📘 Year 7 Maths – Number and Calculations

🔑 Key Vocabulary

- **Integer**: A whole number (positive, negative, or zero)
- **Place value**: The value of where a digit is in the number
- **Product**: The result of multiplying two numbers
- **Quotient**: The result of a division
- **Remainder**: The amount left over after division
- **Negative number**: A number less than zero
- **Order of operations**: The rules for which operations to do first (BIDMAS/BODMAS)

📜 Key Knowledge

- **Adding/Subtracting integers**: Understand number lines and inverse operations
- **Multiplying/Dividing integers**: Use written methods and place value
- **Remainders and decimals**: Interpret remainders and divide to get decimals
- **Negative numbers**: Apply all four operations with negative values
- **Order of operations**: Apply correct order using brackets and operations hierarchy

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🧠 Lesson Sequence

1. Adding Integers
2. Subtracting Integers
3. Multiplying Using Place Value
4. Written Methods for Multiplying Integers
5. Dividing Numbers into Equal Groups
6. Written Division Methods

7. Division with Remainders
8. Decimal Division
9. Ordering Negative Numbers
10. Operations with Negative Numbers
11. Multiplying & Dividing Negative Numbers
12. Order of Operations

⚠ Possible Misconceptions

- Confusing subtraction with negative signs (e.g., thinking -5 - 3 is the same as -5 + 3)
- Incorrectly applying BIDMAS, especially when operations appear together
- Believing division must always result in a whole number
- Forgetting rules for signs (e.g., negative × negative = positive)

❓ 3 Key Questions

1. What is the correct way to add and subtract negative numbers?
2. How do we decide the order in which to carry out calculations?
3. Why is it important to use place value when multiplying and dividing?

Sparx codes

	Number and calculations	Adding	M928	Adding integers
		Subtracting	M347	Subtracting integers
		Multiplying	M911	Multiplying using place value
			M187	Using a written method to multiply integers
		Dividing	M462	Dividing numbers into equal groups
			M354	Using a written method to divide integers
			M873	Dividing with a remainder
			M262	Using a written method to divide to get a decimal answer
		Negative numbers	M527	Ordering negative numbers
			M106	Adding and subtracting with negative numbers
			M288	Multiplying and dividing with negative numbers
		Order of operations	M521	Using the correct order of operations

📘 Year 7 Maths – Expressions and Equations

🔑 Key Vocabulary

- **Expression**: A combination of numbers, variables, and operators (no equals sign)
- **Variable**: A symbol (usually a letter) that represents a number
- **Term**: A part of an expression separated by + or – signs
- **Coefficient**: A number multiplied by a variable
- **Formula**: A mathematical rule or relationship expressed using symbols
- **Substitute**: Replace a variable with a given value
- **Simplify**: Combine like terms to make an expression shorter or easier to work with
- **Non-linear**: An expression where the variable has an exponent other than 1

📚 Key Knowledge

- Understand algebraic notation and terminology (e.g. 3x means 3 × x)
- Know how to substitute numbers into algebraic expressions and formulae
- Be able to simplify expressions by combining like terms
- Recognise and correctly interpret real-life formulae
- Work with expressions involving more than one variable or non-linear terms

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🧠 Lesson Sequence

1. Algebraic Notation
2. Algebraic Terminology
3. Substituting into Expressions with One Operation
4. Substituting into Expressions with Multiple Operations
5. Substituting into Algebraic Formulae

6. Substituting into Real-life Formulae
7. Simplifying Expressions with a Single Variable
8. Simplifying Expressions with Multiple Variables
9. Simplifying Non-linear Expressions

⚠ Possible Misconceptions

- Believing that terms with different variables can be combined (e.g. thinking 3a+2b=5ab3a + 2b = 5ab3a+2b=5ab)
- Confusing expressions with equations (expressions have no = sign)
- Incorrectly substituting values (especially into more complex or non-linear expressions)
- Omitting multiplication signs (e.g. writing 2a2a2a as just aaa)
- Thinking that like terms must be next to each other to simplify

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❓ 3 Key Questions

1. How do we use letters and symbols to represent numbers in algebra?
2. What does it mean to substitute into an expression or formula?
3. How can we simplify expressions to make them easier to work with?

