

Spring Learning Journey for Maths

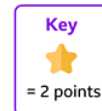
Year 7F Unit 1 Analysing and Displaying Data

How does this unit link to prior learning?

- **Be able to put numbers in order**
Links to lessons 1 and 2 on range and median
- **Be able to carry out mental arithmetic**
Links to lesson 2 on mean
- **Be able to interpret a key**
Links to lesson 3 on pictograms

Prior Knowledge Check

- 1) List some graphs you have heard of?
- 2) Why do people use graphs?
- 3) Put the following numbers in order from smallest to biggest:
a) 4 2 7 2 3 5
b) 21 34 20 5 82 27
- 4) Using the key on the right, how many points would:
a) 3 stars represent?
B) Half a star represent?
- 5) Calculate without a calculator:
a) $6 + 3 + 7 + 5 + 5$
b) $35 \div 7$



What will you be learning about?		How does this link to the wider curriculum?	
- Interpret, analyse and compare the distributions of data sets. - Find the range of a set of data.		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. Mode and range (<i>GCSE Statistics</i>) - Find the mode of a set of data, numerical and non-numerical. - Find the range of a set of data.		RAG	2. Median and mean (<i>GCSE Statistics</i>) - Find the median of a set of data (odd and even number of values). - Find the mean of a set of data.
3. Displaying data: Pictograms Read and draw pictograms.			4. Displaying data: Bar charts Read and draw bar charts and bar-line charts
5. More bar charts (<i>GCSE Statistics</i>) - Read and draw a dual bar chart. - Read and draw a compound bar chart.			6. Displaying data: Tally charts and frequency tables - Read and construct tally charts and frequency tables. - Read and construct grouped tally charts and frequency tables. - Find the mode and range from a chart or table.

7. Line graphs (GCSE Statistics) Read and draw a line graph.				8. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.			
9. Assessment Lesson (non-calculator) - 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							
Average	Survey	Represent	Interpret	Data	Statistics	Frequency	
Graph	Class	Table	Axes	Tally	Order	Compare	

How will this help you in the future?	
KS4	Beyond LHS
Mode and Range - Builds the foundation for interpreting data sets and comparing distributions using averages and spread in GCSE Statistics and Mathematics. Median and Mean - Essential for GCSE questions involving averages, data analysis, and comparing different data sets. Displaying Data: Pictograms - Develops the ability to interpret and communicate data visually, a key skill needed for more advanced statistical diagrams. Displaying Data: Bar Charts - Supports GCSE work on data representation, interpretation of graphs, and comparing categories. More Bar Charts (Dual and Compound Bar Charts) - Prepares students for GCSE questions involving comparisons between multiple data sets and more complex data displays. Displaying Data: Tally Charts and Frequency Tables - Forms the basis for organising data before calculating averages, drawing graphs, and analysing distributions. Grouping Data - Introduces grouped data, which is required for GCSE topics such as grouped frequency tables, histograms, and estimating averages. Line Graphs - Supports GCSE work on interpreting trends, time-series data, and graphical representation of information.	Mode and Range - Used when comparing data such as sports results, weather records, customer feedback, or salary ranges. Median and Mean - Used in careers such as business, healthcare, and science to summarise and interpret data, as well as in everyday contexts such as understanding average wages or test scores. Displaying Data: - Helps pupils understand information presented in newspapers, advertisements, reports, and social media. - Frequently used in business reports, surveys, news articles, and workplace presentations to communicate information clearly. - Useful for interpreting financial reports, election results, population data, and workplace statistics. - Used in data collection tasks such as surveys, stock control, quality assurance, and scientific investigations. Grouping Data - Used when analysing large data sets in fields such as healthcare, business, engineering, and social sciences. Line Graphs - Commonly used to monitor changes over time, such as company profits, population growth, weather patterns, and scientific experiments.

