



Autumn Learning Journey for Maths

Year 8F Unit 1 Number



How does this unit link to prior learning?

- **Types of number**
Link to lesson 9 on powers and roots.
- **BIDMAS**
Link to lesson 10 on BIDMAS.
- **Addition and subtraction**
Links to lessons 1 and 2 on addition and subtraction, including with decimals.

Prior Knowledge Check

1. Give 3 examples of each type of number:
Odd: _____ Even: _____
Prime: _____ Square: _____
Cube: _____
2. What does BODMAS/BIDMAS stand for?
3. Calculate:
a) $645 + 798$
b) $3409 - 461$

What will you be learning about?

- Apply the four operations to integers, decimals and simple fractions.
- Recognise and use BIDMAS.
- Use prime numbers, factors, multiples.
- Recognise powers of 2, 3, 4, 5.
- Estimate powers and roots of any given positive number.

How does this link to the wider curriculum?

- The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.

We will develop our learning each week by focusing on:

1) Long Addition and subtraction	RAG	2) Calculations	RAG
• Add and subtract two-digit and three-digit numbers.		• Use written methods to add and subtract with decimals.	
3) Money		4) Rounding	
• Calculate with money.		• Rounding decimals and significant figures.	

5) Estimation Estimate answers to calculations.				6) Consolidation lesson - Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions			
7) Calculate with negative numbers. Adding and subtract negative numbers.				8) Calculate with negative numbers. Multiply and divide negative numbers.			
9) Powers and roots Calculate using squares, square roots, cubes and cube roots.				10) BIDMAS Use mental methods to calculate combinations of powers roots and brackets.			
11) Index Laws Use index notation.				12) Prime Factors Write a number as a product of its prime factors.			
13) Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.				14) Assessment Lesson - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.			
15) Feedback Lesson - Student to highlight their traffic light sheet. - Teacher to go through test and students to self-assess in green. - Students to complete the NOW section of the WOW-HOW-NOW sheet.							
Key Vocabulary							
Product	Quotient	Sum	Difference	Factor	Multiple	Prime	

How will this help you in the future?	
KS4 - Number skills help pupils understand more advanced maths topics in Key Stage 4, such as algebra, geometry, and statistics. - Strong numeracy improves confidence when solving multi-step problems and exam questions. - Pupils can work more accurately with percentages, ratios, fractions, and graphs. - Good number skills support learning in other subjects, including science, geography, and business studies. - Developing numeracy helps pupils prepare for GCSE exams and future careers that require mathematical understanding.	Beyond LHS - Number skills help with managing money, including budgeting, saving, and understanding bills. - They are useful when comparing prices and making informed financial decisions. - Strong numeracy supports success in college, apprenticeships, and workplace training. - Many careers require confidence with numbers, such as engineering, healthcare, construction, and business. Number skills help people understand information, data, and statistics they encounter in everyday life.



Autumn Learning Journey for Maths

Year 8F Unit 2 - Algebra



How does this unit link to prior learning?

- **Substitution**
Link to lesson 4 on substitution.
- **Simplifying expressions**
Link to lesson 1 on simplifying expressions.
- **Solving 1 step equations**
Links to lesson 8 on solving 1 step equations.

Prior Knowledge Check

- If $x = 5$, what does:
a) $x - 3$ equal _____ b) $4x + 5$ equal? _____
- Simplify: a) $5x + 7y + 4x$ _____ b) $6 + 7a - 3 - 4a$ _____
- Solve: a) $x + 9 = 15$ _____ b) $4x - 3 = 29$ _____

What will you be learning about?

- Substitute numerical values into formulae and expressions.
- Simplify and manipulate algebraic expressions.
- Understand and use standard mathematical formulae.
- Use reverse functions to solve equations.

How does this link to the wider curriculum?

- The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.

We will develop our learning each week by focusing on:

1) Simplify Expressions Simplify expressions by collecting like terms.	RAG	2) Expand single brackets Expand brackets.	RAG
3) Expand and Simplify Expand brackets and collect like terms.		4) Substitution Substitute into algebraic expressions involving powers.	
5) Change the Subject Change the subject of basic formula.		6) Consolidation lesson - Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions	
7) Factorising expressions Factorise expressions.		8) One-step equations - Find the inverse of a function. - Solve simple equations using function machines.	

