📘 Year 8 Maths – Expressions

🔑 Key Vocabulary

- Expression: A mathematical phrase that includes numbers, variables, and operations
- Variable: A letter used to represent an unknown value
- Coefficient: A number multiplying a variable (e.g. 4 in 4x)
- Term: A part of an expression separated by + or − signs
- Like terms: Terms that have the same variable(s) raised to the same power
- Simplify: To write an expression in its simplest form
- Non-linear term: A term with a variable raised to a power other than 1 (e.g. x2x^2x2)

📚 Key Knowledge

- Use and understand algebraic notation and the meaning of common symbols
- Accurately identify parts of algebraic expressions using correct terminology
- Simplify expressions by collecting like terms
- Simplify expressions involving more than one variable
- Recognise and simplify non-linear expressions (e.g. involving x2x^2x2)

🧠 Lesson Sequence

1. Algebraic Notation
2. Algebraic Terminology
3. Simplifying Expressions Containing a Single Variable
4. Simplifying Expressions Containing Multiple Variables
5. Simplifying Expressions Containing Non-Linear Terms

⚠ Possible Misconceptions

- Thinking that unlike terms (e.g. 3x3x3x and 3x23x^23x2) can be simplified together
- Forgetting to include the sign (positive/negative) when collecting like terms
- Confusing coefficients with exponents
- Assuming xxx and x2x^2x2 are like terms

❓ 3 Key Questions

1. How can we use algebra to represent and simplify real-world problems?
2. What makes two terms "like terms"?
3. Why can't we simplify certain algebraic terms together?

Sparx Codes

Expressions	M813	Algebraic notation
	M830	Algebraic terminology
	M795	Simplifying expressions containing a single variable
	M531	Simplifying expressions containing multiple variables
	M949	Simplifying expressions containing non-linear terms

📘 Year 8 Maths – Substitution

🔑 Key Vocabulary

- **Substitute**: To replace a variable with a number
- **Expression**: A mathematical phrase involving numbers and/or variables
- **Formula**: A mathematical rule written using symbols
- **Variable**: A symbol, usually a letter, representing a number
- **Order of operations**: The sequence in which mathematical operations are performed (BIDMAS/BODMAS)

📚 Key Knowledge

- Understand how to substitute numbers into simple and more complex expressions
- Apply substitution correctly using the correct order of operations
- Identify and substitute values into algebraic formulae
- Use formulae in real-life contexts, such as area, perimeter, speed, etc.
- Know that a single mistake in substitution (e.g. missing BIDMAS) can lead to a wrong final answer

---

🧠 Lesson Sequence

1. Substituting into Expressions with One Operation
2. Substituting into Expressions with Multiple Operations
3. Substituting into Algebraic Formulae
4. Substituting into Real-Life Formulae

⚠️ Possible Misconceptions

- Ignoring the correct order of operations when substituting

- Replacing only part of a variable term (e.g. replacing just the letter in 3x3x3x but not multiplying)
- Confusing formulae with expressions
- Not using brackets around substituted values when needed

❓ 3 Key Questions

1. What does it mean to substitute a value into an expression or formula?
2. Why is it important to follow the order of operations during substitution?
3. How is substitution useful in real-life situations?

Sparx Codes

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

📘 Year 8 Maths – Expanding, Factorising and Rearranging Formulae

🔑 Key Vocabulary

- Bracket: A grouping symbol used in algebra
- Expand: Multiply out a bracketed expression
- Simplify: Combine like terms to make an expression shorter
- Factorise: Reverse of expanding – put an expression into brackets
- Subject of a formula: The variable that is isolated on one side of the equation
- Rearrange: Change the subject of a formula using inverse operations

---

📚 Key Knowledge

- Expanding single brackets requires multiplying every term inside the bracket by the term outside
- Factorising is the opposite process – taking out a common factor and using brackets
- Simplification often follows expansion to combine like terms
- To rearrange a formula, use inverse operations and keep the equation balanced
- More complex rearrangements require applying steps in the correct order, often using multiple inverse operations