Sparx Codes

Expressions and equations	**Expressions**	M813	Algebraic notation
		M830	Algebraic terminology
	Substitution	M417	Substituting into expressions with one operation
		M327	Substituting into expressions with multiple operations
		M208	Substituting into algebraic formulae
		M979	Substituting into real-life formulae
	Simplifying expressions	M795	Simplifying expressions containing a single variable
		M531	Simplifying expressions containing multiple variables
		M949	Simplifying expressions containing non-linear terms

📘 Year 7 Maths – Geometry and Angles

🔑 Key Vocabulary

- **Angle**: The space (usually measured in degrees) between two intersecting lines
- **Acute angle**: Less than 90°
- **Right angle**: Exactly 90°
- **Obtuse angle**: Between 90° and 180°
- **Reflex angle**: More than 180°
- **Protractor**: A tool used to measure angles
- **Vertically opposite angles**: Equal angles formed opposite each other when two lines cross
- **Supplementary angles**: Angles that add up to 180°
- **Complementary angles**: Angles that add up to 90°
- **Polygon**: A closed 2D shape with straight sides

📚 Key Knowledge

- Identify and classify types of angles
- Estimate and accurately measure angles using a protractor
- Draw angles using appropriate equipment
- Know angle rules on a straight line (180°), at a point (360°), and in various shapes
- Calculate unknown angles in triangles and quadrilaterals
- Use facts about vertically opposite angles and combine angle rules to solve problems

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🧠 Lesson Sequence

1. Types of Angles
2. Estimating Angles

3. Measuring Angles
4. Drawing Angles
5. Angles on a Line and About a Point
6. Angles in Triangles
7. Vertically Opposite Angles
8. Angles in Quadrilaterals
9. Combining Angle Facts

⚠ Possible Misconceptions

- Believing a right angle is always marked with a curve instead of a square corner
- Thinking all triangle angles are equal regardless of triangle type
- Forgetting that angles at a point add to 360°
- Confusing opposite angles with adjacent ones
- Assuming all quadrilaterals have equal angles

❓ 3 Key Questions

1. What rules help us calculate missing angles in shapes and around points?
2. How do we measure and draw angles accurately?
3. How can angle facts be combined to solve more complex problems?

Sparx codes

Geometry and angles	**Angles**	M502	Types of angles
		M541	Estimating angles
		M780	Measuring angles
		M331	Drawing angles
	Unknown angles	M818	Angles on a line and about a point
		M351	Angles in triangles
		M163	Vertically opposite angles
		M679	Angles in quadrilaterals
		M319	Combining angle facts

📘 Year 7 Maths – Coordinates and Graphs

🔑 Key Vocabulary

- **Coordinate**: A pair of numbers (x, y) that show position on a grid
- **Origin**: The point (0, 0) where the x- and y-axes intersect
- **Axis (plural: axes)**: The horizontal (x) and vertical (y) lines on a graph
- **Quadrant**: One of the four sections of the coordinate grid
- **Function machine**: A way of showing operations applied to a number to get an output
- **Input/Output**: The number that goes into and comes out of a function machine
- **Linear graph**: A graph of a straight line
- **Gradient**: The steepness of a line

📚 Key Knowledge

- Read and plot coordinates in all four quadrants
- Solve problems involving shapes using coordinates (e.g. midpoints, translations)
- Use function machines with numbers and algebraic expressions
- Understand and use function notation
- Plot horizontal, vertical, and diagonal lines
- Draw and interpret straight line graphs, identifying patterns and relationships

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🧠 Lesson Sequence

1. Reading and Plotting Coordinates
2. Solving Shape Problems Involving Coordinates
3. Function Machines with Numbers
4. Function Machines with Letters

5. Plotting Horizontal, Vertical, and Diagonal Lines
6. Plotting Straight Line Graphs

⚠ Possible Misconceptions

- Confusing the x-coordinate and y-coordinate order (x comes before y)
- Believing all graphs must be curved unless specifically told
- Thinking function machines only work with numbers, not algebra
- Misunderstanding horizontal vs vertical lines (mixing up x = and y = lines)
- Assuming diagonal lines are always 45° or go through the origin

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❓ 3 Key Questions

1. How do coordinates describe position on a grid?
2. What do function machines help us understand about numbers and algebra?
3. How can we plot and interpret different types of straight line graphs?

Sparx Codes

Coordinates and graphs	**Coordinates**	M618	Reading and plotting coordinates
		M230	Solving shape problems involving coordinates
	Function machines	M175	Function machines with numbers
		M428	Function machines with letters
	Graphs	M797	Plotting horizontal, vertical and diagonal lines
		M932	Plotting straight line graphs

📘 Year 7 – Topic: Averages

🔑 Key Vocabulary

- **Mean**: The sum of values divided by the number of values.
- **Median**: The middle value when data is in order.
- **Mode**: The value that appears most often.
- **Range**: The difference between the highest and lowest values.
- **Frequency**: The number of times a value appears.
- **Frequency table**: A table showing how often each value occurs.