9) Two-step equations - Solve two-step equations using function machines. - Solve real life problems using equations.			10) Equations with 2 unknowns Solve equations with unknowns on both sides.			
11) Forming expressions. Form expressions from different problems and scenarios.			12) Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.			
13) Assessment Lesson - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.			14) Feedback Lesson - Student to highlight their traffic light sheet. - Teacher to go through test and students to self-assess in green. - Students to complete the NOW section of the WOW-HOW-NOW sheet.			
Key Vocabulary						
Expression	Formula	Substitute	Equation	Balance	Factorise	Expand

How will this help you in the future?	
KS4 - Algebra is a key part of GCSE maths and appears in many exam questions. - It helps pupils solve more complex problems using formulas and equations. - Strong algebra skills support learning in topics such as graphs, geometry, and statistics. - Algebra develops logical thinking and problem-solving skills. - Understanding algebra helps pupils succeed in maths, science, and other Key Stage 4 subjects.	Beyond LHS - Algebra helps develop problem-solving and logical thinking skills valued by employers. - It is used in many careers, including engineering, computing, finance, and science. - Algebra helps people understand formulas, data, and patterns in everyday life. - It supports further study in A-levels, apprenticeships, and college courses. - Learning algebra builds confidence in tackling unfamiliar problems and making informed decisions.



Autumn Learning Journey for Maths

Year 8F Unit 3 – Area and Volume



How does this unit link to prior learning?

- **Multiplication**
Link to lessons 1 and 2 on area of rectangles and triangles.
- **Area of squares and rectangles**
Link to lesson 1 on area of rectangles.
- **Nets**
Link to lesson 8 on 3D shapes.

Prior Knowledge Check

1. Calculate:

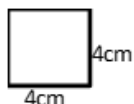
a) $16 \times 3 =$

b) $14 \times 2 =$

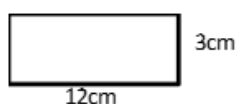
c) $6 \times 6 \times 6 =$

d) $8 \times 4 \times 5 =$

2. Find the area: a)



b)



3. Draw any net that would make a cube

What will you be learning about?

- Calculate the area of shapes including compound shapes.
- Calculate the volume and surface area of cubes and cuboids.

How does this link to the wider curriculum?

- The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.

We will develop our learning each week by focusing on:

1) Area of Squares and Rectangles

- Find the area of squares and rectangles.

RAG

2) Area of a triangle

- Derive and use the formula for the area of a triangle.

RAG

3) Compound Shapes

- Find areas of compound shapes.

4) Area of Parallelograms

- Calculate areas of parallelograms.

5) Area of Trapeziums Calculate areas of trapezia.		6) Consolidation lesson - Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions				
7) Volume of cubes and cuboids Calculate the volume of cubes and cuboids.		8) 3D shapes Sketch nets of 3D solids.				
9) Surface area of cubes and cuboids Calculate the surface area of cubes and cuboids.		10) Problems and measures Calculate mixed problems of volume and surface area of cubes and cuboids.				
11) Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.		12) Assessment Lesson (non-calculator) - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.				
13) Feedback Lesson - Student to highlight their traffic light sheet. - Teacher to go through test and students to self-assess in green. - Students to complete the NOW section of the WOW-HOW-NOW sheet.						
Key Vocabulary						
Area	Net	Volume	Surface Area	Base	Width	Height

How will this help you in the future?	
KS4 - Area and volume are important topics that appear regularly in GCSE maths. - Understanding area and volume helps pupils solve more complex geometry and measurement problems. - These skills support learning in science, design technology, and geography. - Pupils use area and volume when working with compound shapes, scale drawings, and 3D objects. - Strong measurement skills help pupils approach Key Stage 4 maths with greater confidence and accuracy.	Beyond LHS - Area and volume are used in many careers, including construction, engineering, architecture, and design. - These skills help people calculate space, capacity, and material requirements accurately. - Understanding area and volume is useful for home projects, decorating, and planning layouts. - They support further study in maths, science, and technical subjects. - Area and volume skills help people make practical decisions in everyday life and the workplace.



