



Year 8 Mathematics – Units 1, 2, 3 & 4

Learning about this topic is important because:

Ratio, proportion, algebra and graphs help us understand and model relationships between quantities. These concepts are used in everyday situations such as interpreting maps, scaling recipes, comparing values, analysing trends and solving problems involving unknown quantities. Developing confidence with these topics strengthens logical thinking, problem-solving skills and mathematical reasoning, which are essential across mathematics and many real-world contexts.

This builds on: Work in Year 7 on fractions, percentages, basic ratio, algebraic expressions, coordinates and plotting points.

This leads to: Future work involving equations, functions, similarity, trigonometry, direct and inverse proportion, simultaneous equations and graphical analysis. These skills are fundamental throughout KS3 and GCSE mathematics.

We will explore:

- How to use and simplify ratios
- How to divide amounts into a given ratio
- How do you scale factors interpret scale drawings
- How to enlarge shapes using positive scale factors
- How to expand brackets and factorise expressions
- How to substitute values into algebraic expressions and formula
- How to plot and interpret coordinates in all four quadrants
- How to recognise and draw linear graphs and identify relationships between variables

We will develop/practise skills including:

- Solving multi step problems involving ratio proportion
- Interpret and analysing scale in real life contexts
- Manipulating applying expressions accurately
- Plotting points and drawing graphs accurately
- Interpreting patterns and trends from graphical representations
- Checking solutions for accuracy and reasonableness

Talk for Learning / Oracy in Maths

In this topic, you will use important terms such as *ratio, proportion, scale factor, enlargement, equivalent ratio, expression, term, coefficient, simplify, expand, factorise, substitute, coordinate, axis, quadrant, graph, gradient and linear relationship*. You should use this vocabulary clearly when explaining your methods, both in writing and speaking.

Keep these questions in mind as you work through tasks: **What can I see? What do I know? What can I do?**

You could learn more about this topic by:

Watching videos and completing extra questions on Sparx, practising algebraic manipulation and graphing skills, exploring scale drawings and maps, and discussing different problem-solving strategies with your classmates. Asking questions and explaining your thinking aloud will help you develop a deeper understanding of the mathematics.

Your teacher will assess your knowledge & understanding by looking at your Classwork, Sparx Homework, through questioning and discussion. They will give you feedback in lots of different ways. The key pieces of work in this topic are your low stakes end of topic tests and your termly cumulative assessments.



Year 8 Mathematics – Units 1, 2, 3 & 4



West Kirby
Grammar School



Year 8 Mathematics – Units 5, 6 & 7

Learning about this topic is important because:

Fractions, symmetry and measurement are all important areas of mathematics that help us understand and solve real-world problems. Fractions are used in finance, recipes and calculations involving proportions. Symmetry is used in art, design, engineering and architecture. Area, volume and density allow us to measure and compare objects and materials, helping us make informed decisions in practical situations. Together, these topics develop numerical fluency, spatial awareness and problem-solving skills.

This builds on: Work in Year 7 on fractions, equivalent fractions, area and perimeter, properties of shapes and basic geometric transformations

This leads to: Future work involving algebraic fractions, similarity, trigonometry, surface area, compound measures and more advanced geometric reasoning. These skills are essential throughout KS3 and GCSE mathematics and support learning in science, technology and engineering.

We will explore:

- How to multiply and divide fractions and mixed numbers
- How to play fraction calculations to problem solving contexts
- How to identify and describe lines of symmetry
- How to identify and use rotational symmetry
- How to reflect shapes accurately in horizontal vertical and diagonal mirror lines
- How to calculate areas of triangles and parallelograms
- How to calculate the volume of prisms and other 3D shapes
- To understand and solve problems involving area, volume and density

We will develop/practise skills including:

- Performing accurate calculations involving fractions
- Selecting efficient methods for multiplying and dividing fractions
- Drawing and interpreting symmetrical shapes
- Measure calculating area and volume accurately
- Making connections between different areas of mathematics

Talk for Learning / Oracy in Maths

In this topic, you will use important terms such as fraction, numerator, denominator, reciprocal, mixed number, symmetry, line of symmetry, rotational symmetry, reflection, mirror line, area, volume, prism, density, formula and compound measure.

You will explain the methods use

You should use this vocabulary clearly when explaining your methods, both in writing and speaking.

Keep these questions in mind as you work through tasks: **What can I see? What do I know?**

What can I do?

You could learn more about this topic by:

Watching videos and completing extra questions on Sparx, practising fraction calculations, exploring symmetry in everyday objects, and investigating how area, volume and density are used in science, engineering and design. Discussing different methods and explaining your thinking aloud will help strengthen your understanding.

