mathematics curriculum;
- opportunities to revisit topics during the year;
- how objectives for oral and mental starters, and for using and applying mathematics, can be incorporated into the teaching units.

Oral and mental work is integral to the main teaching programme. It also provides a means of revisiting important elements of the work regularly to keep essential knowledge and skills 'on the boil'. You need to adjust this work to address the particular needs of your pupils.

Using the plan

The Year 7 intervention plan may not fit the pattern of your school year. You need to adapt it, making small alterations to timings, to fit your particular circumstances. Some pupils will be expected to move back to the main teaching programme during Year 7.

The aim is to complete the programme with appropriate consolidation before the Year 7 Progress test.

In schools with **relatively few Year 7 pupils working at level 3**, the intervention plan can be used alongside existing plans. Related objectives are addressed in the units at an appropriate level and with a suitable emphasis.

In schools with **large numbers of Year 7 pupils working at level 3**, this plan can form the basis of a Key Stage 3 plan that aims to move pupils from level 3 in Year 7 to level 5 in Year 9.

Most schools allocate about three hours per week to the teaching of mathematics during Key Stage 3. You should aim to increase this allocation for pupils who are working just below national expectations. Four lessons per week, each of 50 minutes, is closer to the Key Stage 2 model of a daily mathematics lesson.

For pupils beginning Year 7 working at level 3, the plan during Key Stage 3 might be:

- in Year 7, use the Year 7 intervention medium-term plan;
- in Year 8, use the Year 7 core medium-term plan, with some limited extension to the Year 8 teaching programme;
- in Year 9, use the Year 8 core medium-term plan, with some limited extension to the Year 9 teaching programme.

Completion of this programme would lead to level 5 in Year 9.

Sample medium-term plan: Year 7 intervention

Autumn term

	Teaching objectives	Teaching support and resources
<p>Algebra 1 (3 hours) Sequences and functions (144–163) Formulae and identities (112–113)</p>	<ul style="list-style-type: none"> • Know addition and subtraction facts to 20. • Recall multiplication facts to 10×10 and derive associated division facts. • Count on and back in steps of constant size. • Recognise and use multiples. • Make general statements about odd and even numbers. • Recognise squares to at least 10×10. • Express simple functions in words. • Generate and describe terms of a simple sequence, including sequences from practical contexts. • Solve problems and investigate in number. 	<p>L3 to L4 lessons A1.1 to A1.3 Mathematics challenge 9</p>
<p>Number 1 (8 hours) Place value (36–41) Integers (48–51) Calculations (88–91, 102–105) Solving problems (2–11)</p>	<ul style="list-style-type: none"> • Read and write whole numbers in figures and words; know what each digit represents. • Extend beyond zero when counting back in steps of constant size. • Understand negative numbers as positions on a number line; order negative integers. • Calculate temperature differences across 0°C. • Know addition and subtraction facts to 20. • Recall multiplication facts to 10×10 and derive associated division facts. • Recall two-digit pairs that total 100. • Add and subtract mentally pairs of two-digit numbers. • Calculate mentally a difference such as $8006 - 2993$. • Find doubles and halves of numbers. • Use jottings to support or explain mental calculations. • Add and subtract whole numbers using standard column methods. • Understand and use the inverse relationship between addition and subtraction. • Multiply and divide whole numbers by 10 and 100 (whole-number answers), and explain the effect. • Multiply $TU \times U$. • Use a calculator effectively; enter numbers and interpret the display in different contexts. • Carry out calculations with more than one step. • Solve word problems and investigate in number. 	<p>L3 to L4 lessons N1.1 to N1.8 Mathematics challenges 1 to 3 Link to Year 7 transition unit Consolidation lessons 1 and 2</p>
<p>Shape, space and measures 1 (3 hours) Mensuration (198–201, 228–231, 234–241)</p>	<ul style="list-style-type: none"> • Convert between m and cm, and cm and mm. • Use a ruler to measure and draw lines to the nearest centimetre or millimetre. • Understand that area is measured in square centimetres (cm^2). • Know and use the formula for the area of a rectangle; calculate the perimeter and area of shapes made from rectangles. • Solve problems and investigate in shape, space and measures. • Explain and justify methods and conclusions. 	<p>L3 to L4 lessons S1.1 to S1.3 Mathematics challenge 10 Consolidation lesson 12</p>