Spring Learning Journey for Maths

Year 8F Unit 4 – Real Life Graphs

How does this unit link to prior learning?			
• Converting units Link to lesson 1 on conversion graphs. • Distance, speed and time Link to lessons 2 and 3 on distance time graphs.			
Prior Knowledge Check			
1. What is 1cm in mm?			
2. A car travels at 50 miles in one hour. How far does it travel in 2 hours?			
3. A man walks at 2Km\h, how far does he travel in 15 mins?			
What will you be learning about?		How does this link to the wider curriculum?	
• Plot graphs of equations. • Identify and interpret gradients and intercepts of linear functions. • Plot and interpret graphs.		• The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.	
We will develop our learning each week by focusing on:			
1) Conversion graphs (<i>GCSE Statistics</i>) • Reading and plotting values from conversion graphs.	RAG	2) Distance-time graphs (<i>GCSE Statistics</i>) • Drawing distance-time graphs.	RAG
3) Distance-time graphs (<i>GCSE Statistics</i>) • Interpreting distance-time graphs.		4) Line graphs (<i>GCSE Statistics</i>) • Plotting line graphs from tables of data.	
5) Consolidation lesson • Consolidation on all work covered so far on the topic. • Long periods of deliberate practice. • Should contain exam questions		6) Line graphs (<i>GCSE Statistics</i>) • Interpreting line graphs.	
7) Real Life Graphs • Recognise and interpret real life graphs.		8) Revision Lesson • Select topics you feel the class need to revise. • Classroom based or Mathswatch.	
9) Assessment Lesson • Do 10-minute top up and go through answers together, students self-assess. • Open book assessment done in silence.		10) Feedback Lesson • Student to highlight their traffic light sheet. • Teacher to go through test and students to self-assess in green.	

				Students to complete the NOW section of the WOW-HOW-NOW sheet.			
Key Vocabulary							
Co-ordinate	Equation	Intercept	Gradient	Variable	Axis	Origin	

How will this help you in the future?	
KS4 - Real-life graphs are used throughout GCSE maths to represent and interpret information. - Understanding graphs helps pupils analyse trends, patterns, and relationships between variables. - Graph skills support learning in subjects such as science, geography, and business studies. - Pupils use graphs to solve problems involving distance-time, speed-time, and other practical situations. - Confidence with graphs helps pupils answer exam questions more accurately and efficiently.	Beyond LHS - Real-life graphs help people understand information and data in everyday situations. - Many careers use graphs to analyse trends, monitor performance, and make decisions. - Graph skills are useful for understanding financial information, statistics, and reports. - They support further study in subjects such as science, business, economics, and engineering. - Being able to interpret graphs helps people make informed decisions at work and in daily life.



Spring Learning Journey for Maths

Year 8F Unit 5 – Percentages, Decimals and Fractions



How does this unit link to prior learning?

- **Know fractions can be equivalent to decimals**
Link to lesson 2: Recall equivalent fractions and decimals
- **Knowing fractions can be equivalent to percentages**
Link to lesson 3: Recall equivalent fractions, decimals and percentages
- **Know how to write one number as a fraction of another**
Link to lesson 5: Writing one number as a percentage of another
- **Know that percentage means out of 100.**
Link to lesson 6: Finding a percentage without a calculator

Prior Knowledge Check

1. Write down three fractions that are equivalent to $\frac{1}{2}$
2. What fractions are equivalent to: a) 50% b) 25% c) 75%
3. How many quarters make 2 wholes?
4. Calculate 10% of 200

What will you be learning about?

- Recall and compare similar fractions, decimals and percentages.
- Work out percentage problems using a multiplier.

How does this link to the wider curriculum?

- The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.

We will develop our learning each week by focusing on:

1. Simplifying fractions	RAG	2. Fractions	RAG
• Simplify fractions • Converting between improper fractions and mixed numbers		• Find equivalent fractions and use them to order fractions	
3. Adding and subtracting fractions • Adding and subtracting fractions with any size denominator.		4. Multiplying fractions • Multiply integers and fractions by a fraction	
5. Dividing fractions • Divide integers and fractions by a fraction. • Use strategies for dividing fractions.		6. Calculating with mixed numbers • Use the four operations with mixed numbers.	