---

🧠 Lesson Sequence

1. Expanding Single Brackets
2. Expanding and Simplifying Expressions
3. Factorising into One Bracket
4. Changing the Subject of Formulae (One Step)
5. Changing the Subject of Formulae (Multiple Steps)

⚠ Possible Misconceptions

- Forgetting to multiply all terms when expanding brackets
- Incorrect signs when expanding or factorising (especially negatives)
- Not fully factorising (e.g. missing the highest common factor)
- Rearranging without applying inverse operations correctly
- Confusing the subject of the formula with other variables

❓ 3 Key Questions

1. How do you expand a single bracket and why must you multiply every term?
2. What's the difference between factorising and expanding?
3. How can you use inverse operations to rearrange a formula?

Sparx Codes

Expanding	M237	Expanding single brackets
	M792	Expanding single brackets and simplifying expressions
Factorising	M100	Factorising into one bracket
Rearranging formulae	M242	Changing the subjects of formulae with one step
	M983	Changing the subjects of formulae with two or more steps

📘 Year 8 Maths – Solving Equations

🔑 Key Vocabulary

- Equation: A mathematical statement showing two expressions are equal
- Linear equation: An equation where the highest power of the variable is 1
- Like terms: Terms with the same variables and powers
- Inverse operation: The opposite operation used to solve or simplify
- Simultaneous equations: Two or more equations solved together to find common solutions
- Elimination method: A method of solving simultaneous equations by adding or subtracting equations

---

🧠 Key Knowledge

- Solve one-step and two-step equations using inverse operations
- Solve equations involving brackets and the distributive law
- Rearrange equations with the variable on both sides
- Solve equations involving fractions or where the unknown is in the denominator
- Construct equations from word problems and solve them
- Understand and solve simultaneous equations using elimination

---

🧪 Lesson Sequence

1. Solving one-step equations
2. Solving two-step equations
3. Solving equations with brackets
4. Solving equations with the unknown on both sides
5. Solving equations involving fractions
6. Constructing and solving equations

7. Solving simultaneous equations using elimination

⚠ Possible Misconceptions

- Confusing solving an expression with solving an equation
- Not applying inverse operations in the correct order
- Forgetting to apply the same operation to both sides
- Losing track of signs (e.g., negative values)
- Incorrectly simplifying brackets or distributing negatives
- Thinking simultaneous equations can be solved independently

---

❓ 3 Key Questions

1. What are the steps to isolate a variable in an equation?
2. How do we check if our solution to an equation is correct?
3. What strategies help when solving simultaneous equations?

Sparx Codes

Solving equations	M707	Solving equations with one step
	M634	Solving equations of the form ax+b=c ax+b=c
	M647	Solving equations of the form xa+b=c ax+b=c
	M855	Mixed problems: solving equations
	M401	Solving equations of the form x+ab=c bx+a=c
	M902	Solving linear equations involving brackets
	M387	Solving equations with the unknown in the denominator
	M509	Mixed problems: solving equations with two or more steps
	M554	Solving equations with the unknown on both sides
	M957	Constructing and solving equations
	M852	Solving simultaneous equations using elimination

📘 Year 8 Maths – Linear Inequalities

🔑 Key Vocabulary

- Inequality: A mathematical statement that compares two values using <, >, ≤, or ≥
- Solution set: All possible values that satisfy an inequality
- Number line: A visual tool to represent inequalities
- Open circle: Used on a number line for strict inequalities (< or >)
- Closed circle: Used on a number line for inclusive inequalities (≤ or ≥)
- Reversing the inequality: When multiplying or dividing both sides of an inequality by a negative number, the inequality sign must be reversed

---

🧠 Key Knowledge

- Understand and interpret inequality symbols
- Represent inequalities on a number line using open and closed circles
- Solve one-step and two-step inequalities
- Solve inequalities with the unknown on both sides
- Understand how to reverse the inequality when multiplying or dividing by a negative
- Write the solution set and represent it visually

