

Autumn Term

Maths Meetings: *Fluent in Five* and *Problem Solving* retrieval from Year 5

Autumn KIRFS: *I know my multiplication and division facts up to 12×12 . I can identify common factors and common multiples of a pair of numbers.*

Place Value

- read, write, order and compare numbers up to 10,000,000 and determine the value of each digit
- round any whole number to a required degree of accuracy
- use negative numbers in context, and calculate intervals across 0
- solve number and practical problems that involve all of the above
- identify the value of each digit in numbers given to 3 decimal places

Addition and Subtraction

Perimeter

- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- Recognise that shapes with the same areas can have different perimeters and vice versa

Multiplication and Division

- **multiply** multi-digit numbers up to 4 digits by a two-digit whole number using the 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, and 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 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
- solve problems involving addition, subtraction, multiplication and division
- use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
- Multiply and divide decimals up to two decimal places.
- Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size
- Recognise when it is possible to use formulae for area and volume of shapes
- Calculate the area of parallelograms and triangles

Spring Term

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Spring KIRFS: I can identify prime numbers up to 50. I know the square roots of numbers up to 15×15 . I can recognise decimal and percentage equivalence for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{3}$, $\frac{2}{3}$, tenths and hundredths.

Fractions

- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- Compare and order fractions, including fractions > 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 [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]
- divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]

**Fractions, Decimals, Percentages
Pie Charts**

- Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]
- Retrieval: Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- Solve problems involving the calculation of percentages (ratio and proportion)
- Use written division methods in cases where the answer has up to two decimal places
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
- interpret and construct **pie charts** and line graphs and use these to solve problems.

Geometry

- 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 and 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.

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.

Measure

- 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, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
- Convert between miles and kilometres

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Summer KIRFS: I can recall all the KIRFS from KS2.

Ratio and Proportion

- solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts
- solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison
- 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

**Measurement
Area and Volume**

- Recognise when it is possible to use formulae for area and volume of shapes
- Calculate the area of parallelograms and triangles
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3].

Algebra

- use simple formulae
- generate and describe linear number sequences \square express missing number problems algebraically
- find pairs of numbers that satisfy an equation with two unknowns
- enumerate possibilities of combinations of two variables.
- use their knowledge of the order of operations to carry out calculations involving the 4 operations

Properties of Number

Revise all NC objectives

Transition Week (prior to starting in Year 6)

Statistics (Pie charts taught later in year with percentages)

- interpret line graphs and use these to solve problems
- calculate and interpret the mean as an average