7. Fractions, decimals and reciprocals - Convert fractions to decimals. - Find the reciprocal of a number.				8. Fractions Write one amount as a fraction of another.			
9. Consolidation lesson - Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions				10. Equivalent proportions 1 Recall equivalent fractions, decimals and percentages.			
11. Equivalent proportions 2 - Recall equivalent fractions, decimals and percentages. - Use the equivalence of fractions, decimals and percentages to compare proportions.				12. Writing percentages Working out one number as a percentage of another.			
13. Percentages of amounts Working out percentages without a calculator.				14. Percentages of amounts Working out percentages with a calculator.			
15. Percentages of amounts Use a multiplier to calculate percentage increase and decrease.				16. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.			
17. Assessment Lesson (non-calculator) - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.				18. Feedback Lesson - Student to highlight their traffic light sheet. - Teacher to go through test and students to self-assess in green. - Students to complete the NOW section of the WOW-HOW-NOW sheet.			
Key Vocabulary							
Fraction	Decimals	Percentage	Denominator	Numerator	Equivalent	Multiplier	

How will this help you in the future?	
KS4 - Fractions, decimals, and percentages are used throughout GCSE maths and many exam questions. - These skills help pupils solve problems involving ratio, probability, and algebra. - Understanding how to convert between fractions, decimals, and percentages improves mathematical fluency. - They support learning in subjects such as science, business studies, and geography. - Strong skills in this area help pupils work more accurately and confidently in Key Stage 4 maths.	Beyond LHS - Fractions, decimals, and percentages are essential for managing money, budgeting, and understanding discounts. - These skills help people compare prices, calculate interest, and make informed financial decisions. - Many careers use fractions, decimals, and percentages, including healthcare, construction, business, and engineering. - They support further study in college, apprenticeships, and workplace training.



Spring Learning Journey for Maths

Year 8F Unit 6 – Lines and Angles

Ad Astra

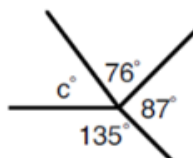
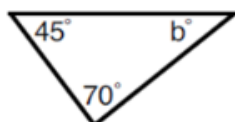
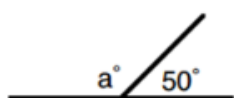
How does this unit link to prior learning?

- **Know angle facts on a straight line, around a point and vertically opposite**
Link to lesson 1: Angles in a triangle
- **Know names of quadrilaterals**
Link to lesson 2: Properties of quadrilaterals
- **Know the meaning of the word parallel**
Link to lesson 4: Alternate angles
- **Know the names of polygons up to 10 sides**
Link to lesson 7: Interior angles in a polygon
- **Be able to form equations from statement**
Link to lesson 9: Finding unknown angles by forming and solving equations

Prior Knowledge Check

1) Name 2 shapes where all the angles are right angles? How many lines of symmetry does each of your shapes have?

2) Find the value of the missing angles:



3) What does parallel mean?

What will you be learning about?

- Apply the properties of angles to solve geometric problems.
- Find missing angles in polygons including interior and exterior angles.

How does this link to the wider curriculum?

- The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.

We will develop our learning each week by focusing on:

1) Angles in a triangle Solving geometrical problems using side and angle properties of triangles	RAG	2) Quadrilaterals - Matching quadrilaterals to their descriptions. - Using known facts about quadrilaterals to solve problems.	RAG
3) Angles in a quadrilateral Solving geometrical problems using side and angle properties of quadrilaterals		4) Alternate angles Using alternate angles to find unknown angles.	

5) Corresponding angles - Identifying corresponding angles. - Solving problems using properties of angles in parallel and intersecting lines.				6) Consolidation lesson - Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions			
7) Interior angles of Polygons - Calculating the sum of the interior angles of a polygon. - Calculating interior angles of a polygon.				8) Exterior angles of Polygons - Know the sum of the exterior angles of a polygon. - Calculating the exterior angles of a polygon.			
9) Solving geometric problems - Finding unknown angles by forming and solving equations. - Solving geometrical problems showing reasoning.				10) Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.			
11) Assessment Lesson - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.				12) Feedback Lesson - Student to highlight their traffic light sheet. - Teacher to go through test and students to self-assess in green. - Students to complete the NOW section of the WOW-HOW-NOW sheet.			
Key Vocabulary							
Segment	Parallel	Perpendicular	Adjacent	Interior	Exterior	Bearing	

How will this help you in the future?	
KS4 - Lines and angles are key geometry topics that appear regularly in GCSE maths. - Understanding angle rules helps pupils solve more complex geometric problems. - These skills support learning in topics such as shapes, constructions, and trigonometry. - Lines and angles help pupils develop logical reasoning and mathematical accuracy. - Confidence with angle facts makes it easier to tackle Key Stage 4 exam questions.	Beyond LHS - Lines and angles are used in careers such as construction, engineering, architecture, and design. - These skills help people measure, plan, and create accurate designs and structures. - Understanding angles is useful when reading maps, plans, and technical drawings. - They support further study in maths, science, technology, and engineering subjects. - Knowledge of lines and angles helps people solve practical problems in everyday life and the workplace.