🧪 Lesson Sequence

1. Reading and drawing inequalities on number lines
2. Solving single-step inequalities
3. Solving two-step inequalities
4. Solving inequalities with the unknown on both sides
5. Representing solution sets clearly

⚠ Possible Misconceptions

- Confusing inequality symbols (e.g. mixing up < and >)
- Forgetting to reverse the inequality sign when multiplying/dividing by a negative
- Using the wrong circle (open/closed) on a number line
- Treating inequalities like equations without considering inequality rules

---

❓ 3 Key Questions

1. What is the difference between solving an equation and solving an inequality?
2. How do you know when to reverse the inequality symbol?
3. How can we show inequality solutions clearly on a number line?

Sparx Codes

Linear inequalities	M384	Reading and drawing inequalities on number lines
	M118	Solving single inequalities
	M732	Solving inequalities with the unknown on both sides

📘 Year 8 Maths – Converting and Ordering Fractions, Decimals and Percentages

🔑 Key Vocabulary

- Fraction: A part of a whole, written as a numerator over a denominator
- Decimal: A number with a decimal point, representing parts of a whole
- Percentage: A fraction out of 100
- Equivalent: Different forms of the same value (e.g. ½ = 0.5 = 50%)
- Convert: To change from one form to another
- Order: To arrange values from smallest to largest (or vice versa)
- Percentage of an amount: A proportion of a number expressed as a percentage

---

🧠 Key Knowledge

- Convert fractions to decimals by dividing numerator by denominator
- Convert decimals to fractions by using place value
- Convert between fractions, decimals, and percentages confidently
- Recognise and use common equivalences (e.g. ¼ = 0.25 = 25%)
- Order mixed groups of fractions, decimals, and percentages by converting to the same form
- Write one number as a percentage of another using the formula

---

🧪 Lesson Sequence

1. Converting between fractions and decimals
2. Converting between fractions, decimals, and percentages
3. Ordering mixed numbers (fractions, decimals, percentages)
4. Writing numbers as percentages of other numbers

⚠ Possible Misconceptions

- Forgetting to convert all numbers to the same form before comparing or ordering
- Confusing place value when converting decimals to fractions (e.g. thinking 0.2 = 2/100)
- Assuming all fractions have easy decimal equivalents
- Mistaking percentage increase for percentage of a number

❓ 3 Key Questions

1. What's the quickest way to compare a fraction, a decimal, and a percentage?
2. Why is it useful to convert numbers into the same form before ordering them?
3. How do you calculate what percentage one number is of another?

Sparx Codes

Converting 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
	M235	Writing numbers as percentages of other numbers

📘 Year 8 Maths – Fractions of an Amount

🔑 Key Vocabulary

- Fraction: A way to represent a part of a whole
- Numerator: The top number of a fraction – how many parts you have
- Denominator: The bottom number – how many parts the whole is divided into
- Of: In maths, this often means multiply
- Unit fraction: A fraction where the numerator is 1
- Equivalent: Equal in value, though written differently

🧠 Key Knowledge

- To find a fraction of an amount, divide by the denominator and multiply by the numerator
- This process can be done with or without a calculator depending on the size of the numbers
- Use mental or written methods for simple values, and calculator techniques for more complex ones
- Know how to simplify fractions and convert improper fractions or mixed numbers if needed
- Recognise when answers should be in whole numbers, decimals, or fractions

---

🧪 Lesson Sequence

1. Finding fractions of amounts without a calculator
2. Finding fractions of amounts using a calculator

⚠️ Possible Misconceptions

- Dividing by the numerator instead of the denominator
- Forgetting to multiply after dividing
- Misreading "of" as addition or subtraction

- Rounding too early or incorrectly when using a calculator

❓ 3 Key Questions

1. What's the correct process for finding a fraction of a number?
2. How do you decide whether to use a calculator or not?
3. Why is it important to simplify fractions where possible?