Your teacher will assess your knowledge & understanding by looking at your Classwork, Sparx Homework, through questioning and discussion. They will give you feedback in lots of different ways. The key pieces of work in this topic are your low stakes end of topic tests and your termly cumulative assessments.



Year 8 Mathematics – Units 8, 9 & 10

Learning about this topic is important because:

Equations, percentages and indices are powerful mathematical tools that help us understand relationships, solve problems and work efficiently with numbers. Equations allow us to represent and solve unknown values, percentages help us compare and interpret quantities in contexts such as finance and statistics, and indices provide a concise way of working with repeated multiplication. Together, these topics develop algebraic thinking, numerical fluency and problem-solving skills that are essential in mathematics and everyday life.

This builds on: Work in Year 7 on solving one-step equations, calculating percentages of amounts, understanding place value and using powers and square numbers.

This leads to: Future work involving algebraic manipulation, simultaneous equations, standard form, compound percentage change, scientific notation and advanced algebraic reasoning. These concepts form an important foundation for GCSE mathematics and many applications in science, finance and technology.

We will explore:

- How to solve equations involving unknown values
- How to format equations from mathematical in real life situations
- How to understand and represent inequalities
- How to solve and interpret simple inequalities
- How to solve problems involve percentage change
- How to calculate percentage increases and decreases
- How to calculate percentages of amounts
- Understand index notation and apply laws of indices

We will develop/practise skills including:

- Solving equations accurately and efficiently
- Using algebra to represent mathematical relationships
- Applying percentage methods to real life contexts
- Using indices laws to simplify calculations
- Identify patterns and relationships within numbers in algebra

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In this topic, you will use important terms such as *equation, variable, unknown, inverse operation, inequality, solution, percentage, percentage increase, percentage decrease, multiplier, index, power, base, square number and cube number*. You should use this vocabulary clearly when explaining your methods, both in writing and speaking.

Keep these questions in mind as you work through tasks: **What can I see? What do I know? What can I do?**

You could learn more about this topic by:

Watching videos and completing extra questions on Sparx, practising equation solving and percentage calculations, exploring how percentages are used in finance and statistics, and investigating patterns involving powers and indices. Explaining your methods to others and discussing different approaches will help deepen your understanding.

Your teacher will assess your knowledge & understanding by looking at your Classwork, Sparx Homework, through questioning and discussion. They will give you feedback in lots of different ways. The key pieces of work in this topic are your low stakes end of topic tests and your termly cumulative assessments.



Year 8 Mathematics – Units 11 & 12

Learning about this topic is important because:

Data and geometry help us understand and interpret the world around us. Data allows us to collect, represent and analyse information so that we can identify patterns, make predictions and draw conclusions. Understanding angles and polygons helps us describe and solve problems involving shapes, designs and structures. These topics develop logical thinking, analytical skills and mathematical reasoning that are useful across mathematics and in everyday life.

This builds on: Work in Year 7 and earlier Year 8 topics on representing data using charts and graphs, calculating averages, identifying angle facts and recognising properties of polygons.

This leads to: Future work involving probability, statistical analysis, geometric proof, circle theorems, trigonometry and more advanced problem-solving. These skills form an important foundation for GCSE mathematics and support learning across a range of subjects.

We will explore:

- How to choose and draw appropriate statistical diagrams
- How to interpret and compare data present in different forms
- How to analyse distributions and identify patterns in data
- How to calculate and interpret averages and measures of spread
- How to identify a corresponding alternate and Co interior angles in parallel lines
- How to use angle facts to calculate missing angles
- How to find and use the sum of interior angles in polygons
- How to calculate interior and exterior angles of regular polygons

We will develop/practise skills including:

- Collecting representing and interpreting data accurately
- Selecting appropriate methods of for displaying information
- Analysing comparing datasets
- Using angle facts and geometric rules confidently
- Applying mathematical reason to justify conclusions

Talk for Learning / Oracy in Maths

In this topic, you will use important terms such as *data, frequency, distribution, average, mean, median, mode, range, chart, graph, angle, parallel lines, corresponding angles, alternate angles, co-interior angles, polygon, interior angle, exterior angle and regular polygon*. You should use this vocabulary clearly when explaining your methods, both in writing and speaking.

Keep these questions in mind as you work through tasks: **What can I see? What do I know? What can I do?**

You could learn more about this topic by:

Watching videos and completing extra questions on Sparx, analysing data from surveys, sports and current events, exploring angle relationships in diagrams and identifying polygons in the world around you. Discussing your methods and explaining your reasoning aloud will help deepen your understanding and improve your confidence.