Summer Learning Journey for Maths

Year 8F Unit 7 Decimals and Ratio

How does this unit link to prior learning?

- **Order negative numbers**
Link to lesson 1 on ordering decimal numbers
- **Rounding to whole to the nearest 10, 100 and whole number**
Link to lesson 2 on rounding to decimal places
- **Multiply using the column method**
Link to lesson 4 on place value calculations and lesson 7 on multiplying decimals
- **Adding and subtracting integers**
Link to lesson 5 on adding and subtracting decimals
- **Dividing integers using the bus stop method**
Link to lesson 8 on dividing decimals
- **Finding highest common factors**
Link to lesson 9 on simplifying ratio with decimals

Prior Knowledge Check

- Put these numbers in order from smallest to biggest: 3 -7 -2 4 -1 0
- Round the following numbers:
a) 34 (nearest 10) b) 256 (nearest 100) c) 7.754 (nearest whole number)
- Work out using the column method: 435×6
- Work out using the column method:
a) $457 + 763$ b) $654 - 297$
- Work out using the bus stop method: $272 \div 4$
- Find the highest common factor of 40 and 28

What will you be learning about?

- Order and round positive and negative decimals.
- Perform the 4 operations with 3 digit decimals.
- Multiply and divide by 0.1 and 0.01.
- Solve ratio problems involving decimals.

How does this link to the wider curriculum?

- The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.

We will develop our learning each week by focusing on:

1. Ordering decimals - Ordering positive and negative decimals. - Using the symbols > and < between two negative decimals.	RAG	2. Rounding decimals to decimal places Rounding decimals to decimal places.	RAG
3. Rounding decimals to significant figures Rounding whole numbers and decimals to significant figures.		4. Place-value calculations - Multiplying larger numbers. - Multiplying any number by 0.1 and 0.01. - Dividing by 0.1 and 0.01.	

5. Adding and Subtracting Decimals • Adding and subtracting decimals of any size.				6. Consolidation lesson • Consolidation on all work covered so far on the topic. • Long periods of deliberate practice. • Should contain exam questions			
7. Multiplying Decimals • Multiplying by decimals.				8. Dividing Decimals • Dividing by decimals.			
9. Ratio with decimals • Simplify ratios • Simplify ratios in the form 1:n				10. Sharing into a ratio with decimals • Share into a ratio • Ratio problems involving decimals			
11. Direct proportion with decimals • Use direct proportion • Solve proportion problems involving decimals				12. Revision Lesson • Select topics you feel the class need to revise. • Classroom based or Mathswatch.			
13. Assessment Lesson (non-calculator) • Do 10-minute top up and go through answers together, students self-assess. • Open book assessment done in silence.				14. Feedback Lesson • Student to highlight their traffic light sheet. • Teacher to go through test and students to self-assess in green. • Students to complete the NOW section of the WOW-HOW-NOW sheet.			
Key Vocabulary							
Ratio	Proportion	Decimal	Place Value	Inequality	Rounding	Decimal place	
Unit	Calculate	Power	Tonne				

How will this help you in the future?	
KS4 - Ordering values on number lines - Using inequalities in exam questions - Rounding answers to a given degree of accuracy - Upper and lower bounds (rounding & error intervals) - Interpreting negative values in graphs (coordinates, temperature, profit/loss) - Multi-step problem solving - Financial maths (Foundation focus) - Calculations in statistics (mean, totals) - Accuracy in exam questions across many topics - Place value and scaling - Standard form - Unit conversions - Ratio and proportion calculations - Understanding how numbers change under scaling - Ratio and proportion exam questions - Unitary method - Direct proportion - Problem solving in real context	Beyond LHS Finance & banking: overdrafts, profit and loss, balances Science: temperatures, measurements below zero Engineering: tolerances above and below a target value Geography & environmental science: altitude, depth, climate data Accounting & business: invoices, budgets, profit Healthcare: medication doses and measurements Retail & hospitality: pricing, stock control Trades: material costs and measurements Science: converting units (g to kg, m to cm) Engineering: scale drawings and models IT: data sizes (MB to GB) Finance: VAT, discounts, interest Catering & food industry: recipes and ingredients Construction: mixing materials Science & engineering: combining substances Business: splitting costs and profits fairly

Summer Learning Journey for Maths

Year 8F Unit 8 Statistics, Charts and Graphs

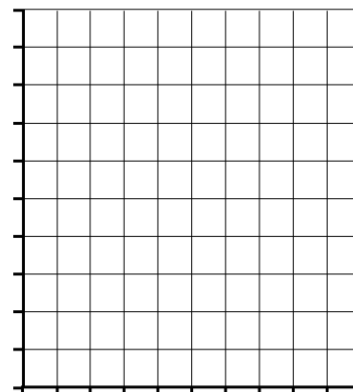
How does this unit link to prior learning?

