



MATHEMATICS

Programme of Study



Year 5 Number and Place Value

Here are the statutory requirements:

Number and place value

Pupils should be taught to:

- read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
- count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero
- round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
- solve number problems and practical problems that involve all of the above
- read Roman numerals to 1000 (M) and recognise years written in Roman numerals.

Below is a list of MathSphere modules covering the above requirements.

Number and place value

(84 pages including titles, concepts and answers)

1. Read and write whole numbers. Partition. (21 pages)
2. Revise comparing and ordering numbers. (10 pages)
3. Count in powers of ten. (4 pages)
4. Extend number sequences. (12 pages)
5. Recognise and order negative numbers. (13 pages)
6. Solve 'real life' number problems (8 pages)

Year 5 Mathematics Programme of Study

Maths worksheets from mathsphere.co.uk

Number and place value (continued)

7. Rounding numbers. (7 pages)

8. Revise estimating and approximating. (11 pages)

9. Roman Numerals. (6 pages)



Programme of Study



Year 5 Addition and Subtraction

Here are the statutory requirements:

Addition and Subtraction

Pupils should be taught to:

- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers
- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Below is a list of MathSphere modules covering the above requirements.

Addition and Subtraction

(195 pages including titles, concepts and answers)

1. Revise understanding addition. (18 pages)
2. Revise understanding subtraction. (12 pages)
3. Know, with rapid recall, addition and subtraction facts. (35 pages)
4. Use known number facts to add and subtract mentally (1). (13 pages)
5. Use known number facts to add and subtract mentally (2). (12 pages)
6. Use mental calculation strategies – adjusting. (13 pages)
7. Add or subtract decimals by adjusting. (13 pages)
8. Relationship between addition and subtraction. Add several numbers. (21 pages)

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Addition and Subtraction (continued)

9. Use the formal written method of addition. (14 pages)
10. Written practice pages: addition with decimals. (8 pages)
11. Adding large numbers. (7 pages)
12. Use the formal written method of subtraction. (12 pages)
13. Written practice pages: subtraction with decimals. (8 pages)
14. More written subtraction. (9 pages)



Programme of Study



Year 5 Multiplication and Division

Here are the statutory requirements:

Multiplication and division

Pupils should be taught to:

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.
- solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- multiply and divide numbers mentally drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

On the next page is a list of MathSphere modules covering the above requirements.

Multiplication and Division

(176 pages including titles, concepts and answers)

1. Revise understanding multiplication. (13 pages)
2. Revise understanding division. (12 pages)
3. Revise multiplying and dividing by 10 and 100. (12 pages)
4. Multiplying and dividing by multiples of 10 and 100. (13 sheets)
5. Multiply and divide by 10, 100 and 1000. (9 pages)
6. Double and halve. Use factors to help calculate. (18 pages)
7. Use knowledge of tables to calculate mentally. (17 pages)
8. Square numbers, prime numbers, factors and multiples. (12 pages)
9. Revise and refine written methods of multiplication. (11 pages)
10. Short multiplication. (5 pages)
11. Written multiplication of decimals. (8 pages)
12. Long multiplication. (8 pages)
13. More long multiplication. (8 pages)
14. Revise written methods for division. (8 pages)
15. Revise short division. (7 pages)
16. Divide a 4-digit number by a 1-digit number. (4 pages)
17. Square and cube numbers, square roots and prime factors. (11 pages)



Programme of Study

Year 5 Fractions (including decimals and percentages)

Here are the statutory requirements:

Fractions (including decimals and percentages)

Pupils should be taught to:

- compare and order fractions whose denominators are all multiples of the same number
- identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number
(e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$)
- add and subtract fractions with the same denominator and multiples of the same number
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
- read and write decimal numbers as fractions (e.g. $0.71 = \frac{71}{100}$)
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- round decimals with two decimal places to the nearest whole number and to one decimal place
- read, write, order and compare numbers with up to three decimal places
- solve problems involving number up to three decimal places
- recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred”, and write percentages as a fraction with denominator hundred, and as a decimal fraction
- solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those with a denominator of a multiple of 10 or 25.