Note: Page numbers refer to the supplement of examples in the *Framework for teaching mathematics: Years 7, 8 and 9*

	Teaching objectives	Teaching support and resources
<p>Number 2 (9 hours) Calculations (92–101, 110–111) Fractions, decimals, percentages (60–77) Solving problems (28–31)</p>	<ul style="list-style-type: none"> • Read and write whole numbers in figures and words. • Multiply and divide integers by 10 and 100. • Recall multiplication facts to 10×10 and derive associated division facts. • Use mental methods to double and halve two-digit numbers and to calculate $TU \times U$ and $TU \div U$. • Use written methods to calculate $HTU \times U$, $TU \times TU$ and $HTU \div U$. • Check whether a result is the right order of magnitude. • Round up or down after division, depending on the context. • Use fraction notation to describe parts of shapes. • Count on and back in halves, fifths and quarters, and in steps of 0.1 and 0.01. • Recognise when two simple fractions are equivalent. • Understand and use decimal notation and place value. • Compare and order decimals. • Find fraction and decimal equivalents in simple cases, including for tenths and hundredths. • Find simple fractions of whole-number quantities. • Use a calculator to convert simple fractions to decimals, and interpret the display. • Compare two simple fractions by using a diagram. 	<p>L3 to L4 lessons N2.1 to N2.9 Mathematics challenges 3 and 4</p> <p>Consolidation lessons 2 and 6</p>
<p>Handling data 1 (4 hours) Probability (276–283) Handling data (256–261, 268–271)</p>	<ul style="list-style-type: none"> • Add several small numbers. • Use vocabulary and ideas of probability, drawing on experience. • Understand and use the probability scale from 0 to 1. • Find and justify probabilities based on equally likely outcomes in simple contexts. • Plan how to organise small sets of data. • Construct frequency tables for discrete data. • Construct graphs and diagrams, on paper and using a computer, to represent data. • Solve a problem by extracting and interpreting data in tables, graphs and charts. • Calculate statistics for small sets of discrete data: <ul style="list-style-type: none"> – find the mode, median and range; – calculate the mean in simple cases. 	<p>L3 to L4 lessons D1.1 to D1.4 Mathematics challenge 7</p> <p>Consolidation lesson 5</p>
<p>Algebra 2 (3 hours) Equations, formulae and identities (112–119, 138–143)</p>	<ul style="list-style-type: none"> • Know addition and subtraction facts to 20. • Recall multiplication facts to 10×10 and derive associated division facts. • Count on and back in steps of constant size. • Recognise and use multiples, factors and primes. • Know and use the order of operations, including brackets. • Solve problems and investigate in number. 	<p>L3 to L4 lessons A2.1 to A2.3</p>

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	Teaching objectives	Teaching support and resources
<p>Shape, space and measures 2 (4 hours) Mensuration (232–233) Geometrical reasoning: lines, angles and shapes (178–189) Coordinates (218–219)</p>	<ul style="list-style-type: none"> • Estimate and use a protractor to measure acute and obtuse angles. • Use the labelling conventions for angles. • Know the sum of angles at a point, on a straight line, and in a triangle. • Identify parallel and perpendicular lines. • Recognise properties of rectangles. • Classify triangles (isosceles, equilateral, scalene). • Recognise positions; read and plot coordinates in the first quadrant. • Find coordinates of points determined by geometric information. • Solve problems and investigate in shape, space and measures. • Explain and justify methods and conclusions. 	<p>L3 to L4 lessons S2.1 to S2.4 Mathematics challenge 8</p>
<p>Number 3A (5 hours) Place value (42–45) Calculations (82–94)</p>	<ul style="list-style-type: none"> • Recall multiplication facts to 10×10 and derive associated division facts. • Understand decimal notation and place value. • Round positive whole numbers to the nearest 10 or 100, and decimals to the nearest whole number or one decimal place. • Add and subtract mentally pairs of two-digit numbers, including decimals. • Find two decimals with a sum of 1. • Add and subtract decimals using written methods. • Convert pounds to pence, and vice versa. • Use a calculator effectively; enter numbers and interpret the display in different contexts. • Check whether a result is the right order of magnitude. • Solve word problems and investigate in number. 	<p>L3 to L4 lessons N3.1 to N3.5 Mathematics challenge 6</p>
<p>Flexi-time (to be used at any time during the term) Use consolidation lessons. Use past test questions with a teaching focus; for example, discuss vocabulary, methods of solution, units in the answer. Give pupils practice in working within a time limit. Practise mental skills (<i>Springboard 7</i>, pages 160 and 286, has examples of mental tests and test questions).</p>		