- **Be able to draw scales on a graph**
Links to lesson 9 on scatter graphs.
- **Be able to plot bar charts**
Links to lesson 4 on using tables.
- **Use a protractor**
Links to lesson 2 on drawing pie charts.

Prior Knowledge Check

Draw a bar chart for the amount of rainfall in each month over the first five months of the year (remember your labels):

Month	Jan	Feb	Mar	Apr	May
Rainfall (mm)	45	43	41	35	27



What will you be learning about?

- Be able to draw pie charts.
- Display and interpret data and two way tables.
- Calculate averages.

How does this link to the wider curriculum?

- The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.

We will develop our learning each week by focusing on:

1. Pie charts (<i>GCSE Statistics</i>)	RAG	2. Pie charts (<i>GCSE Statistics</i>)	RAG
• Interpret simple pie charts.		• Calculate angles and draw pie charts.	
3. Using tables (<i>GCSE Statistics</i>)		4. Using tables (<i>GCSE Statistics</i>)	
• Drawing and interpreting two-way tables.		• Calculating the mean from a simple frequency table.	
5. Using tables (<i>GCSE Statistics</i>)		6. Consolidation lesson	
• Tallying data into a grouped frequency table, designing a grouped frequency table, using $a \leq x < b$ notation, finding modal class and estimating range.		• Consolidation on all work covered so far on the topic. • Long periods of deliberate practice	
7. Stem and leaf diagrams (<i>GCSE Statistics</i>)		8. Comparing data (<i>GCSE Statistics</i>)	
• Drawing and interpreting stem and leaf diagrams with different stem values. • Finding mode, median and range from stem and leaf diagrams, and comparing them for different data sets.		• Compare data using averages and range, including mean calculated from frequency table. • Compare data using the shape of a line graph or pie chart. • Draw line graphs to compare sets of data.	

		Decide on the most appropriate average to use.				
9. Scatter graphs (<i>GCSE Statistics</i>) - Draw scatter graphs. - Describe types of correlation. - Draw a line of best fit by eye on a scatter graph.		9. FINANCE: Misleading graphs Identify graphs and charts that are misleading because of the scales used and missing axis labels, mainly in financial contexts.				
10. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.		11. Assessment Lesson - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence				
12. Feedback Lesson - Student to highlight their traffic light sheet. - Teacher to go through test and students to self-assess in green. - Students to complete the NOW section of the WOW-HOW-NOW sheet.						
Key Vocabulary						
Interpret	Mode	Mean	Median	Range	Key	Frequency
Sum	Correlation	Bias	Misleading	Compare	Scale	Angle

How will this help you in the future?	
KS4 Pie Charts Forms a core part of the Statistics paper. It scales up to comparing two pie charts of different sizes. Using Tables This is high-yield for GCSE. You'll move from simple tables to Estimated Mean from grouped data, which requires a deep understanding of midpoints and the sum of fx Stem and Leaf Often used in "compare and contrast" questions. You'll be expected to calculate the Interquartile Range (IQR) from these diagrams to discuss the consistency of data. Comparing Data You move from just "calculating" to "evaluating." You'll need to write sentences comparing the central tendency (mean/median) and spread (range/standard deviation) to gain full marks. Scatter Graphs Algebra ($y = mx + c$). Your "Line of Best Fit" is actually a linear equation. You'll use it to predict missing numbers (Interpolation). Misleading Graphs Appears in "Problem Solving" questions where you must critique a given statistical claim. It tests your ability to spot non-linear scales or "truncated" axes.	Beyond LHS Pie Charts Used in budgeting and business to show how money, resources, or market share are divided. Using Tables Essential for organising and analysing data in careers such as healthcare, retail, and logistics. Stem and Leaf Diagram Help display and analyse raw data, useful in quality control, engineering, and research. Comparing Data Supports informed decision-making by helping people compare options and interpret averages accurately. Scatter Graphs Used in science, business, and economics to identify relationships and make predictions. Misleading Graphs Develops critical thinking by helping people spot manipulated data in media, advertising, and politics.

