

Year 6 Objectives: Number

NUMBER AND PLACE VALUE AND ROUNDING

Read, write, order and compare numbers to 10,000,000 and know value of each digit

Revise reading and writing numbers to: 1000 and then to 100,000

Read and write number to 1,000,000

Read and write numbers to 10,000,000

Recognise the value of each digit up to 10,000,000

Know and use terms: units; tens, hundreds, thousands, ten thousands, hundred thousands, one million and ten million correctly

Partition any number up to 10,000,000 showing the value of each digit

NUMBER AND PLACE VALUE AND ROUNDING

Round any number to any degree of accuracy

Round any 7-digit number to the nearest million

Round any 6-digit number to the nearest hundred thousand

Round any 5-digit number to the nearest ten thousand

Round any 4-digit number to the nearest thousand

Round any number to the nearest degree of accuracy

Recognise binary numbers to 15 (1111) and convert between binary and decimal numbers

Know and understand how the binary system works

Write all binary numbers to 15

Convert a binary number up to 15 back to TU

Year 6 Objectives : Number 2

ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION

Add and subtract negative integers

Add any 2 negative numbers together

Know what happens when subtracting a negative number from another negative number

Multiply 4-digit whole numbers by 2-digit whole numbers

Revise multiplication of HTU x U

Revise multiplication of ThHTU x U

Multiply 4-digit numbers by a 2-digit number using grid method or another conventional method

Estimate the answer to any given addition involving two 2-digit numbers to the nearest 10

Estimate the answer to any given addition involving two 3-digit numbers to the nearest 100

Estimate the answer to any given addition involving two 3-digit numbers to the nearest 10

ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION

Divide numbers up to 4-digits by a 2-digit whole numbers and recognise remainders as whole numbers, fractions, decimals or by rounding

Revise division of numbers with up to 4-digits by a single-digit number with and without remainders

Divide numbers with up to 4-digits by a 2-digit number up to 20 without remainder

Divide numbers with up to 4-digits by a 2-digit number up to 20 with remainder

Express remainder as a fractional value of the number divided by

Express remainder as a decimal

Divide numbers with up to 4-digits by any 2-digit number with and without remainder

Use rounding up to express answers as a whole number

Year 6 Objectives : Number 3

ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION

Perform mental calculations, including mixed operations and large numbers

Perform mental calculations with large numbers

Perform mental calculations which require at least two different operations, eg, addition and multiplication

Use estimation to check answers and determine in the context of a problem whether an answer should be rounded, or written as a fraction or a decimal

Know when it is appropriate to represent an answer to a given problem as a fractional value rounded to the nearest whole number value

Estimate the answer to a problem before working it out and use the estimation to check on accuracy of problem solving

Carry out combined operations involving the four operations accurately and state the order of operations

Know the term 'BODMAS' and use this to work out the order within a mixed operation calculation

ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION

Solve word problems involving the four operations

Solve word problems involving addition with numbers up to 10,000,000

Solve word problems involving subtraction with numbers up to 10,000,000

Solve word problems involving multiplication with numbers up to 10,000,000

Solve word problems involving division with numbers up to 10,000,000

Solve word problems with mixed operations with numbers up to 10,000,000

Year 6 Objectives : Number 4

FRACTIONS

Add and subtract mixed numbers and fractions with different denominations

Revise addition and subtraction of fractions with the same denominator

Work out common denominator for a pair of fractions with different denominators, eg $\frac{2}{3}$ and $\frac{3}{5}$

Add 2 fractions with different denominators

Add 2 mixed numbers where the fractional values have different denominators

Subtract 2 fractions with different denominators

Subtract 2 mixed numbers where the fractional values have different denominators

Multiply simple unit fractions and pairs of proper fractions, writing the answer in its simplest form

Multiply a whole number with a fraction

Multiply a whole number with a fraction and give answer in its simplest form

Multiply 2 simple fractions together and give answer in its simplest form

Turn mixed fractions into an improper fraction

Multiply 2 mixed fractions and write answer in its simplest form

FRACTIONS

Divide proper fractions by whole numbers

Divide a proper fraction by a whole number

Divide a proper fraction by a whole number and give answer in its simplest form

Associate a fraction with division to calculate decimal fraction equivalents, eg 0.375 for a simple fraction $\frac{3}{8}$