Spring Learning Journey for Maths

Year 7F Unit 2 Number Skills

How does this unit link to prior learning?					
Understand place value and how to read a number Links to all lessons Know the simple times tables Links to lesson 1 on times tables Be able to add and subtract basic numbers Links to lesson 2 and 5 on adding and subtracting					
Prior Knowledge Check					
1) Write in words: a) 429 b) 5308 2) Without a calculator write down: a) 4×3 b) 8×5 c) 4×10 3) Without a calculator work out: a) $27 + 25$ b) $45 - 14$ c) $32 + 251$					
What will you be learning about?			How does this link to the wider curriculum?		
- Be able to add, subtract, multiply and divide with whole positive or negative numbers. - Be able to recognise and use factors, multiples, prime, square and triangle numbers.			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. Times Tables		RAG	2. Order of Operations		RAG
Recall multiplication facts up to 10×10			Know and use the priority of operations and laws of arithmetic		
3. Mental Maths			4. Rounding		
Multiply and divide by 10, 100, 1000			- Round whole numbers to the nearest 10, 100, 1000 - Check answers using estimation.		
5. Adding and Subtracting			6. Consolidation lesson		
Add and subtract whole numbers using written methods.			- Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions		
7. Multiplication			8. Division		
Multiply whole numbers using a written method.			- Divide whole numbers using a written method. - Check answers using inverse operations.		

9. Negative numbers - Order positive and negative numbers. - Add and subtract positive and negative numbers.		10. Negative numbers 2 Begin to multiply and divide with negative numbers.				
11. Factors and multiples Identifying and understanding factors, multiples.		12. Primes Identifying and understanding prime numbers.				
13. Square and triangle numbers Recognise and use square numbers, square roots and triangle numbers.		14. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.				
15. Assessment Lesson (non-calculator) - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.		16. 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						
Arithmetic	Negative	Positive	Estimate	Round	Finance	Time
Money	Inverse	Calculator	Factor	Multiple	Prime	Square

How will this help you in the future?	
KS4 Times Tables: Fluency with times tables supports algebra, fractions, ratios, percentages, and many GCSE calculation questions. BIDAMS: Essential for GCSE Mathematics when evaluating expressions, solving equations, and using formulas accurately. Rounding: Required for estimation, error intervals, and checking the reasonableness of answers in GCSE Mathematics. Finance: Provides a foundation for GCSE financial mathematics, including budgeting, interest, and problem-solving with money. Negative Numbers: Required for algebra, coordinates, transformations, and calculations involving directed numbers at GCSE. Factors and Multiples: Forms the foundation for fractions, HCF, LCM, algebraic factorisation, and number theory topics at GCSE. Primes: Supports prime factor decomposition, HCF, LCM, and other number skills required at GCSE.	Beyond LHS Times Tables: Quick recall of multiplication facts is useful in everyday tasks such as budgeting, shopping, cooking, and mental calculations at work. BIDMAS: Helps ensure calculations are performed correctly in fields such as science, engineering, finance, and computing. Rounding: Used when estimating costs, measurements, travel times, and making quick decisions based on approximate values. Finance: Directly applicable to managing personal finances, understanding payslips, planning journeys, and making informed financial decisions. Negative Numbers: Used to interpret temperatures, financial losses, bank balances, and changes in elevation. Factors and Multiples: Useful in scheduling, organising quantities efficiently, and solving practical problems involving groups and arrangements. Primes: Prime numbers have important applications in computing, coding, and cybersecurity.

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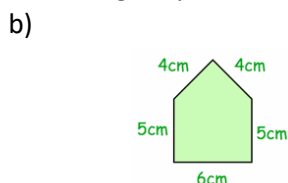
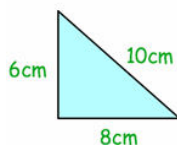
Year 7F Unit 3 Algebra

How does this unit link to prior learning?