📚 Key Knowledge

- To calculate the **mean**, add all the numbers and divide by how many numbers there are.
- The **median** is the middle number when the list is in order. If there is an even number of values, find the mean of the two middle values.
- The **mode** is the number that appears most frequently.
- The **range** is calculated by subtracting the smallest number from the largest.
- **Frequency tables** help to organise data. To find the mean from a frequency table, multiply each value by its frequency, sum those products, then divide by the total frequency.

🧠 Lesson Sequence

1. Calculating the Range
2. Finding the Mode
3. Calculating the Median
4. Calculating the Mean
5. Finding Averages from Frequency Tables

⚠ Possible Misconceptions

- Confusing **mean** with **median** or **mode**.
- Forgetting to order data before finding the **median**.
- Thinking the **range** is an average.
- Not dividing by the **total frequency** when finding the mean from a frequency table.
- Believing that data must always have a **mode** (some sets have none or more than one).

❓ 3 Key Questions

1. What is the difference between mean, median, mode, and range?
2. How do you find the average from a frequency table?
3. Why might the median or mode be more useful than the mean in some situations?

Sparx codes

Averages	**Mean, mode, median, range**	M328	Calculating the range
		M841	Finding the mode
		M934	Calculating the median
		M940	Calculating the mean
	Frequency tables	M127	Finding averages from frequency tables

📘 Year 7 – Topic: Rounding and Estimation

🔑 Key Vocabulary

- **Rounding**: Reducing a number to a simpler form, often to a specific place value.
- **Integer**: A whole number (positive, negative, or zero).
- **Decimal**: A number that includes a fractional part after the decimal point.
- **Place value**: The value of a digit based on its position in a number.
- **Estimation**: An approximate calculation or judgment.
- **Approximate**: Close to the actual value but not exact.

📚 Key Knowledge

- To round **integers**, look at the digit to the right of the rounding place:
    - If it's 5 or more, round **up**.
    - If it's 4 or less, round **down**.
- To round **decimals**, apply the same rules, focusing on decimal places (e.g., nearest tenth or hundredth).
- **Estimating calculations** helps to check answers quickly and understand if they are reasonable.
    - Round each number before carrying out the operation (addition, subtraction, multiplication, division).

🧠 Lesson Sequence

1. Rounding Integers
2. Rounding Decimals
3. Estimating Calculations

⚠ Possible Misconceptions

- Believing that numbers always round up if they have a decimal.
- Forgetting to consider place value when rounding (e.g., rounding to nearest ten vs hundred).
- Confusing rounding rules (e.g., thinking "5 rounds down").
- Performing the full calculation before estimating, instead of rounding first.

❓ 3 Key Questions for the Topic

1. How do you round a number to the nearest 10, 100, or whole number?
2. What are the steps to estimate a calculation?
3. Why is estimation useful in real life and checking answers?

Sparx codes

Rounding and estimation	**Rounding**	M111	Rounding integers
		M431	Rounding decimals
		M878	Estimating calculations

📘 Year 7 – Topic: Converting Measures

🔑 Key Vocabulary

- **Length**: A measure of distance (e.g. millimetres, centimetres, metres, kilometres).
- **Mass**: A measure of weight (e.g. grams, kilograms, tonnes).
- **Capacity**: A measure of volume (e.g. millilitres, litres).
- **Conversion**: Changing from one unit to another.
- **Metric system**: A decimal-based system of measurement.

📜 Key Knowledge

- **Units of length**:
  - 10 mm = 1 cm
  - 100 cm = 1 m
  - 1000 m = 1 km
- **Units of mass**:
  - 1000 g = 1 kg
  - 1000 kg = 1 tonne
- **Units of capacity**:
  - 1000 ml = 1 litre
- Converting between units involves **multiplying** or **dividing by powers of 10**.
- Always check the **direction** of conversion:
  - From a smaller to a larger unit = **divide**
  - From a larger to a smaller unit = **multiply**

🧠

Lesson Sequence

1. Converting Units of Length
2. Converting Units of Mass
3. Converting Units of Capacity

⚠ Possible Misconceptions

- Confusing units (e.g. mixing up cm and mm).
- Thinking conversion always requires multiplication.
- Incorrect place value when multiplying or dividing by 10, 100, or 1000.
- Forgetting to use the correct units in the answer.