Sparx Codes

Fractions of an amount	M695	Finding fractions of amounts without a calculator
	M684	Finding fractions of amounts with a calculator

📘 Year 8 Maths – Fraction Calculations

🔑 Key Vocabulary

- Fraction: A part of a whole, written as a fraction
- Improper fraction: A fraction where the numerator is larger than the denominator
- Mixed number: A whole number and a fraction combined
- Like denominators: Fractions with the same bottom number
- Common denominator: A shared multiple used to compare or add/subtract fractions
- Reciprocal: The flipped version of a fraction (used in division)
- Simplify: To reduce a fraction to its lowest terms

🧠 Key Knowledge

- Add/subtract fractions with like denominators directly
- For unlike denominators, find a common denominator first
- Convert between improper fractions and mixed numbers to simplify calculations
- Multiply fractions by multiplying numerators and denominators
- Divide fractions by multiplying by the reciprocal of the divisor
- For mixed numbers, convert to improper fractions before multiplying or dividing
- Understand how to compare and order fractions and mixed numbers
- Apply these skills to solve contextual problems involving fractions

---

🧪 Lesson Sequence

1. Adding and subtracting fractions
2. Converting between mixed numbers and improper fractions
3. Adding and subtracting mixed numbers

4. Ordering fractions and mixed numbers
5. Multiplying fractions
6. Multiplying with mixed numbers
7. Dividing fractions
8. Dividing with mixed numbers
9. Problem solving with fractions and mixed numbers

⚠ Possible Misconceptions

- Adding or subtracting numerators without adjusting denominators
- Confusing improper fractions and mixed numbers
- Multiplying or dividing without converting mixed numbers
- Not simplifying final answers
- Reversing numerators and denominators when finding the reciprocal incorrectly
- Forgetting to apply correct order of operations in worded problems

---

❓ 3 Key Questions

1. When should you convert a mixed number to an improper fraction?
2. What is the difference between multiplying and dividing fractions?
3. How can you apply fraction skills to real-life or multi-step problems?

Sparx Codes

Fraction calculations	X481	Adding and subtracting fractions
	X721	Converting between mixed numbers and improper fractions
	X201	Adding and subtracting mixed numbers
	X717	Ordering fractions and mixed numbers
	X497	Multiplying fractions
	X422	Multiplying with mixed numbers
	X784	Dividing fractions
	X286	Dividing with mixed numbers
	X319	Problem solving: Fractions and mixed numbers

📘 Year 8 Maths – Percentage of an Amount and Percentage Change

🔑 Key Vocabulary

- Percentage: A part per hundred (%)
- Percentage increase/decrease: How much a value grows or shrinks as a percentage
- Original value: The starting amount before any change
- New value: The amount after a percentage increase or decrease
- Multiplier: A decimal used to apply a percentage increase or decrease (e.g. 1.2 = +20%, 0.8 = -20%)
- Percentage change: The amount of change, expressed as a percentage of the original value

---

🧠 Key Knowledge

- To find a percentage of an amount:
  $$\text{Percentage of amount} = \frac{\text{Percentage}}{100} \times \text{Total}$$
- Use mental or written methods without a calculator for simple percentages (e.g. 50%, 25%, 10%)
- Use a calculator for less common percentages (e.g. 17%, 62%)
- To calculate **percentage change**:
  $$\text{Percentage change} = \frac{\text{Change}}{\text{Original}} \times 100$$
- Increase/decrease by a percentage using a **multiplier**
- To find the **original value**, use inverse operations or divide by the multiplier

🧪 Lesson Sequence

1. Finding percentages of amounts without a calculator
2. Finding percentages of amounts with a calculator
3. Percentage increase and decrease (without a calculator)
4. Percentage increase and decrease (with a calculator)
5. Calculating percentage change
6. Finding original values in reverse percentage problems

⚠️ Possible Misconceptions

- Confusing the new value with the original when calculating percentage change
- Using incorrect multipliers (e.g. using 1.2 for a 12% increase instead of 1.12)
- Forgetting to divide by 100 when finding a percentage
- Assuming all percentage problems should be done without a calculator
- Reversing the change and original value when working backwards

---

❓ 3 Key Questions

1. How can you find a percentage of an amount mentally and using a calculator?
2. What does a multiplier tell you about the change being applied?
3. How do you work backwards to find the original amount from a percentage change?