- **Perform arithmetic with single digit numbers**
Links to most lessons
- **Be able to perform arithmetic with negative numbers**
Links to lessons 2,3,4 and 6 on simplifying expressions
- **Be able to work out the perimeter of simple shapes**
Links to lesson 9 on applying algebra to solve problems

Prior Knowledge Check

- 1) Work out the following without a calculator:
a) 3×7 b) $12 - 4$ c) $24 \div 6$ d) 5×9 e) $7 + 12 - 3$
- 2) Work out the following without a calculator:
a) $5 - 7$ b) $-5 + 8$ c) $-7 - 2$ d) -4×2 e) -6×-3
- 3) Find the perimeter of the following shapes:



What will you be learning about?

- Substitute numbers into expressions and formulae.
- Simplify and manipulate algebraic expressions.
- Use function machines.
- Understand and use vocabulary for expressions, equations, formulae, terms and factors

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. Function machines • Find outputs of simple functions written in words and using symbols. • Describe simple functions in words.	RAG	2. Collecting link terms 1 • Simplify simple algebraic expressions by collecting like terms (positives only). • Use arithmetic operations with algebra.	RAG
3. Collecting link terms 2 • Simplify simple algebraic expressions by collecting like terms (including negatives). • Use arithmetic operations with algebra.		4. Multiplying Terms • Simplify algebraic expressions by multiplying terms	
5. Consolidation lesson • Consolidation on all work covered so far on the topic. • Long periods of deliberate practice. • Should contain exam questions		6. Expanding brackets • Use brackets with numbers and letters. • Simplify more complicated expressions by collecting like terms.	

7. Writing expressions - Write expressions from word descriptions using addition, subtraction and multiplication. - Write expressions to represent function machines.				8. STEM: Substituting into formulae (GCSE Statistics) - Substitute positive integers into simple formulae written in words. - Substitute integers into formulae written in letter symbols.			
10. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.				11. Assessment Lesson (non-calculator) - 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							
Algebra	Unknown	Symbol	Variable	Formula	Equation	Term	
Expression	Simplify	Substitute	Expand	Equals	Brackets	Apply	

How will this help you in the future?	
KS4 Function Machines: Introduces the concept of functions, which is fundamental to GCSE topics such as equations, graphs, sequences, and algebraic reasoning. Collecting Like Terms: Simplifying algebraic expressions is a core GCSE skill needed for solving equations and manipulating formulas. Multiplying Terms: Provides the foundation for expanding brackets, factorising, and working with algebraic expressions at GCSE. Expanding Brackets: Essential preparation for GCSE topics such as factorising, solving equations, and quadratic expressions. Writing Expressions: Develops the ability to translate real-life situations into algebraic expressions, a key GCSE problem-solving skill. Substituting into Formulae: Required for GCSE Mathematics and Science when using formulas to calculate unknown values.	Beyond LHS Function Machines: Functions are used in computing, coding, finance, and science to model inputs, outputs, and real-world processes. Collecting Like Terms: Developing algebraic thinking helps with logical problem-solving and recognising patterns in many careers, including engineering and technology. Multiplying Terms: Used in STEM subjects where formulas and relationships between variables are frequently represented algebraically. Expanding Brackets: Supports the use of formulas and mathematical models in science, engineering, economics, and technology. Writing Expressions: Useful for modelling situations, creating formulas, and communicating mathematical relationships in a range of careers. Substitution into Formulae: Formulae are used extensively in science, engineering, healthcare, finance, and data analysis.

Spring Learning Journey for Maths

Year 7F Unit 4 Fractions, Decimals and Percentages

How does this unit link to prior learning?