❓3 Key Questions for the Topic

1. What are the key metric conversions for length, mass, and capacity?
2. When do you multiply or divide when converting units?
3. Why is it important to convert units accurately in real-life situations?

Sparx codes

Measures	**Converting measures**	M772	Converting units of length
		M530	Converting units of mass
		M761	Converting units of capacity

📘 Year 7 – Topic: Solving Equations

🔑 Key Vocabulary

- **Equation**: A mathematical statement where two expressions are equal.
- **Variable**: A symbol (usually a letter) that represents an unknown number.
- **Solve**: To find the value of the variable that makes the equation true.
- **Inverse operation**: An operation that reverses the effect of another (e.g. addition ↔ subtraction).
- **Bracket**: A symbol used to group parts of an expression (e.g. (x + 2)).
- **Fraction**: A number expressed as part of a whole (e.g. ½).
- **Linear equation**: An equation in which the variable is raised only to the power of 1.

📚 Key Knowledge

- Use **inverse operations** to isolate the variable.
- Maintain **balance**: whatever you do to one side of the equation, you must do to the other.
- Understand how to:
    - Solve one-step and two-step equations.
    - Rearrange equations with variables on both sides.
    - Expand brackets before solving.
    - Simplify and solve equations involving fractions.

🧠 Lesson Sequence

1. Solving Equations with One Step
2. Solving Equations with Two or More Steps
3. Solving Equations of the Form ax + b = cax + b = c
4. Solving Linear Equations Involving Brackets

5. Solving Linear Equations Involving Fractions
6. Solving Equations with the Unknown on Both Sides

⚠ Possible Misconceptions

- Forgetting to apply the same operation to both sides.
- Confusing inverse operations (e.g. adding instead of subtracting).
- Incorrectly expanding brackets.
- Struggling with fractional equations (e.g. not finding a common denominator).
- Moving terms to the other side without changing the sign.

❓ 3 Key Questions for the Topic

1. How do inverse operations help in solving equations?
2. What steps must you follow when solving an equation with brackets or fractions?
3. How can you check your solution is correct?

Sparx codes

Equations	**Solving equations**	M707	Solving equations with one step
		M634	Solving equations of the form ax+b=cax+b=c
		M902	Solving linear equations involving brackets
		M855	Solving linear equations involving fractions
		M554	Solving equations with the unknown on both sides
		M509	Mixed problems: solving equations with two or more steps

📘 Year 7 – Topic: Ratio

🔑 Key Vocabulary

- **Ratio**: A comparison of two or more quantities.
- **Simplify**: To express a ratio in its simplest form.
- **Equivalent ratio**: A ratio that represents the same relationship, even if the numbers look different.
- **Part-to-part**: A ratio comparing one part of a group to another part.
- **Part-to-whole**: A ratio comparing one part to the total amount.
- **Proportion**: A statement that two ratios are equal.
- **Percentage**: A way of expressing a number as a fraction of 100.

📚 Key Knowledge

- Write and simplify ratios using the lowest terms.
- Identify and use equivalent ratios to solve problems.
- Convert between ratios, fractions, and percentages.
- Share amounts in a given ratio by finding the total number of parts and dividing accordingly.
- Express complex ratios in forms such as 1:n or 1:n:1.

🧠 Lesson Sequence

1. Writing and Simplifying Ratios
2. Using Equivalent Ratios to Find Unknown Amounts
3. Converting Between Ratios, Fractions, and Percentages
4. Sharing Amounts in a Given Ratio
5. Writing Ratios in the Form 1:n or 1:n:1

⚠ Possible Misconceptions

- Believing that a ratio is the same as a fraction without context.
- Adding parts incorrectly when sharing in a ratio.
- Not simplifying ratios fully.
- Confusing part-to-part with part-to-whole relationships.
- Failing to convert units when comparing different quantities.

❓ 3 Key Questions for the Topic

1. How can you simplify and compare ratios effectively?
2. What does it mean to share an amount in a given ratio?
3. How can you convert between ratios, fractions, and percentages accurately?