Know that $\frac{1}{10}$ can be represented as 0.1

Know that $\frac{1}{4}$ can be represented as 0.25

Know that $\frac{3}{4}$ can be represented as 0.75

Know all the decimal fraction equivalents for fractional values where the denominator is 3, 4, 5, 6, 8 or 10

Year 6 Objectives : Number 5

DECIMALS

Identify the value of each digit to three decimal places and multiply and divide numbers up to three decimal place by 10, 100 and 1000

Know the value of each digit in a decimal fractions which has up to 3 decimal places

Know that when multiplying a decimal fraction by 10 the decimal point moves one place to the right, eg $3.457 \times 10 = 34.57$

Know that when multiplying a decimal fraction by 100 the decimal point moves two places to the right, eg $3.457 \times 100 = 345.7$

Know that when multiplying a decimal fraction by 1000 the decimal point moves three places to the right, eg $3.457 \times 1000 = 3457$

Know that when dividing a decimal fraction by 10 the decimal point moves one place to the left, eg $567.234 \div 10 = 56.7234$

Know that when dividing a decimal fraction by 100 the decimal point moves two places to the left, eg $567.234 \div 100 = 5.67234$

Know that when dividing a decimal fraction by 1000 the decimal point moves three places to the left, eg $567.234 \div 1000 = 0.567234$

DECIMALS

Multiply and divide a number with up to two decimal places by 1-digit and 2-digit whole numbers

Multiply a decimal fraction with up to 2 decimal places by a single-digit number

Multiply a decimal fraction with up to 2 decimal places by a 2-digit number

Divide a decimal fraction with up to 2 decimal places by a single-digit number

Divide a decimal fraction with up to 2 decimal places by a 2-digit number

Year 6 Objectives : Number 6

PERCENTAGES

Use percentages for comparison and calculate percentages of whole numbers or measures, eg 15% of 360

Recognise 50% as being a half of the original value

Recognise 25% as being a quarter of the original value

Recognise 75% as being three quarters of the original value

Recognise 10% as being a tenth of the original value

Know that to find 1% of a value you divide by 100

Find 25%, 50% and 75% of any given value

Find 10%, 20%, 30%, etc. of a given value

Find any percentage of a given value, eg, 18% of 360

PERCENTAGES

Recall and use equivalences between fractions, decimals and percentages

Revise that $\frac{1}{10}$ can be represented as 0.1 and use this to solve problems

Revise that $\frac{1}{4}$ can be represented as 0.25 and use this to solve problems

Revise that $\frac{3}{4}$ can be represented as 0.75 and use this to solve problems

Revise all the decimal fraction equivalents for fractional values where the denominator is 3, 4, 5, 6, 8 or 10 and use this to solve problem

Year 6 Objectives : Number 7

RATIO AND PROPORTION

Use ratio to show the relative sizes of two quantities

Understand the term ratio

Recognise that the symbol associated with ratio is ‘:’

Know what is meant by the term ‘ratio of 1:2’

Use ratio in defining the sizes of various shapes

Recognise equivalent ratios and reduce a given ratio to its lowest form

Know how to reduce a given ratio to its lowest form, eg, 2:4 is 1:2

Recognise and use division in the context of fractions, percentages and ratio

Use division to work out fractional values, decimal fractional values, percentages and ratio

ALGEBRA

Solve linear missing number problems, including those involving decimals and fractions, and find pairs of numbers that satisfy number sentences involving two unknowns

Write known rules algebraically, eg, $a + b = b + a$

Work out equations involving missing amount, eg, If $2x - 1 = 9$, what is x ?

Work out calculations when given value of 2 letters, eg, What is $2a + 3b$ if $a = 2$ and $b = 5$?

Use simple formulae expressed in words

Write rules algebraically for known relationships like $p = 4s$ for finding out the perimeter of a square

Generate and describe linear number sequences including those involving negative and decimal numbers, and proper fractions, eg, 1.4, 1.1, 0.8

Continue a linear number sequence involving positive and negative numbers

Continue a linear number sequence involving fractions

Continue a linear number sequence involving decimal fractions

Year 6 Objectives : Geometry and Measures

PROPERTIES AND SHAPE	
Compare and classify geometrical shapes based on properties and sizes	
Classify triangles in terms of their properties	
Know that an equilateral triangle has three angles of 60° and three equal sides	
Know that an isosceles triangle has two sides which are equal and two angles which are equal	
Describe a right angled triangle according to properties	
Describe a square and oblong in terms of their properties	
Know the properties of rectangles such as parallelogram; trapezium; rhombus	
Find unknown angles in any triangle, quadrilateral and regular polygon	
Know that the total of the three angles of any triangle adds up to 180°	
Use a protractor to measure individual angles of a triangle	
Draw a triangle given size of sides and angle sizes	
Know that the four angles of any quadrilateral adds up to 360°	
Work out the size of an angle in a quadrilateral by using a protractor to measure it	