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Summer Learning Journey for Maths

Year 8F Unit 9 Straight Line Graphs

How does this unit link to prior learning?

- **Substitution**
Link to lesson 3 on gradients and equation of a straight line.
- **Plotting coordinates**
Link to lesson 2 and 3 on equation of a straight line.
- **Simplifying ratio**
Links to lesson 1 on direct proportion graphs.
- **Midpoints**
Links to lesson 4 on midpoints.

Prior Knowledge Check

1. Find the value of $2x + 3$ when $x = 4$
2. Describe how you would plot these coordinates (3,2) (-2 4)
3. Simplify this ratio 28:14
4. What number is halfway between 8 and 14?

What will you be learning about?

- Plot straight line graphs using a variety of methods.
- Calculate gradients of a graph.
- Using direct proportion.

How does this link to the wider curriculum?

- The five British values are embedded in maths lessons through collaborative problem-solving, mutually respecting discussions of different methods, following classroom rules, making independent choices and appreciating diverse perspectives and contributions.

We will develop our learning each week by focusing on:

1. Direct proportion on graphs • Recognising when values are in direct proportion. • Plotting graphs and reading values to solve problems.	RAG	2. Gradients (GCSE Statistics) • Plot a straight-line graph and work out its gradient.	RAG
3. Equations of straight lines (GCSE Statistics) • Plot the graphs of linear functions.		4. Midpoints (GCSE Statistics) • Find midpoints of line segments.	
5. Equations of straight lines (GCSE Statistics) • Write the equations of straight line graphs in the form $y = mx + c$		6. Direct proportion problems • Identify and describe practical examples of direct proportion. • Solve problems involving direct proportion with or without a graph.	
7. Revision Lesson • Select topics you feel the class need to revise. • Classroom based or Mathswatch.		8. Assessment Lesson • Do 10-minute top up and go through answers together, students self-assess. • Open book assessment done in silence	

9. Feedback Lesson • Student to highlight their traffic light sheet. • Teacher to go through test and students to self-assess in green. • Students to complete the NOW section of the WOW-HOW-NOW sheet.							
Key Vocabulary							
Direct	Proportion	Gradient	Plot	Equation	Linear	Function	
Midpoint	axis	Coordinate	Graph	y-intercept	Line segment		

How will this help you in the future?	
KS4 Direct proportion on graphs • You will use this in GCSE when working with ratio and proportion problems. • It helps you understand straight-line graphs that go through the origin. • You'll need this for solving problems with formulas and scaling. • Comes up in both calculator and non-calculator papers. Gradients • Gradient means how steep a line is – a key GCSE skill. • You'll use it when analysing graphs in maths and statistics. • Helps with understanding rates of change (how quickly something increases/decreases). • Appears in algebra and graph questions regularly. Equations of straight lines • Writing equations like $y = mx + c$ is a major GCSE topic. • You'll need to: ◦ Plot straight-line graphs ◦ Find gradients and intercepts • Midpoints link to coordinate geometry questions in GCSE. • This topic often appears in higher tier papers. Direct proportion problems • Builds on direct proportion but with problem solving. • You'll need this for worded GCSE questions. • Links to algebra, graphs, and ratio all in one. • Helps you decide when to use formulas or graphs.	Beyond LHS Direct proportion on graphs • Used when things increase at the same rate (e.g. pay per hour worked). • Helps in jobs like construction, engineering, and science. • Useful for understanding cost vs quantity (e.g. shopping, fuel costs). • Important in jobs that involve measurements and scaling (e.g. designers, architects). Gradients • Used in construction (e.g. slopes of roads, roofs, ramps). • Important in geography and science (e.g. speed, distance-time graphs). • Used in engineering and design to calculate angles and slopes. • Helps in data jobs where trends on graphs matter. Equations of straight lines • Used in computing and coding (creating graphs and models). • Important in engineering and physics (modelling relationships). • Helps with predicting trends (e.g. business profits over time). • Used in map reading and navigation (coordinates and positions). Direct proportion problems • Used in science experiments (e.g. doubling ingredients or measurements). • Important in jobs like medicine, engineering, and technology. • Helps with everyday decisions (e.g. recipes, budgeting, scaling up quantities). • Useful in any career where you solve real-life problems using maths.