Sparx codes

Ratio	**Ratio**	M885	Writing and simplifying ratios
		M801	Using equivalent ratios to find unknown amounts
		M267	Converting between ratios, fractions and percentages
		M525	Sharing amounts in a given ratio
		M543	Writing ratios in the form 1:n1:n

📘 Year 7 – Topic: Fractions

🔑 Key Vocabulary

- **Fraction**: A way to represent part of a whole.
- **Numerator**: The top number of a fraction, showing how many parts are considered.
- **Denominator**: The bottom number of a fraction, showing the total number of equal parts.
- **Equivalent fractions**: Fractions that represent the same value.
- **Improper fraction**: A fraction where the numerator is greater than or equal to the denominator.
- **Mixed number**: A number made up of a whole number and a fraction.
- **Simplify**: To write a fraction in its simplest form.
- **Common denominator**: A shared multiple of the denominators of two or more fractions.

📚 Key Knowledge

- Understand and identify fractions in shapes and quantities.
- Construct and interpret fractions in real-life contexts.
- Find and use equivalent fractions confidently.
- Simplify fractions by finding the highest common factor.
- Order fractions by finding a common denominator or converting to decimals.
- Add and subtract fractions with the same or different denominators.
- Convert between mixed numbers and improper fractions.
- Multiply and divide fractions using simple rules.
- Solve word problems involving fractions in different contexts.

🧠 Lesson Sequence

1. Finding Fractions of Shapes

2. Constructing Fractions
3. Finding Equivalent Fractions
4. Simplifying Fractions
5. Ordering Fractions
6. Adding and Subtracting Fractions
7. Converting Between Mixed Numbers and Improper Fractions
8. Multiplying Fractions
9. Dividing Fractions
10. Mixed Problems: Calculating with Fractions

⚠ Possible Misconceptions

- Believing that a larger denominator means a larger fraction.
- Not simplifying fractions fully when required.
- Forgetting to find a common denominator for addition or subtraction.
- Mixing up rules for multiplying vs. adding fractions.
- Misinterpreting mixed numbers as multiplication (e.g., 2 ½ as 2 × ½).

❓ 3 Key Questions for the Topic

1. How can you tell if two fractions are equivalent?
2. What steps do you follow to add or subtract fractions with different denominators?
3. How do you solve real-life problems using fractions?

Sparx codes

Fractions	**Writing fractions**	M158	Finding fractions of shapes
		M939	Constructing fractions
		M410	Finding equivalent fractions
	Simplifying fractions	M671	Simplifying fractions
	Ordering fractions	M335	Ordering fractions
	Adding and subtracting fractions	M835	Adding and subtracting fractions
	Mixed numbers	M601	Converting between mixed numbers and improper fractions
	Multiplying fractions	M157	Multiplying fractions
	Dividing fractions	M110	Dividing fractions
	Fraction problems	M645	Mixed problems: Calculating with fractions

📘 Year 7 – Topic: Area, Perimeter and Volume

🔑 Key Vocabulary

- **Area**: The amount of space a 2D shape covers (measured in square units).
- **Perimeter**: The total distance around the edge of a shape.
- **Volume**: The amount of space a 3D object occupies (measured in cubic units).
- **Rectangle, Triangle, Parallelogram, Trapezium**: Different 2D shapes with specific area formulas.
- **Compound shape**: A shape made from two or more basic shapes.
- **Prism**: A 3D shape with identical cross-sections throughout its length.
- **Cuboid**: A 3D shape with six rectangular faces.

📚 Key Knowledge

- Use grids to estimate and calculate area and perimeter.
- Apply correct formulas to calculate area of rectangles, triangles, parallelograms, and trapeziums.
- Understand how to break compound shapes into simpler parts for area and perimeter calculations.
- Use appropriate units for area (e.g., cm^2, m^2) and volume (e.g., cm^3, m^3).
- Calculate volume using formula: **Volume = Area of cross-section × length**.
- Solve problems involving mixed shapes and real-life applications.

🧠 Lesson Sequence

1. Finding Areas Using Grids
2. Finding Perimeters Using Grids
3. Finding the Area of Rectangles

4. Finding the Perimeter of Rectangles and Simple Shapes
5. Finding the Area of Parallelograms
6. Finding the Area of Triangles
7. Finding the Area of Compound Shapes
8. Finding the Perimeter of Compound Shapes
9. Finding the Area of Compound Shapes Containing Triangles
10. Finding the Area of Trapeziums
11. Mixed Area Problems
12. Finding the Volume of Cubes and Cuboids
13. Finding the Volume of Prisms

⚠ Possible Misconceptions

- Confusing perimeter with area (e.g., using area formulas to find perimeter).
- Forgetting to use correct units or convert between units.
- Thinking area and volume are calculated the same way.
- Not dividing by 2 when using the triangle area formula.
- Misapplying formulas to irregular or compound shapes.

