Maths MTP

Year 5 Year 6

Autumn 1

Number and Place Value

- Read **Roman numerals** to 1000 (M) and recognise years written in Roman numerals
- Revision

- Know **value** of each digit in numbers up to 1,000,000
- Know the value of each digit in numbers up to 10,000,000

- **Read and write** numbers to at least 1,000,000
- Read and write numbers up to 10,000,000

- **Order and compare** numbers to at least 1,000,000
- Order and compare number up to 10,000,000

- **Count in powers of 10** forward or backward for any number up to 1,000,000
- Count forward or backward in powers of 10 for any number up to 10,000,000

- **Round** any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
- Round any whole number

- Interpret **negative numbers** in context, count forwards and backwards with positive and negative whole numbers including through zero
- Use negative numbers in context, calculate across zero

- Solve **number problems** and practical problems involving all of the above
- Solve number problems and practical problems involving all of the above

Addition and subtraction

- Add and subtract numbers **mentally** with increasingly large numbers
- Perform mental calculations, including with mixed operations and large numbers

- Add and subtract numbers with more than 4 digits using formal written methods of **column addition and subtraction**
- Revision

- Understand the meaning of the equals sign for solving problems involving addition and subtraction (**balanced equations**)
- Revision

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- Solve addition and subtraction **multi-step problems** in contexts.
- Solve addition and subtraction multi-step problems in contexts.

Multiplication and Division

- Multiply and divide numbers **mentally** drawing upon known facts
- Perform mental calculations, including with **mixed operations** and large numbers
- Use their knowledge of the **order of operations** to carry out calculations involving the four operations (**BIDMAS**)

- Multiply numbers up to 4 digits by a **1-digit and 2-digit** numbers using a formal written method of **short and long multiplication**
- Multiply numbers up to 4 digits by a **2-digit** number using a formal written method of **long multiplication**

- Divide numbers up to 4 digits by a **1-digit** number using the formal written method of **short division**
- Divide numbers up to 4 digits by a **2-digit** number using the formal written method of short division

Autumn 2

Multiplication and Division

- Recognise **square** numbers (^{2}) and **cube** numbers (^{3})
- Revision

- Establish whether a number up to 100 is **prime** and recall prime numbers up to 19
- Revision

- Find all **factor pairs** of a number, **prime factors** and **common factors** of two numbers
- Identify prime factors, common factors and **common multiples**

- Multiply and divide numbers **by 10, 100 and 1000** giving answers up to three decimal places
- Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places

Fractions

- Recognise **mixed numbers** and **improper fractions** and convert from one form to the other
- Revision

- Identify **equivalent** fractions of a given fraction
- Use common multiples to express different fractions as fractions with the **same denominator**

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- Use common factors to **simplify** fractions

- **Compare and order** fractions whose denominators are all multiples of the same number
- Compare and order fractions with **different denominators**

- **Add and subtract** fractions with denominators that are multiples of the same number
- Add and subtract fractions with **different denominators** and mixed numbers

- **Multiply** proper fractions and mixed numbers by **whole numbers**

- **Divide** proper fractions by **whole numbers**

- **Multiply two fractions**, writing the answer in its simplest form

Measurement

- Measure and calculate the **perimeter** of composite rectilinear shapes (cm and m)
- Revision

- Calculate and compare the **area** of rectangles and squares (cm^2 and m^2)
- Recognise that shapes with the **same areas** can have **different perimeters** and vice versa

- Estimate the area of **irregular shapes**
- Calculate the area of **parallelograms and triangles**

- Estimate **volume** using blocks and **capacity** using water
- Calculate, estimate and compare **volume** of cubes and cuboids using standard units

Spring 1

Fractions, Decimals and Percentages

- Recognise tenths, hundredths and **thousandths fractions as decimal equivalents**
- Revision

- Read and write **decimal numbers as fractions**
- Revision

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- Recognise the percent symbol (%) and understand that it relates to 'per hundred'
- Write **percentages** as a fraction with denominator 100, and as a decimal
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

- Know percentage and decimal equivalents of **half, quarters and fifths** and fractions with a **denominator of multiples of 10 or 25**
- Associate a fraction with division and calculate decimal fraction equivalents (including **eighths**)