PROPERTIES AND SHAPE	
Illustrate and name parts of circles, including radius, diameter and circumference	
Know that the line across the centre of a circle is known as the diameter	
Know that the distance from the centre to the arc of a circle is the radius	
Know that distance around the outside of a circle is the circumference	
Recognise, describe and build 3D shapes, including nets	
Know what a net for a square looks like	
Create a cube using knowledge of what the net looks like	
Know what a net for an oblong looks like	
Create a cuboid using knowledge of what the net looks like	
Know what a net for a prism looks like	
Create a prism using knowledge of what the net looks like	
Know what a net for a square based pyramid looks like	
Create a pyramid using knowledge of what the net looks like	

Year 6 Objectives : Geometry and Measures: 2

PROPERTIES AND SHAPE

Describe properties of common 3D shapes and identify parallel planes and symmetry

Describe the properties of a cube, cuboid, sphere, prism and pyramid

Point out the parallel planes associated with any 3d shape

Identify lines of symmetry in 3D shapes

Estimate size of angles

Recognise 90° as a corner angle and know that there are many of them in the built environment

Recognise that 45° is half of a 90° and can estimate if an angle is greater or smaller than 45°

Find unknown angles involving angles at a point, on a straight line, in a triangle (180°), in a quadrilateral (360°) and vertically opposite

Given 2 angles of a triangle know what the value of the third angle is

Given 3 angles of a quadrilateral know what the value of the fourth angle is

Know missing angles in parallelogram; rhombus and trapezium from working out diagonally opposite angles, etc.

POSITION, DIRECTION and MOTION

Describe position on the full co-ordinate grid (all four quadrants)

Identify each position on four quadrants of a grid using numbers on the axes

Create shapes within a grid by following pairs of numbers on the grid

Construct, translate and reflect shapes on the co-ordinate plane

Use four quadrants of the grid to construct different shapes in different quadrants

Reflect a given shape from one grid to another

Translate a given shape across different grids

Year 6 Objectives : Geometry and Measures 3

MEASURES

Read, write and convert between standard units, converting between measurements of length, mass, volume and time between large and smaller units

Use, add and subtract positive and negative integers for measures such as temperature and money

Convert large numbers of cm into meters; ml into l; grams into Kg; and, minutes into hours

Recognise that shapes with the same area can have different perimeters

Draw a number of rectangles with the same perimeter

Calculate the area of parallelograms and triangles

Know the formula associated with finding the area of triangles

Know the formula associated with finding the area of parallelogram

Recognise when it is necessary to use the formulae for area and volume of shapes

Know when to apply a given formula to find out the area of a shape

Know when to apply a given formula to find out the volume of a shape

MEASURES

Calculate, estimate and compare volumes of cubes and cuboids using standard units, using cm^3 and m^3 and extending to mm^3 and Km^3

Calculate the volume of a cube using either cm^3 or m^3 as appropriate

Calculate the volume of a cuboid using either cm^3 or m^3 as appropriate

Calculate the volume of large or small cubes or cuboid using either mm^3 or Km^3 as appropriate

Use decimal notation to three decimal places to solve calculations and conversion of measures

Use decimal notation to three decimal places to solve calculations with measures

Use other compound units for speed such as miles per hour and apply their knowledge in science as appropriate

Year 5 Objectives : Geometry and Measures 4

DATA

Draw, read and interpret line graphs and use to solve problems

Know how to construct a line graph from a set of given information

Know how to apply scales on the axes of a line graph

Can read line graphs with scales

Can construct own line graph and make decisions about the scales for the axes

Use and interpret averages including mean, medium and mode

Know the terms average, mean, medium and mode

Find the average of a given set of numbers

Find the mode of a given set of numbers

Find the medium of given set of numbers

Find the mode of a given set of numbers

PROBABILITY

Use the language associated with probability such as certain, equally likely, unlikely, impossible and use this in on-going work

Know the terms certain, likely, equally likely, unlikely and impossible as used with aspects of probability

Work on probability problems using the terms: certain, likely, equally likely, unlikely and impossible