❓3 Key Questions for the Topic

1. What is the difference between area, perimeter, and volume?
2. How do you choose and apply the correct formula for different shapes?
3. How can you break down complex shapes to find their area or perimeter?

Sparx codes

Area, perimeter and volume	**Area and perimeter**	M900	Finding areas using grids
		M920	Finding perimeters using grids
		M390	Finding the area of rectangles
		M635	Finding the perimeter of rectangles and simple shapes
		M291	Finding the area of parallelograms
		M610	Finding the area of triangles
		M269	Finding the area of compound shapes
		M690	Finding the perimeter of compound shapes
		M996	Finding the area of compound shapes containing triangles
		M705	Finding the area of trapeziums
		M303	Mixed area problems
	Volume	M765	Finding the volume of cubes and cuboids
		M722	Finding the volume of prisms

📘 Year 7 – Topic: Sequences

🔑 Key Vocabulary

- **Sequence**: An ordered list of numbers or objects.
- **Term**: A single number or object in a sequence.
- **Term-to-term rule**: A rule that tells you how to get from one term to the next.
- **Position-to-term rule**: A rule that gives a formula for finding any term in the sequence based on its position.
- **Arithmetic sequence**: A sequence where the same number is added each time (constant difference).
- **Pattern**: A recurring or predictable sequence of shapes or numbers.
- **Substitute**: To replace a variable with a number.

📜 Key Knowledge

- Recognise and continue sequences of numbers and patterns.
- Identify and describe term-to-term rules (e.g., +3, -2).
- Understand how patterns can form sequences and write the term-to-term rules for these.
- Use substitution to calculate terms from position-to-term rules (e.g., nth term).
- Recognise and construct arithmetic sequences.
- Describe position-to-term rules using algebraic expressions (e.g., 2n + 1).

🧠 Lesson Sequence

1. Term-to-Term Rules for Numerical Sequences
2. Term-to-Term Rules for Sequences of Patterns
3. Substituting into Position-to-Term Rules
4. Position-to-Term Rules for Arithmetic Sequences

5. Position-to-Term Rules for Sequences of Patterns

⚠ Possible Misconceptions

- Confusing term-to-term rules with position-to-term rules.
- Thinking sequences must always increase.
- Incorrect substitution into algebraic formulas (e.g., not squaring correctly or forgetting to apply the order of operations).
- Believing all sequences are arithmetic when they may not be (e.g., geometric or other non-linear patterns).

❓ 3 Key Questions for the Topic

1. How can I describe a sequence using a rule?
2. What's the difference between a term-to-term and a position-to-term rule?
3. How do I use substitution to find terms in a sequence?

Sparx codes

Sequences	**Sequences**	M381	Term-to-term rules for numerical sequences
		M241	Term-to-term rules for sequences of patterns
		M166	Substituting into position-to-term rules
		M991	Position-to-term rules for arithmetic sequences
		M866	Position-to-term rules for sequences of patterns
		M981	Special sequences

📘 Year 7 – Topic: Handling Data and Statistical Diagrams

🔑 Key Vocabulary

- **Data**: Information collected for analysis.
- **Table**: A way to organise data clearly.
- **Tally Chart**: A way to record frequency using tally marks.
- **Pictogram**: A chart using pictures/symbols to represent data.
- **Bar Chart**: A graph that uses bars to represent data values.
- **Pie Chart**: A circular chart divided into sectors to represent proportions.
- **Line Graph**: A graph that uses points connected by lines to show changes over time.
- **Interpret**: To understand and explain the meaning of information.
- **Axis**: The horizontal or vertical lines on a graph.

📚 Key Knowledge

- Understand how to collect and record data in tables.
- Represent data using tally charts and pictograms with clear keys.
- Draw bar charts accurately using consistent scales and labels.
- Interpret bar charts to answer questions about the data shown.
- Construct and interpret pie charts using angle calculations to show proportions.
- Draw line graphs with appropriate axes and scales to represent data over time.
- Analyse and interpret line graphs to understand trends and changes.