Your teacher will assess your knowledge & understanding by looking at your Classwork, Sparx Homework, through questioning and discussion. They will give you feedback in lots of different ways. The key pieces of work in this topic are your low stakes end of topic tests and your termly cumulative assessments.



Year 8 Mathematics – Units 13 & 14

Learning about this topic is important because:

Tables and probability help us organise information, identify patterns and make predictions about the likelihood of events. These skills are used in many real-life situations, including weather forecasting, sports statistics, scientific investigations, games and risk assessment. Understanding probability helps us make informed decisions, while organising information in tables allows us to solve problems efficiently and communicate mathematical information clearly.

This builds on: Work in Year 7 on collecting and representing data, interpreting tables and charts, and understanding simple probability.

This leads to: Future work involving probability trees, Venn diagrams, statistical analysis, conditional probability and more advanced problem-solving. These skills are fundamental throughout KS3 and GCSE mathematics and support learning in subjects such as science, geography and business studies.

We will explore:

- How to organise information using tables and grids
- How to use tables to identify patterns and solve problems
- Had record outcomes systematically
- How to calculate probabilities of simple events
- How describe probability using words, fractions, decimals and percentages
- How to calculate probabilities from experimental data and from theoretical situations
- How to understand and use probability scale

We will develop/practise skills including:

- Organising information logically and systematically
- Identifying patterns and relationships within data
- Interpreting comparing probabilities in different forms
- Applying mathematical reasoning to justify conclusions

Talk for Learning / Oracy in Maths

In this topic, you will use important terms such as probability, outcome, event, likelihood, impossible, unlikely, even chance, likely, certain, theoretical probability, experimental probability, sample space, table, grid, frequency and prediction. You should use this vocabulary clearly when explaining your methods, both in writing and speaking.

Keep these questions in mind as you work through tasks: **What can I see? What do I know? What can I do?**

You could learn more about this topic by:

Watching videos and completing extra questions on Sparx, investigating probabilities through games and experiments, collecting your own data and organising it in tables, and discussing different problem-solving approaches with your classmates. Explaining your thinking aloud and checking whether answers are reasonable will help deepen your understanding.

Your teacher will assess your knowledge & understanding by looking at your Classwork, Sparx Homework, through questioning and discussion. They will give you feedback in lots of different ways. The key pieces of work in this topic are your low stakes end of topic tests and your termly cumulative assessments.



Year 8 Mathematics – Units 15 & 16

Learning about this topic is important because:

Graphs, charts and sequences help us identify patterns, represent information and make predictions. Graphs and charts allow us to communicate data clearly and interpret trends, while sequences help us recognise mathematical relationships and describe how values change. These skills are used in fields such as science, economics, engineering and technology, where understanding patterns and data is essential for solving problems and making decisions.

This builds on: Work in Year 7 and earlier Year 8 topics on plotting coordinates, interpreting graphs, representing data and recognising simple number patterns.

This leads to: Future work involving functions, algebraic reasoning, graphical analysis, statistical interpretation and GCSE sequence problems, including finding and using n th term rules. These skills support many areas of mathematics and other subjects that involve data and modelling.

We will explore:

- How to interpret and compare information presented in graphs and charts
- How to draw and interpret a variety of graphs and charts accurately
- How to choose appropriate graphical representations for different types of data
- How to identify patterns in numerical and visual data
- How to recognise and describe arithmetic and geometric sequences
- How to generate terms from a sequence rule
- How to find and use the end term of an arithmetic sequence

We will develop/practise skills including:

- Interpreting trends and patterns within data
- Identifying relationships between numbers and variables
- Describing extending sequences
- Using algebraic thinking to find a sequence rule
- Drawing graphs and charts accurately
- Applying mathematical reasoning to justify conclusions

Talk for Learning / Oracy in Maths

In this topic, you will use important terms such as *graph*, *chart*, *axis*, *scale*, *trend*, *data*, *frequency*, *sequence*, *term*, *pattern*, *arithmetic sequence*, *geometric sequence*, *n th term*, *rule*, *variable* and *prediction*. You should use this vocabulary clearly when explaining your methods, both in writing and speaking.

Keep these questions in mind as you work through tasks: **What can I see? What do I know? What can I do?**

You could learn more about this topic by:

Watching videos and completing extra questions on Sparx, analysing graphs and charts from newspapers, websites and scientific reports, looking for patterns in everyday situations and practising sequence problems. Discussing your reasoning and explaining how you identify patterns will help strengthen your understanding and confidence.

Your teacher will assess your knowledge & understanding by looking at your Classwork, Sparx Homework, through questioning and discussion. They will give you feedback in lots of different ways. The key pieces of work in this topic are your low stakes end of topic tests and your termly cumulative assessments.