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Spring term and summer term to Progress test

	Teaching objectives	Teaching support and resources
<p>Handling data 2A (3 hours) Handling data (248–255, 262–265, 268–271)</p>	<ul style="list-style-type: none"> • Find simple fractions of whole-number quantities. • Plan how to collect and organise small sets of data. • Construct charts and graphs, on paper and using a computer, to represent data. • Construct frequency tables for discrete data. • Solve a problem by extracting and interpreting data in tables, graphs and charts. 	<p>L3 to L4 lessons D2.1 to D2.3</p>
<p>Number and measures 3B (3 hours) Solving problems (28–31, 100)</p>	<ul style="list-style-type: none"> • Count on and back in steps of 0.1, 0.2, 0.25. • Use names and abbreviations of units of length to measure, estimate, calculate and solve problems. • Read and interpret scales on a range of measuring instruments. • Convert one metric unit to another. • Use a timetable and find intervals for 24-hour times. • Solve word problems involving time. 	<p>L3 to L4 lessons N3.6 to N3.8</p>
<p>Algebra 3 (3 hours) Integers, powers and roots (52–59) Sequences, functions and graphs (148–167)</p>	<ul style="list-style-type: none"> • Recall multiplication facts to 10×10 and derive associated division facts. • Understand and use inverse operations. • Count on and back in steps of constant size. • Recognise multiples and use tests of divisibility. • Generate terms of a simple sequence, including from practical contexts. • Recognise the first few triangular numbers. • Solve problems and investigate in number and algebra. 	<p>L3 to L4 lessons A3.1 to A3.3</p>
<p>Shape, space and measures 3 (4 hours) Construction (220–223) Geometrical reasoning: lines, angles and shapes (184–189, 198–201)</p>	<ul style="list-style-type: none"> • Visualise and describe 2-D and 3-D shapes. • Use a ruler and protractor to: <ul style="list-style-type: none"> – measure and draw lines to the nearest millimetre and angles to the nearest degree; – construct a triangle given two sides and the included angle or two angles and the included side. • Use the labelling conventions for lines, angles and shapes. • Identify parallel and perpendicular lines. • Recognise properties of rectangles. • Begin to identify and use angle, side and symmetry properties of triangles and quadrilaterals. • Identify nets of an open cube. • Use standard units of mass and capacity. • Suggest suitable units and equipment to estimate and measure mass and capacity. • Read and interpret scales on a range of measuring instruments. • Solve word problems and investigate in shape, space and measures. • Explain reasoning with diagrams and text. 	<p>L3 to L4 lessons S3.1 to S3.4 Consolidation lesson 9</p>