🧠 Lesson Sequence

1. Collecting and Recording Data Using Tables
2. Drawing and Interpreting Tally Charts

3. Drawing and Interpreting Pictograms
4. Drawing Bar Charts
5. Interpreting Bar Charts
6. Drawing Pie Charts
7. Interpreting Pie Charts
8. Drawing Line Graphs
9. Interpreting Line Graphs

⚠ Possible Misconceptions

- Misreading scales on graphs (e.g., skipping intervals or unequal spacing).
- Confusing different types of graphs or using the wrong one for the context.
- Not labelling axes or giving incomplete titles on graphs.
- Forgetting to use a key in pictograms or pie charts.
- Assuming all data is continuous (especially when using line graphs).

❓ 3 Key Questions for the Topic

1. What is the best way to represent this type of data?
2. How do I draw a graph that clearly shows the data?
3. What can I learn or conclude by interpreting the graph/chart?

Sparx codes

Handling data and statistical diagrams	**Representing and interpreting data**	M945	Collecting and recording data using tables
		M597	Drawing and interpreting tally charts
		M644	Drawing and interpreting pictograms
		M460	Drawing bar charts
		M738	Interpreting bar charts
		M574	Drawing pie charts
		M165	Interpreting pie charts
		M140	Drawing line graphs
		M183	Interpreting line graphs

📘 Year 7 – Topic: Fractions, Decimals and Percentages

🔑 Key Vocabulary

- **Fraction**: A way of representing part of a whole.
- **Decimal**: A number with a decimal point showing part of a whole.
- **Percentage**: A way of expressing a number as a part of 100.
- **Convert**: To change from one form to another (e.g., fraction to decimal).
- **Equivalent**: Equal in value, even if in a different form.
- **Order**: To arrange numbers from smallest to largest or vice versa.

📚 Key Knowledge

- Be able to convert between fractions and decimals using division.
- Know common fraction-decimal-percentage equivalents (e.g., ½ = 0.5 = 50%).
- Convert percentages to decimals and fractions by dividing by 100 or simplifying.
- Understand how to order a mix of fractions, decimals, and percentages by converting them to the same format.
- Recognise recurring and terminating decimals.
- Use place value knowledge and simplification techniques when converting.

🧠 Lesson Sequence

1. Converting Between Fractions and Decimals
2. Converting Between Fractions, Decimals and Percentages
3. Ordering Fractions, Decimals and Percentages

⚠️ Possible Misconceptions

- Thinking 0.5 and 0.50 are different values.

- Believing percentages over 100% are not possible or meaningful.
- Incorrectly simplifying fractions (e.g., dividing only numerator or denominator).
- Confusion when ordering mixed numbers without converting to the same form.

❓ 3 Key Questions for the Topic

1. How can I convert this number to a different form (fraction, decimal or percentage)?
2. What is the easiest format to compare or order these numbers?
3. Are these numbers equivalent even though they look different?

Sparx codes

Fractions, decimals and percentages	**Converting fractions, decimals and percentages**	M958	Converting between fractions and decimals
		M264	Converting between fractions, decimals and percentages
		M958	Converting between fractions and decimals
		M264	Converting between fractions, decimals and percentages
	Ordering fractions, decimals and percentages	M553	Ordering fractions, decimals and percentages

📘 Year 7 – Topic: Probability

🔑 Key Vocabulary

- **Probability**: The chance or likelihood of an event happening.
- **Certain**: An event that will definitely happen (probability = 1).
- **Impossible**: An event that cannot happen (probability = 0).
- **Mutually exclusive**: Events that cannot happen at the same time.
- **Expected frequency**: How often an outcome is expected to occur.
- **Venn diagram**: A diagram using circles to show relationships between sets.

📚 Key Knowledge

- Use words to describe probability (e.g. likely, unlikely, certain, impossible).
- Write probabilities as fractions, decimals, and percentages.
- Know that probability values range between 0 and 1.
- Calculate probabilities of simple and mutually exclusive events.
- Understand expected outcomes from repeated trials.
- Use and interpret Venn diagrams to find probabilities involving sets.

🧠 Lesson Sequence

1. Using Probability Phrases
2. Writing Probabilities as Fractions
3. Writing Probabilities as Fractions, Decimals and Percentages
4. Probabilities of Mutually Exclusive Events
5. Expected Results from Repeated Experiments
6. Interpreting Venn Diagrams

7. Probabilities from Venn Diagrams

⚠ Possible Misconceptions

- Thinking probabilities can be greater than 1 or less than 0.
- Adding probabilities incorrectly (especially when not mutually exclusive).
- Misreading Venn diagrams (e.g. miscounting overlaps).
- Assuming expected results always match actual outcomes.

❓ 3 Key Questions for the Topic

1. What is the likelihood of this event happening?
2. How do I calculate the probability of different outcomes?
3. What can a Venn diagram tell me about shared or exclusive outcomes?