Year 5 Mathematics Programme of Study

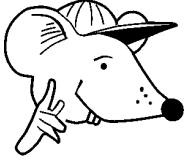
Maths worksheets from mathsphere.co.uk

Below is a list of MathSphere modules covering the above requirements.

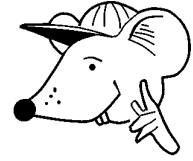
Fractions (including decimals and percentages)

(83 pages including titles, concepts and answers)

1. Recognise equivalent fractions. Order fractions. (13 pages)
2. Find fractions of numbers or quantities. (6 pages)
3. Adding fractions. (7 pages)
4. Subtracting fractions. (7 pages)
5. Multiplying fractions. (5 pages)
6. Round decimals. Equivalence between decimals and fractions. (16 pages)
7. Order decimals: thousandths. (9 pages)
8. Understand percentages. (13 pages)
9. Find percentages of numbers or quantities (7 pages)



Programme of Study



Year 5 Measurement

Here are the statutory requirements:

Measurement

Pupils should be taught to:

- convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
- understand and use equivalences between metric units and common imperial units such as inches, pounds and pints
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes
- estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)
- solve problems involving converting between units of time
- use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.

Below is a list of MathSphere modules covering the above requirements.

Measurement

(104 pages including titles, concepts and answers)

1. Units to measure length, mass or capacity. (20 pages)
2. Standard metric units of measurement. (10 pages)
3. Metric and Imperial. (5 pages)
4. Read scales, record, estimate and measure. (16 pages)

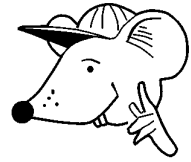
Measurement (continued)

5. Perimeter and area. (18 pages)
6. Estimating and measuring time. (9 pages)
7. Solve problems involving time. (8 pages)
8. Solve problems involving length, mass or capacity. (7 pages)
9. Solve problems involving money. (8 pages)
10. Investigate cuboids. (3 pages)



Programme of Study

Year 5 Geometry



Here are the statutory requirements:

Geometry

Properties of shapes

Pupils should be taught to:

- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees ($^{\circ}$)
- identify:
 - angles at a point and one whole turn (total 360°)
 - angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°)
 - other multiples of 90°
- use the properties of rectangles to deduce related facts and find missing lengths and angles
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Position and direction

Pupils should be taught to:

- identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.

On the next page is a list of MathSphere modules covering the above requirements.

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Maths worksheets from mathsphere.co.uk

Geometry

(61 pages including titles, concepts and answers)

1. Describe and classify 3-D and 2-D shapes. (11 pages)
2. Estimate, draw and measure angles. (10 pages)
3. Making shapes and patterns. (7 pages)
4. Recognise position and direction. Use co-ordinates. (13 pages)
5. Reflective symmetry. Reflections and translations. (15 pages)
6. Tessellation squares investigation (5 pages)



Programme of Study

Year 5 Statistics



Here are the statutory requirements:

Statistics

Pupils should be taught to:

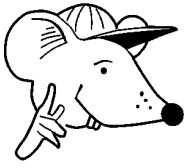
- solve comparison, sum and difference problems using information presented in a line graph
- complete, read and interpret information in tables, including timetables.

Below is a list of MathSphere modules covering the above requirements.

Statistics

(46 pages including titles, concepts and answers)

1. Collect, sort and organise data. Use tables, graphs and charts. (11 pages)
2. Further data handling. Use median and mode. (10 pages)
3. Interpreting graphs, tables and charts. (21 pages)
4. Two dice investigation. (4 pages)



Non statutory mathematics



Year 5 Using and Applying Mathematics

Below is a list of MathSphere modules covering Using and Applying Mathematics:
(58 pages including titles, concepts and answers where appropriate)

1. Checking results of calculations. (11 pages)
2. Use a calculator. (9 pages)
3. Probability: using the language of chance or likelihood. (7 pages)
4. Maths vocabulary games. (8 pages)
5. Investigate zero. (4 pages)
6. Investigate 10. (4 pages)
7. Investigate products. (3 pages)
8. Triangle numbers. (12 pages)