- **Finding highest common factors**
Link to lesson 2 on simplifying fractions
- **Knowing times tables off by heart**
Link to lesson 3 on converting between improper fractions and mixed numbers and lesson 11 on multiplying decimals
- **Finding lowest common multiples**
Link to lesson 4 on adding and subtracting fractions
- **Be able to divide numbers in the times tables**
Link to lesson 5 on fractions of quantities and lesson 12 on dividing with decimals
- **Ordering integers**
Link to lesson 8: Ordering decimal numbers
- **Rounding numbers to nearest 10, 100, 1000**
Link to lesson 9: Rounding decimals to the nearest whole number and decimal place
- **Adding and subtracting using the column method**
Link to lesson 10: Adding and subtracting Decimals
- **Know common equivalent fractions, decimals and percentages**
Link to lesson 13 on converting f,d,p

Prior Knowledge Check

- Find the highest common factor of 15 and 20:
- Without a calculator what is:
a) 4×6 b) 7×3 c) 8×9
- What is the lowest common multiple of 5 and 7?
- Without a calculator work out:
a) $30 \div 6$ b) $28 \div 4$ c) $18 \div 3$
- Order the following from smallest to biggest: 10 6 2 9 4 5 1 12
- Round the following:
a) 54 (nearest 10) b) 764 (nearest 100) c) 8356 (nearest 1000)
- Add the following using the column method:
a) $43 + 76$ b) $245 + 75$
- What is 50% as a fraction and decimal?

What will you be learning about?	How does this link to the wider curriculum?
- Calculate with fractions, decimals and percentages. - Convert between fractions, decimals and percentages. - Interpret fractions and percentages in problems. - Use the four operations with decimal numbers.	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. Fractions of Shapes - Use fraction notation to describe parts of a shape. - Compare simple fractions. - Use a diagram to compare two or more simple fractions.	RAG	2. Simplifying fractions - Identify equivalent fractions. - Simplify fractions by cancelling common factors.	RAG
3. Improper fractions Change an improper fraction to a mixed number.		4. Arithmetic with fractions Add and subtract simple fractions.	
5. Fractions of amounts Calculate simple fractions of quantities.		6. Fractions Write one number as a fraction of another.	

7. Consolidation lesson - Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions				8. Ordering Decimals Numbers Write decimals in order of size.			
9. Rounding Decimal Numbers Round decimals to the nearest whole number and to one decimal place.				10. Working with Decimals (adding and subtracting) Add and subtract decimals.			
11. Working with Decimals (Multiplying) Multiply decimals by single-digit whole numbers.				12. Working with Decimals (Dividing) Divide decimals by single-digit whole numbers.			
13. Fractions, decimals and percentages Work with equivalent percentages, fractions and decimals.				14. Percentages of amounts (non-calc) Use different strategies to calculate with percentages.			
15. Percentages of amounts (calc) Use different strategies to calculate with percentages.				16. One number as a percentage of another Express one number as a percentage of another.			
17. 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							
Fraction	Decimal	Percentage	Numerator	Denominator	Equivalent	Cancel	
Simplify	Improper	Mixed	Express	Compare	Round	Order	

How will this help you in the future?	
KS4 - Comparing fractions supports ratio, proportion and probability at KS4, which are core GCSE topics. - Using fraction notation and diagrams prepares pupils for algebraic fractions, graphs and geometric reasoning. - Identifying equivalent fractions is essential for simplifying algebraic expressions and equations at GCSE. - Cancelling common factors links directly to algebraic fractions and solving equations. - Converting improper fractions to mixed numbers supports work with measures, compound units and real-life GCSE problems. - Adding and subtracting fractions underpins problem-solving with measures, rates and calculations at KS4. - Calculating fractions of amounts prepares pupils for percentage increase/decrease and financial maths.	Beyond LHS - Comparing fractions and ratios is used in engineering, science and technical careers where accuracy matters. - Calculating percentages of amounts is used for tax, wages, discounts, interest and profit calculations. - Simplifying and cancelling fractions is important in technology, computing, engineering and scientific research. - Adding and subtracting fractions is essential in medicine, laboratory work and manufacturing processes. - Calculating fractions of amounts is a key skill for retail, hospitality, childcare and everyday budgeting. - Understanding fractions as parts of a whole supports quality control, stock management and logistics. - Converting between fractions, decimals and percentages is vital in finance, business, banking and data handling.