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	Teaching objectives	Teaching support and resources
Number 4 (8 hours) Fractions, decimals, percentages, ratio and proportion (70–81)	<ul style="list-style-type: none"> Recall multiplication facts to 10×10 and derive associated division facts. Find doubles and halves of numbers. Multiply and divide decimals by 10 or 100. Convert one metric unit to another. Change mixed numbers to improper fractions and vice versa. Compare two or more simple fractions. Add and subtract simple fractions. Multiply a fraction by an integer. Understand percentages as 'the number of parts per 100'. Find simple equivalent fractions, decimals and percentages. Calculate simple percentages of whole-number quantities. Enter numbers into a calculator and interpret the display in different contexts. Solve word problems. Solve simple problems involving direct proportion. Divide a quantity into two parts in a given ratio. 	L3 to L4 lessons N4.1 to N4.8 Mathematics challenges 4 and 5 Choose from consolidation lessons 3, 4, 6 and 7
Handling data 2B (2 hours) Handling data (248–255, 262–265, 268–271)	<ul style="list-style-type: none"> Find simple fractions of whole-number quantities. Recognise the equivalence of simple fractions and percentages. Solve a problem by extracting and interpreting data in tables, graphs and charts. Understand and use the probability scale from 0 to 1. 	L3 to L4 lessons D2.4 and D2.5 Consolidation lesson 8
Algebra 4 (2 hours) Equations, formulae and identities (112–125)	<ul style="list-style-type: none"> Add several small numbers. Use letter symbols to represent unknown numbers or variables. Substitute positive integers into simple linear expressions and formulae. Use simple formulae. Solve simple linear equations with integer coefficients (unknown on one side only) using an appropriate method. Solve problems and investigate in number and algebra. 	L3 to L4 lessons A4.1 and A4.2 Consolidation lesson 11
Shape, space and measures 4 (3 hours) Transformations (202–212)	<ul style="list-style-type: none"> Visualise and describe 2-D shapes. Understand and use the language associated with reflections and rotations. Recognise and visualise the transformation and symmetry of 2-D shapes: <ul style="list-style-type: none"> – reflection in given mirror lines, and line symmetry; – rotation about a given point, and rotation symmetry. Solve problems and investigate in shape, space and measures. Explain reasoning with diagrams and text. 	L3 to L4 lessons S4.1 to S4.3 Consolidation lesson 10

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	Teaching objectives	Teaching support and resources
<p>Number 5 (6 hours) Calculations (88–107, 110–111) Fractions and percentages (66–77) Solving problems</p>	<ul style="list-style-type: none"> • Recall multiplication facts to 10 x 10 and derive associated division facts. • Convert one metric unit of length to another. • Calculate mentally TU x U and TU ÷ U. • Estimate calculations. • Use written methods to calculate U.t x U, TU.t x U and TU.t ÷ U. • Express a quotient in fraction or decimal form. • Divide £.p by a single-digit number. • Round up or down after division, depending on the context. • Use the laws of arithmetic and inverse operations. • Carry out calculations with more than one step. • Use a calculator effectively; enter numbers into a calculator and interpret the display in different contexts. • Check whether a result is the right order of magnitude. • Solve word problems and investigate in number. 	<p>L3 to L4 lessons N5.1 to N5.6</p> <p>Consolidation lessons 3, 4 and 7</p>

<p>Flexi-time (9 to 12 lessons, depending on the lengths of terms and timing of the Progress test)</p> <p>Preparation for the Progress test</p> <p>Focus on topics that pupils have found difficult.</p> <p>Use the consolidation lessons, especially on topics not covered recently:</p> <ol style="list-style-type: none"> 1 Place value, addition and subtraction 2 Multiplication 3 Using fractions 4 Fractions and decimals 5 Probability 6 Calculators 7 Word problems 8 Interpreting data 9 Shapes and angles 10 Coordinates and reflections 11 Sequences 12 Perimeter and area <p><i>Springboard 7</i> page 502 has examples of mental tests and test questions. Use past test questions with a teaching focus. Give pupils practice in working within a time limit. Discuss vocabulary, methods of solution and how to 'show your method', how to 'show your working', the importance of including units in the answers, and so on.</p>

<p>PROGRESS TEST</p>

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Summer term (after Progress test)

<p>Handling data 3 (4 hours) Handling data (250–273) Probability (278–285)</p>	<p>Base on Handling data 1 from the main Year 7 sample plan. When this is revisited in Year 8, include extension objectives.</p>
<p>Algebra 5 (4 hours) Equations, formulae and identities (122–143) Sequences, functions and graphs (154–177)</p>	<p>Base on Algebra 1 and Algebra 2 from the main Year 7 sample plan. When these are revisited in Year 8, include extension objectives.</p>
<p>Shape, space and measures 5 (4 hours) Geometrical reasoning: lines, angles and shapes (184–212) Construction (220–223)</p>	<p>Base on Shape, space and measures 1 and Shape, space and measures 2 from the main Year 7 sample plan. When these are revisited in Year 8, include extension objectives.</p>

Note: Page numbers refer to the supplement of examples in the *Framework for teaching mathematics: Years 7, 8 and 9*