Sparx codes

Probability	**Probability with words**	M655	Using probability phrases
	Writing probabilities	M941	Writing probabilities as fractions
	Writing probabilities	M938	Writing probabilities as fractions, decimals and percentages
	Calculating probability	M755	Probabilities of mutually exclusive events
		M206	Expected results from repeated experiments
	Venn diagrams	M829	Interpreting Venn diagrams
		M419	Probabilities from Venn diagrams

📘 Year 7 – Topic: Transformations

🔑 Key Vocabulary

- **Transformation**: A change in position, size, or orientation of a shape.
- **Reflection**: Flipping a shape over a mirror line.

Translation: Moving a s## 📘 Year 7 – Topic: Probability

🔑 Key Vocabulary

- **Probability**: The chance or likelihood of an event happening.
- **Certain**: An event that will definitely happen (probability = 1).
- **Impossible**: An event that cannot happen (probability = 0).
- **Mutually exclusive**: Events that cannot happen at the same time.
- **Expected frequency**: How often an outcome is expected to occur.
- **Venn diagram**: A diagram using circles to show relationships between sets.

📚 Key Knowledge

- Use words to describe probability (e.g. likely, unlikely, certain, impossible).
- Write probabilities as fractions, decimals, and percentages.
- Know that probability values range between 0 and 1.
- Calculate probabilities of simple and mutually exclusive events.
- Understand expected outcomes from repeated trials.
- Use and interpret Venn diagrams to find probabilities involving sets.

🧠 Lesson Sequence

8. Using Probability Phrases
9. Writing Probabilities as Fractions

10. Writing Probabilities as Fractions, Decimals and Percentages
11. Probabilities of Mutually Exclusive Events
12. Expected Results from Repeated Experiments
13. Interpreting Venn Diagrams
14. Probabilities from Venn Diagrams

⚠ Possible Misconceptions

- Thinking probabilities can be greater than 1 or less than 0.
- Adding probabilities incorrectly (especially when not mutually exclusive).
- Misreading Venn diagrams (e.g. miscounting overlaps).
- Assuming expected results always match actual outcomes.

❓ 3 Key Questions for the Topic

4. What is the likelihood of this event happening?
5. How do I calculate the probability of different outcomes?
6. What can a Venn diagram tell me about shared or exclusive outcomes?

Sparx codes

Probability	**Probability with words**	M655	Using probability phrases
	Writing probabilities	M941	Writing probabilities as fractions
	Writing probabilities	M938	Writing probabilities as fractions, decimals and percentages
	Calculating probability	M755	Probabilities of mutually exclusive events
		M206	Expected results from repeated experiments
	Venn diagrams	M829	Interpreting Venn diagrams
		M419	Probabilities from Venn diagrams

- hape without rotating or flipping it, using a vector.
- **Rotation**: Turning a shape around a fixed point.

- **Enlargement**: Increasing or decreasing the size of a shape from a centre of enlargement, using a scale factor.
- **Vector**: Describes the direction and distance of a translation.
- **Centre of rotation/enlargement**: The fixed point a shape is rotated or enlarged around.

📚 Key Knowledge

- Identify and describe reflections using mirror lines (axes or given lines).
- Describe translations using vectors (e.g., (3−2)\begin{pmatrix}3 \\ -2\end{pmatrix}(3−2)).
- Perform and describe rotations using angles, direction (clockwise/anticlockwise), and centre of rotation.
- Enlarge shapes from a given centre using positive or fractional scale factors.
- Combine multiple transformations and describe the overall effect.

🧠 Lesson Sequence

1. Reflection
2. Translation
3. Rotation
4. Enlargement
5. Mixed Transformations

⚠️ Possible Misconceptions

- Confusing directions in rotation (e.g., clockwise vs anticlockwise).
- Misunderstanding scale factor < 1 as an enlargement instead of a reduction.
- Forgetting to use or misidentifying the centre of rotation or enlargement.
- Describing translations incorrectly or without vectors.

❓ 3 Key Questions for the Topic

1. How does each transformation affect the position or size of a shape?
2. What information do I need to perform or describe a transformation?
3. How can I combine multiple transformations and describe the result clearly?

Sparx codes

Transformations	**Reflection**	M290	Reflection
	Translation	M139	Translation
	Rotation	M910	Rotation
	Enlargement	M178	Enlargement
	Mixed transformations	M881	Mixed transformations