Spring Learning Journey for Maths

Year 7F Unit 5 Lines, Angles and Measures

How does this unit link to prior learning?	
• Know how many mm in a cm, cm in m, m in km, g in kg, kg in t and ml in l. Link to lessons 2 and 3: Converting metric units • Name types of triangles Link to lesson 8: Lines, angles and triangles • Name types of angles Link to lesson 9: Estimating, measuring and drawing angles • Name types of quadrilaterals Link to lesson 16: Properties of quadrilaterals • Lines of symmetry in a rectangle Link to lesson 17: Angles in a quadrilateral	
Prior Knowledge Check	
1) Complete the sentences: There are _____ millimetres (mm) in a centimetre (cm). There are _____ centimetre (cm) in a metre (m). There are _____ grams (g) in a kilogram (kg). 2) Name the 4 types of triangles 3) Name 3 different types of angles? 4) How as many types of quadrilaterals as possible. 5) How many lines of symmetry does a rectangle have?	
What will you be learning about?	How does this link to the wider curriculum?
• Use and convert between common measures including their use with perimeter and area. • Draw and label angles correctly. • Use known angle facts to calculate missing angles in right angles, on straight lines and around a point. • Use known angle facts to find missing angles in triangles and quadrilaterals.	• 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: Measure and Draw Lines • Measure and draw lines to the nearest millimetre	2: Units of Length • Convert between metric units of length, • Compare measurements by converting them into the same units. • Solve simple problems involving units of measurement in the context of length.
3: Units of Mass and Capacity • Convert between metric units of mass and capacity. • Compare measurements by converting them into the same units.	4: Reading Scales • Read scales on a range of measuring equipment.
5: Perimeter • Work out the perimeters of shapes. • Solve perimeter problems.	6: Area of Rectangles • Find areas by counting squares. • Calculate the areas of squares and rectangles.
7: Area of Compound Shapes • Calculate the areas of shapes made from rectangles. • Solve problems involving area.	8. Consolidation lesson • Consolidation on all work covered so far on the topic. • Long periods of deliberate practice. • Should contain exam questions

9: Lines, angles and triangles - Describe and label lines, angles and triangles. - Identify angle, side and symmetry properties of triangles.		10: Estimating, measuring and drawing angles - Use a protractor to measure and draw angles. - Estimate the size of angles. - Solve problems involving angles.				
11: Drawing triangles accurately - Use a ruler and protractor to draw triangles accurately. - Solve problems involving angles and triangles.		12: Calculating Angles 1 - Angles in a right angle - Use the rule for angles on a straight line				
13: Calculating Angles 2 Angles around a point		14: Calculating Angles 3 - Vertically opposite angles. - Mixed angles				
15: Angles in a triangle - Use the rule for the sum of angles in a triangle. Identify and recognise different types of triangles - Calculate interior and exterior angles. - Solve angle problems involving triangles.		16: Types of Quadrilaterals Identify and name types of quadrilaterals.				
17: Angles in Quadrilaterals - Use the rule for the sum of angles in a quadrilateral. - Solve angle problems involving quadrilaterals.		18. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.				
19. Assessment Lesson (non-calculator) - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.		20. 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						
Units	Quadrilaterals	Polygons	Perimeter	Area	Degrees	Triangles
Angles	Protractor	Length	Mass	Volume	Interior	Exterior

