

Number and Place Value

read, write, order and compare numbers to 10,000,000 and determine the value of each digit

use negative numbers in context, and calculate intervals across zero

round any number to a required degree of accuracy

solve number and practical problems that involve all of the above

Addition, Subtraction, Multiplication and Division

multiply multi-digit numbers up to 4 digits by a two-digit whole number using formal written method of long multiplication

divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division

interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division where appropriate, interpreting remainders according to the context

perform mental calculations, including with mixed operations and large numbers

identify common factors, common multiples and prime numbers

use their knowledge of the order of operations to carry out calculations involving the four operations

solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Fractions

use common factors to simplify fractions;

use common multiples to express fractions in the same denomination

compare and order fractions, including >1

add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

multiply simple pairs of proper fractions, writing the answer in its simplest form. Eg. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$

divide proper fractions by whole numbers. Eg. $\frac{1}{3} \div 2 = \frac{1}{6}$

associate a fraction with division and calculate decimal fraction equivalents for a simple fraction. Eg. $0.375 = \frac{3}{8}$

identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to three decimal places

multiply one-digit numbers with up to two decimal places by whole numbers

use written division methods in cases where the answer has up to two decimal places

solve problems which require answers to be rounded to specified degrees of accuracy

recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Algebra

use simple formulae

generate and describe linear number sequences

express missing number problems algebraically

find pairs of numbers that satisfy an equation with two unknowns

enumerate possibilities of combinations of two variables

Geometry – Position and Direction

describe positions on the full coordinate grid – all four quadrants

draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Measurement

solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

use, read, write and convert between standard units from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places (length, mass, volume and time)

convert between miles and km

recognise that shapes with the same areas can have different perimeters and vice versa

recognise when it is possible to use formulae for area and volume of shapes

calculate, estimate and compare volume of cubes and cuboids using standard units, including cm^3 , m^3 and extending to other units. Eg. mm^3 and km^3

calculate the area of parallelograms and triangles

Ratio and Proportion

solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

solve problems involving the calculation of percentages and the use of percentages for comparison. Eg. of measures, such as 15% of 360

solve problems involving similar shapes where the scale factor is known or can be found

solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

Geometry – Properties of Shape

draw 2-D shapes using given dimensions and angles

recognise, describe and build simple 3-D shapes, including making nets

compare and classify geometric shapes based on their properties and sizes

find unknown angles in any triangles, quadrilaterals and regular polygons

illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Statistics

interpret and construct pie charts and line graphs and use these to solve problems

calculate and interpret the mean as an average