Sparx Code

Percentage of an amount	M437	Finding percentages of amounts without a calculator
	M905	Finding percentages of amounts with a calculator
Percentage change	M476	Percentage change without a calculator
	M533	Percentage change with a calculator
	X382	Finding the percentage an amount has been changed by
	X749	Finding original values in percentage calculations

📘 Year 8 Maths – Estimating and Finding Unknown Angles

🔑 Key Vocabulary

- Angle: A measure of turn between two lines meeting at a point (measured in degrees)
- Acute: An angle less than 90°
- Obtuse: An angle greater than 90° but less than 180°
- Reflex: An angle greater than 180°
- Vertically opposite angles: Equal angles formed by two intersecting lines
- Supplementary angles: Two angles that add up to 180°
- Angles on a line: Add up to 180°
- Angles around a point: Add up to 360°
- Interior angles: Angles on the inside of a polygon
- Exterior angles: Angles on the outside of a polygon

🧠 Key Knowledge

- Angles in a triangle add up to 180°
- Angles in a quadrilateral add up to 360°
- Vertically opposite angles are equal
- Angles on a straight line add up to 180°
- Angles around a point add up to 360°

- Interior angle of a regular polygon = $\frac{(n-2)\times 180^\circ}{n}$ where n is the number of sides
- Alternate angles are equal
- Corresponding angles are equal
- Co-interior angles are supplementary (add to 180°)

🧪 **Lesson Sequence**

1. Estimating angles
2. Finding angles in triangles
3. Finding angles in quadrilaterals
4. Vertically opposite angles
5. Angles on a line and around a point
6. Using properties of quadrilaterals
7. Combining angle facts
8. Angles on parallel lines
9. Angles in polygons

⚠️ **Possible Misconceptions**

- Thinking all angles in a triangle are equal
- Confusing corresponding and alternate angles
- Forgetting that quadrilaterals have 4 sides and 360° total
- Assuming all polygons have equal angles
- Ignoring vertically opposite angles

❓ 3 Key Questions

1. How do you use facts about angles to find missing values?
2. What are the rules for angles on lines and at points?
3. How do properties of shapes help in solving angle problems?

Sparx Codes

Estimating	M541	Estimating angles
Finding unknown angles	M351	Angles in triangles
	M679	Angles in quadrilaterals
	M163	Vertically opposite angles
	M818	Angles on a line and about a point
	M393	Using quadrilateral properties to find angles
	M319	Combining angle facts
	M606	Angles on parallel lines
	M653	Angles in polygons

📘 Year 8 Maths – Function Machines, Coordinates & Graphs

🔑 Key Vocabulary

- Function machine: A diagram that shows an input, an operation, and an output
- Coordinate: A pair of numbers showing position on a grid (x, y)
- Origin: The point (0, 0) on a coordinate grid
- Axis: Horizontal (x-axis) and vertical (y-axis) lines on a grid
- Linear graph: A straight-line graph
- Gradient: The steepness of a line
- Y-intercept: The point where a line crosses the y-axis
- Equation of a line: Usually in the form $y = mx + c$, where m is the gradient and c is the y-intercept
- Real-life graph: A graph that models a real-world situation

---

🧠 Key Knowledge

- Function machines follow a rule: input → operation → output
- Coordinates are written as (x, y)
- Straight line graphs have constant gradient
- A horizontal line has the form y = c
- A vertical line has the form x = c
- Diagonal lines follow the form y = mx + c
- Gradient is rise ÷ run
- To find the equation of a straight line:
    1. Find the gradient (m)
    2. Use a point to find the y-intercept (c)
- Real-life graphs can represent speed, cost, temperature, etc.