How will this help you in the future?	
KS4 - Builds essential measurement skills needed for GCSE topics involving length, perimeter, area, and geometry. - Develops accuracy when measuring and drawing, which is important for exam questions involving diagrams and constructions. - Strengthens unit conversion skills, a common feature of GCSE exam questions. - Improves problem-solving ability by applying maths to real-world measurement situations. - Provides a strong foundation for geometry, including lines, angles, triangles, and quadrilaterals. - Develops understanding of area and perimeter formulas, which appear regularly in GCSE papers. - Improves confidence with mathematical equipment such as rulers, protractors, and scales. - Encourages logical thinking and reasoning when solving multi-step geometry problems.	Beyond LHS Measuring accurately is useful in DIY projects, home improvements, and furniture assembly. Understanding units of length, mass, and capacity helps with cooking, shopping, and travel. Reading scales correctly is important when using weighing scales, fuel gauges, maps, and measuring equipment. Calculating perimeter and area helps when decorating rooms, buying flooring, fencing gardens, or estimating materials. Drawing and measuring angles is useful in construction, engineering, design, and crafts. Developing accuracy and attention to detail is valuable in almost every job and everyday task. Improving problem-solving skills helps with decision-making, planning, and managing practical challenges. Building confidence with mathematical reasoning supports further education, apprenticeships, and workplace training.

Summer Learning Journey for Maths

Year 7F Unit 6 Ratio and Proportion

How does this unit link to prior learning?

- **Dividing amounts**
Link to lesson 1: Direct proportion
- **Find highest common factors**
Link to lesson 2: Writing ratios
- **Divide and multiply integers**
Link to lesson 3: Using ratio
- **Measure using a ruler**
Link to lesson 4: Scales and measures
- **Understand what a fraction is**
Link to lesson 5: Proportions and fractions
- **Work out percentages**
Link to lesson 6: Proportions and percentages

Prior Knowledge Check

- Work out:
 - $250g \div 5 =$
 - $£1.20 \div 6 =$
- Find the highest common factor of 15 and 20:
- Work out:
 - $40 \div 5 \times 3 =$
 - $20 \div 4 \times 6 =$
- Measure the length of this line to the nearest mm. 
- Jennie has 10 sweets. Three of these sweets are strawberry flavoured. What fraction of the sweets are NOT strawberry flavoured?
- Calculate the following percentages:
 - 10% of 300
 - 50% of 600

What will you be learning about?

- Simplify and share with ratio.
- Understand the connection between fractions, percentages and ratio.
- Understand and calculate with amounts in 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

- Use direct proportion in simple contexts.
- Solve simple problems involving direct proportion.
- Use the unitary method to solve simple word problems involving direct proportion.

RAG

2. Writing ratios

- Use ratio notation.
- Reduce a ratio to its simplest form.
- Reduce a three-part ratio to its simplest form by cancelling.

RAG

3. Using ratios - Divide a quantity into two parts in a ratio given in words. - Divide a quantity into two parts in a given ratio. - Solve word problems involving ratio.		4. Consolidation lesson - Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions.	
5. Scales and measures Use ratios and measures.		6. Proportions and fractions - Use fractions to describe and compare proportions. - Understand and use the relationship between ratio and proportion.	
7. Proportions and percentages - Use percentages to describe proportions. - Use percentages to compare simple proportions. - Understand and use the relationship between ratio and proportion.		8. Consolidation/Revision lesson - Consolidation on all work covered so far on the topic. - Long periods of deliberate practice. - Should contain exam questions	
9. Assessment Lesson (non-calculator) - 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			
Proportion	Ratio	Simplify	Quantity
Fractions	Percentages	Scale factor	

How will this help you in the future?	
KS4	Beyond LHS
Percentages - Ratio and proportion help pupils understand percentage increase, decrease, reverse percentages and percentage change. Fractions, decimals and percentages (FDP) - Converting between these relies on understanding parts of a whole. Algebra - Proportion leads directly to forming and solving equations - Direct and inverse proportion Scale factors and similarity - Used in similar shapes, area and volume scale factors, enlargement and maps Probability - Probabilities are proportions written as fractions, decimals or percentages. Compound measures - Density, pressure and speed all rely on ratio and proportion.	Money and budgeting - Working out discounts and sale prices - Comparing value for money (e.g. price per item) - Splitting bills fairly Cooking and recipes - Adjusting ingredients for different numbers of people Work and careers - Trades: mixing materials (cement, paint, chemicals) - Health: medication doses based on body weight - Business: profit, loss, commission and tax - Science and engineering: formulas and rates Sport and fitness - Win percentages - Performance statistics - Ratios in training plans Travel and maps - Reading scale drawings - Working out real distances from maps - Speed and time calculations Everyday decisions - Comparing offers (e.g. "3 for £5" vs "£1.80 each") - Understanding percentages in news, polls and adverts

Summer Learning Journey for Maths

Year 7F Unit 7 Sequences and Graphs

How does this unit link to prior learning?

