

Objectives in BOLD = children are expected to be secure by the end of that term.



Westgate Academy Medium Term Planning

Year 6: Autumn Term

Some objectives (in bold) and based on Y5 objectives.

Try to establish what children are confident with and try to move onto objectives not in bold where possible.



Please date each objective with when it was taught.

Please note, in each box, how many weeks each strand took to teach.

1. Number - Place Value

- **Read, write, order and compare numbers up to 1,000,000 and determine the value of each digit.** Read, write, order and compare numbers 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 to a required degree of accuracy.
- **Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.**
- **Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals (a recap from Y5 not a Y6 objective).**

STRANDS- These objectives need to be running through the above objectives.

- **Solve number problems and practical problems that involve all of the above.**

4. Number – Fractions (including decimals and percentages)

- **Compare and order fractions whose denominators are all multiples of the same number. Extend to denominators which have less obvious common multiples (e.g. 11 and 12).** Compare and order fractions, including fractions > 1
- **Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths, hundredths and thousandths.**
- Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.
- Solve problems which require answers to be rounded to specified degrees of accuracy.
- **Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements as a mixed number > 1 as a mixed number (e.g. $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$).** Extend with whole numbers greater than 1 ($3 \frac{1}{2} = 7/2$). Also link to adding and subtracting fractions.
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
- **Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.** Extend beyond if your class are confident.
- Multiply simple pairs of proper fractions, writing the answer in its simplest form [$1/4 \times 1/2 = 1/8$].
- Use common factors to simplify fractions; use common multiples to express fractions in the same denominators.
- **Divide proper fractions by whole numbers [$1/3 \div 2 = 1/6$].**
- 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.
- **Read and write decimal numbers as fractions (e.g. $0.71 = 71/100$).** Move onto decimals which include thousandths.
- Associate a fraction with division and calculate decimal fraction equivalents [e.g. 0.375] for a simple fraction [e.g. $3/8$].
- **Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.**
- **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.**
- **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 and beyond.**
- **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 100, and as a decimal.** Simplify fractions where necessary.
- **Solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and those with a denominator of a multiple of 10 or 25.** Extend to more complex fractions if children are secure.

5. Ratio and Proportion

THIS TOPIC FIRST APPEARS IN THE YEAR 6 CURRICULUM. ENSURE CHILDREN UNDERSTAND THE BASIC SKILLS.

- 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 [e.g. of measures and such as 15% of 360] and the use of percentages for comparison.**
- Solve problems involving similar shapes where the scale factors is known or can be found.
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

2. Number – Addition and Subtraction

- **Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).** Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why (numbers with more than 4 digits). Including decimal numbers.
- Use estimation and rounding to check answers to calculations and determine, in the context of the problem, an appropriate degree of accuracy.
- Use their knowledge of the order of operations to carry out calculations involving the four operations.
- **Add and subtract numbers mentally with increasingly large numbers.** Perform mental calculations including with mixed operations and large numbers.

STRANDS- These objectives need to be running through the above objectives.

- **Solve problems involving addition, subtraction, multiplication and division.**

3. Number – Multiplication & Division

- **Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.** Complete problem solving activities based on these.
- **Establish whether a number up to 100 is prime; recall prime no. to 19.**
- **Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.** Complete problem solving activities based on these.
- **Recognise and use square numbers and cube numbers, and their notation.** Complete problem solving activities based on these.
- **Multiply numbers up to 4 digits by a one digit number or two-digit number using a formal written method, including short multiplication for multiplying a one digit and a four digit number and long multiplication for four digit numbers multiplied by two-digit numbers. Use the grid method to support the teaching of short multiplication and long multiplication.** Move onto more complex numbers. 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 one-digit, using formal written methods of short division; interpret remainders appropriate to the context.** Divide numbers up to 4 digits by a two-digit whole number using the formal written method for 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.
- **Multiply and divide numbers mentally drawing upon known facts.** Perform mental calculations including with mixed operations and large numbers.
- **Multiply and divide whole numbers and decimals by 10, 100 and 1,000.**
- **Use their knowledge of the order of operations to carry out calculations involving the four operations- BIDMAS.**
- Solve problems involving addition, subtraction, multiplication and division.
- Use estimation to check answers to calculations and determine, in the context of the problem, an appropriate degree of accuracy.

6. Algebra

THIS TOPIC FIRST APPEARS IN THE YEAR 6 CURRICULUM. ENSURE CHILDREN UNDERSTAND THE BASIC SKILLS.