🧪 Lesson Sequence

1. Function machines with numbers
2. Reading and plotting coordinates
3. Solving problems involving coordinates
4. Plotting horizontal, vertical and diagonal lines
5. Plotting straight line graphs
6. Finding equations of straight lines
7. Interpreting equations of lines
8. Interpreting real-life graphs

⚠️ Possible Misconceptions

- Confusing x and y coordinates
- Thinking $y = 2x + 3$ means “add 2 and then multiply by 3”
- Misreading axis scales
- Not using a point to find the intercept
- Drawing non-straight lines for linear graphs

❓ 3 Key Questions

1. What does the gradient tell you about a line?
2. How can you use a table of values to plot a line?
3. What do graphs represent in real-world problems?

Sparx Codes

Function machines	M175	Function machines with numbers
Coordinates	M618	Reading and plotting coordinates
	M230	Solving shape problems involving coordinates
Plotting graphs and finding equations	M797	Plotting horizontal, vertical and diagonal lines
	M932	Plotting straight line graphs
	M544	Finding equations of straight line graphs
	M888	Interpreting equations of straight line graphs
	M771	Interpreting real-life graphs

📘 Year 8 Maths – Proportion & Money Calculations

🔑 Key Vocabulary

- **Proportion**: A part or share in relation to a whole
- **Ratio**: A comparison of two quantities
- **Unitary method**: Finding the value of one, then scaling up
- **Value for money**: Comparing prices for best deal
- **Best buy**: The most cost-effective option
- **Rate**: A ratio comparing two different units (e.g. £/kg)
- **Cost per unit**: The price of one item or unit of measurement
- **Scaling**: Increasing or decreasing a recipe or quantity proportionally

---

🧠 Key Knowledge

- Proportional problems involve **equivalent values**
- Use **unitary method**:
  Example: 5 pens cost £10 → 1 pen = £2 → 7 pens = £14
- To compare best buys:
  - Find cost per item/unit
  - Lower price = better value
- Proportions appear in recipes, map scales, currency conversions, and shopping offers
- Check if two ratios are equivalent by simplifying or cross-multiplying

---

🧪 Lesson Sequence

1. Solving proportion problems
2. Understanding value for money

⚠ Possible Misconceptions

- Confusing ratio with fraction
- Not converting to **same units** when comparing
- Dividing instead of multiplying (or vice versa)
- Assuming more items always mean better value

❓ 3 Key Questions

1. How do you decide which option is better value?
2. How do you solve a problem using the unitary method?
3. Why is it important to compare items using the same units?

Sparx codes

Proportion	M478	Solving proportion problems
Calculating with money	M681	Value for money

📘 Year 8 Maths – Calculating with Fractions

🔑 Key Vocabulary

- **Fraction**: A part of a whole written as numerator/denominator
- **Equivalent fractions**: Fractions that represent the same value
- **Simplifying**: Reducing a fraction to its lowest terms
- **Improper fraction**: Numerator is greater than or equal to denominator
- **Mixed number**: A whole number and a fraction combined
- **Common denominator**: A shared multiple of two or more denominators
- **Reciprocal**: When two numbers multiply to give 1
- **Multiply/Divide fractions**: Applying multiplication/division rules to parts

---

🧠 Key Knowledge

- **Simplify** fractions by dividing both parts by the same number
- **Equivalent fractions**: Multiply/divide numerator and denominator by same number
- **Add/Subtract**: Convert to common denominator before solving
- **Multiply**: Multiply numerators together and denominators together
- **Divide**: Flip the second fraction (reciprocal) and multiply
- Convert between **mixed numbers** and **improper fractions** when needed
- Apply knowledge in context: e.g. recipes, ratios, measurement problems

---

🧪 Lesson Sequence

1. Simplifying fractions
2. Finding equivalent fractions
3. Adding and subtracting fractions
4. Multiplying fractions
5. Dividing fractions
6. Mixed problems using all four operations

⚠ Possible Misconceptions

- Forgetting to find a common denominator when adding/subtracting
- Confusing rules for multiplying and adding
- Not simplifying final answers
- Incorrectly flipping the fraction when dividing

❓ 3 Key Questions

1. When do we need a common denominator?
2. How is multiplying fractions different from adding them?
3. What steps do you follow to divide one fraction by another?