- **Solve problems** using fractions, decimals and percentage equivalents

- Read and write decimal numbers with up to **three decimal places**
- Identify the value of each digit in numbers given to three decimal places

- **Order and compare decimal** numbers with up to three decimal places
- Revision

- **Round decimals** with two decimal places to the nearest whole number and to one decimal place
- Revision

- **Solve problems** involving decimal numbers up to three decimal places
- Solve problems which require **answers to be rounded** to specified degrees of accuracy

- **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

Multiplication and Division

- **Interpret remainders** for short division appropriately for the context
- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of **long division**
- **Interpret remainders** for short division as whole number remainders, fractions, decimals or by rounding

- Understand the meaning of the equals sign for solving problems involving addition, subtraction, multiplication and division (**balanced equations**)
- Use **rounding to check** answers to multiplication and division calculations
- Use **estimation to check** answers to multiplication and division calculations

- **Solve problems** involving multiplication and division, including using their knowledge of **factors, multiples, squares and cubes**
- **Solve problems** involving addition, subtraction, multiplication and division

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Ratio and proportion

- Solve problems involving multiplication and division, including **scaling by simple fractions** and problems involving simple rates
- Solve problems involving measure using decimal notation, including **scaling**
- 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 calculation of percentages and the use of **percentages** for comparison
- Solve problems involving unequal **sharing** and grouping using knowledge of fractions and multiples.

Spring 2

Measurement

- Convert between different units of **metric measure** (km and m, mm cm and m, kg and g, L and ml)
- Use, read, write and convert between standard units from a smaller unit of measure to a larger unit, and vice versa, using **decimal notation** to up to three decimal places

- Use all four operations to **solve problems** involving measure using decimal notation [length, mass, volume, money]
- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places

- Understand and use approximate equivalences between metric units and common **imperial units** (e.g. inches, pounds and pints)
- Convert between **miles and kilometres**

Properties of Shapes

area, perimeter, volume, perpendicular lines, parallel lines, intersecting lines, adjacent lines, right angle, acute angle, obtuse angle, reflex angle, quadrilateral, polygon, regular, irregular, equilateral triangle, isosceles triangle, scalene triangle, right angle triangle, vertices, edge, face, cube, cuboid, sphere, cone, cylinder, tetrahedron, square-based pyramid, triangular prism, pentagonal prism, hexagonal prism, octagonal prism

- Distinguish between **regular and irregular polygons** based on reasoning about equal sides and angles.
- Illustrate and name parts of **circles**, including **radius, diameter and circumference** and know that the diameter is twice the radius

- Identify **3-D shapes**, including cubes and other cuboids, from 2-D representations
- Recognise, describe ~~and build~~ simple **3-D shapes using nets**

- Know angles are measured in degrees: estimate and compare **acute, obtuse and reflex angles**
- Revision

- **Draw given angles**, and **measure** them in degrees (o)
- **Draw 2-D shapes** using given dimensions and angles

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- Identify angles at **a point** and one whole turn (total **360°**)
- Identify angles at a point on a **straight line** and half a turn (total **180°**)
- Recognise **angles** where they meet at a point, are on a **straight line**, or are vertically opposite, and find missing angles.

- Use the properties of **rectangles** to deduce related facts and find missing **lengths and angles**
- Find **unknown angles** in any triangles, quadrilaterals, and regular polygons

Statistics

- Solve comparison, sum and difference problems using information presented in a **line graph**
- Interpret and construct line graphs and use these to solve problems and calculate the **mean** as an **average**

- Solve problems involving converting between units of **time**
- Complete, read and interpret information in tables, including **timetables**.

Summer 1

Year 6 only

Position and Direction

- Describe positions on the full **coordinate** grid on all **four quadrants**
- Draw and **translate** simple shapes on the coordinate grid and **reflect** them in the axes

Ratio and proportion

- Solve problems involving similar shapes where the **scale factor** is known or can be found

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.
- Recognise when it is possible to use formulae for **area and volume of shapes**

Statistics

- Revise fraction and percentage equivalents.
- Interpret and ~~construct~~ **pie charts** and use these to solve problems and calculate the **mean** as an **average.**

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Summer 2
• Interpret and **construct pie charts** and use these to solve problems and calculate the **mean** as an **average.** • Recognise, describe and **build simple 3-D shapes** using nets