- **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.

Problem Solving and Reasoning- to run through all objectives.

7. Measures

- **Convert between different units of metric measure: kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre.** Extend with problem solving.
- 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**
- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.
- **Solve problems involving converting between units of time.**
- **Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.** Extend with problem solving.
- **Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes. Extend to shapes with triangles.**
- **Estimate volume: use 1 cm³ blocks to build cuboids (including cubes); and capacity (for example, using water)**
- **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 the area of parallelograms and triangles
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³].

9. Geometry – Property of Shape

- **Identify 3-D shapes, including cubes and other cuboids, from 2-D representations. By the end of Year 5 pupils should know the following shapes; square, rectangle, circle, triangle, polygons, quadrilaterals, semi-circle, all triangles parallelogram, rhombus, trapezium, kite, arrowhead, pentagon, hexagon, octagon, cube, cuboid, pyramid, sphere, cylinder, cone, prisms, hemisphere, square-based and triangular-based pyramids, tetrahedrons.** Recognise, describe and build simple 3-D shapes, including making nets.
- Draw 2-D shapes using given dimensions and angles.
- **Identify:**
 - * **angles at a point and one whole turn (total 360)**
 - * **angles at a point on a straight line and 21 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.**
- 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.

8. Statistics

- **Solve comparison, sum and difference problems using information presented in a line graph.** Extend with more complex scales.
- **Complete, read and interpret information in tables, including timetables.**
- Interpret and construct pie charts and line graphs and use these to solve problems
- Calculate and interpret the mean as an average.

10. Geometry – Position & Direction

- **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.**
- 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.

Problem Solving and Reasoning- to run through all objectives.

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1. Number – Place Value

- **Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.** Beyond 10,000,000 if confident.
- **Round any whole number to a required degree of accuracy.** Round decimal numbers.
- **Use negative numbers in context and calculate intervals across zero.** Include decimal numbers.

STRANDS- These objectives need to be running through the above objectives.

- **Solve number problems and practical problems that involve all of the above.**

4. Number – Fractions (including decimals and percentages)

- **Use common factors to simplify fractions; use common multiples to express fractions in the same denominators.**
- **Compare and order fractions, including fractions > 1**
- **Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.** Increasing difficulty in the denominators used.
- **Multiply simple pairs of proper fractions, writing the answer in its simplest form [1/4 x 1/2= 1/8].** Increasing difficulty in the numerators and denominators used.
- **Divide proper fractions by whole numbers [1/3 ÷ 2 = 1/6].** Move onto improper fractions and mixed numbers.
- **Associate a fraction with division and calculate decimal fraction equivalents [e.g. 0.375] for a simple fraction [e.g. 3/8].** Increasingly difficult fractions.
- **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.**
- **Multiply one-digit numbers with up to two decimal places by whole numbers.** Extend to two digit numbers with two up to two decimal places.
- **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.**

5. 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 [e.g. of measures and such as 15% of 360] and the use of percentages for comparison.** Extend to finding 1% of amounts e.g. 16%.
- **Solve problems involving similar shapes where the scale factors is known or can be found.**
- **Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.**

7. Measures

- **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 .** Extend with problem solving.
- **Convert between miles and kilometres.** Extend with problem solving.
- **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 the area of parallelograms and triangles**
- **Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³].**
- **Problem solve using the objectives above.**

2. Number – Addition and Subtraction

- **Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why (numbers with more than 4 digits).** Including decimal numbers.
- **Solve problems involving addition, subtraction, multiplication and division.**
- **Use estimation to check answers to calculations and determine, in the context of the problem, an appropriate degree of accuracy.**
- **Use their knowledge of the order of operations to carry out calculations involving the four operations.**
- **Perform mental calculations including with mixed operations and large numbers.**

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3. Number – Multiplication & 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 for 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.**
- **Use their knowledge of the order of operations to carry out calculations involving the four operations- BIDMAS.**
- **Solve problems involving addition, subtraction, multiplication and division.**
- **Use estimation to check answers to calculations and determine, in the context of the problem, an appropriate degree of accuracy.**

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8. Statistics

- **Interpret and construct pie charts and line graphs and use these to solve problems**
- **Calculate and interpret the mean as an average.**

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- Draw 2-D shapes using given dimensions and angles
- Recognise, describe and build simple 3-D shapes, including making nets
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- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
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