Sparx codes

Fractions	**Calculating with fractions**	M671	Simplifying fractions
		M410	Finding equivalent fractions
		M835	Adding and subtracting fractions
		M110	Dividing fractions
		M157	Multiplying fractions
		M645	Mixed problems: Calculating with fractions

📘 Year 8 Maths – Interpreting and Representing Data

🔑 Key Vocabulary

- Tally chart: A way to record frequency using marks
- Pictogram: A visual representation using symbols or pictures
- Bar chart: Displays data with rectangular bars
- Pie chart: A circular chart divided into sectors
- Line graph: Shows change over time by connecting data points
- Stem-and-leaf diagram: A method of showing data in a compact form
- Frequency: The number of times something occurs
- Key: Explains symbols or values in diagrams

🧠 Key Knowledge

- Use tally charts to collect and count frequency
- Interpret and draw pictograms, using the key accurately
- Bar charts compare categories using height or length of bars
- Pie charts show parts of a whole – interpret angle sizes
- Line graphs are useful for showing trends or change over time
- Draw and interpret stem-and-leaf diagrams to understand data distribution

---

🧪 Lesson Sequence

1. Drawing and interpreting tally charts
2. Drawing and interpreting pictograms
3. Interpreting bar charts
4. Interpreting pie charts
5. Interpreting line graphs
6. Drawing stem-and-leaf diagrams
7. Interpreting stem-and-leaf diagrams

⚠ Possible Misconceptions

- Misreading or missing the key in pictograms and charts
- Thinking the tallest bar always means the largest value (without checking scales)
- Confusing angles in pie charts with frequency
- Not organising numbers properly in stem-and-leaf diagrams

❓ 3 Key Questions

1. What does the key in a pictogram or chart tell us?
2. How can we use graphs to compare or describe data?
3. What's the difference between a bar chart and a pie chart?

Sparx codes

Representing and interpreting data	M597	Drawing and interpreting tally charts
	M644	Drawing and interpreting pictograms
	M738	Interpreting bar charts
	M165	Interpreting pie charts
	M183	Interpreting line graphs
	M648	Drawing stem-and-leaf diagrams
	M210	Interpreting stem-and-leaf diagrams

📘 Year 8 Maths – Plans, Elevations and Scale Diagrams

🔑 Key Vocabulary

- Plan view: A view from directly above (bird's-eye view)
- Elevation: A view from the side or front of an object
- 3D shape: A solid shape that has depth, height and width
- Scale diagram: A drawing that is a reduced or enlarged version of an object, keeping all proportions the same
- Scale: The ratio of the drawing size to the actual size
- Length/width/height: Dimensions used to describe and draw shapes accurately

---

🧠 Key Knowledge

- Recognise and draw plan, front, and side elevations from 3D shapes
- Use cubes or isometric drawings to visualise different views
- Understand and apply scale to create or interpret diagrams
- Convert between real-life measurements and scaled lengths using the given scale
- Label all diagrams clearly with dimensions and units

🧪 Lesson Sequence

1. Drawing and interpreting plan views
2. Drawing and interpreting front and side elevations
3. Drawing 3D shapes from multiple views
4. Understanding and using scales in diagrams
5. Drawing scale diagrams accurately

⚠️ Possible Misconceptions

- Confusing the plan view with a side or front elevation
- Not keeping proportions accurate in scale drawings

- Using incorrect units or not converting measurements
- Missing out important details like dimensions or labels in diagrams

---

❓ 3 Key Questions

1. How do you identify the plan, front and side views of a 3D object?
2. What does a scale of 1:100 mean in real-life terms?
3. Why is it important to use a consistent scale when drawing diagrams?

Sparx codes

Scale diagrams	**Drawing plans and elevations**	M229	Plans and elevations
	Draw scale diagrams	M112	Drawing and interpreting scale diagrams