- **Find the next numbers in a sequence**
Link to lesson 1 on sequences
- **Find the regular difference between numbers**
Link to lesson 3 on position to term rules
- **Plot coordinates in one quadrant**
Link to lesson 5 on coordinates and 6 on straight line graphs
- **Substitute numbers into an equation**
Link to lesson 7 on straight line graphs

Prior Knowledge Check

1) What are the next three terms in the following sequence?

3 7 11 15

2) What is the pattern in the following sequence?

4 7 10 13

3) On the grid, plot and label

A (2,5)

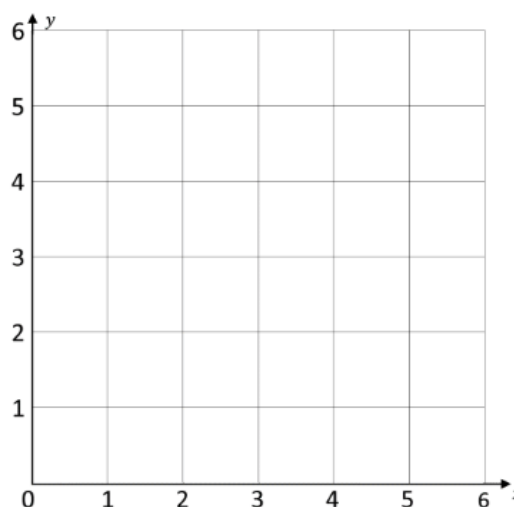
B (4,6)

4) If $x = 5$, what do the following make:

a) $x + 5$

b) $3x$

c) $2x - 2$



What will you be learning about?

- Recognise and complete sequences.
- Find the rule for a sequence.
- Generate and plot coordinates.

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. Sequences

- Revisit sequences including term-to-term rules.
- Develop the use of mathematical language to describe sequences.
- Generate sequences from practical sequences, describing how patterns grow.
- Continue sequences arising from practical contexts and use them to answer questions.

RAG

2. Position-to-term rules

- Identify and use position-to-term rules.
- Write the n th term of a sequence using algebra.
- Recognise the relationships between term-to-term rules, position-to-term rules and n th terms.

RAG

3. Coordinates

- Read, generate and plot coordinates.
- Recognise geometric shapes drawn on coordinate grids and find coordinates of points using geometric information.
- Find and calculate the midpoints of a line segment.

4. Straight-line graphs 1 (*GCSE Statistics*)

- Recognise, name and plot straight line graphs parallel to the x - or y -axis.
- Recognise, name and plot the graphs of $y = x$ and $y = -x$.

5. Straight-line graphs 2 (GCSE Statistics) • Generate coordinates that satisfy a simple linear rule and plot the graph in the first quadrant. • Read values from a graph.				6. Revision Lesson • Select topics you feel the class need to revise. • Classroom based or Mathswatch.			
7. Assessment Lesson (non-calculator) • Do 10-minute top up and go through answers together, students self-assess. • Open book assessment done in silence.				8. 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-ordinates	Equation	Intercept	Steepness	Grid	Slope	Origin	
X - coordinate	Y - coordinate	Axes	Variable	Graph	Sequence	Term	

How will this help you in the future?	
KS4 Sequences (term-to-term rules & language) - Forms the foundation for arithmetic and geometric sequences at GCSE. - Supports GCSE questions requiring pupils to describe sequences using correct mathematical language. Pattern sequences (practical contexts) - Supports GCSE questions where sequences are presented in real-life or pictorial contexts. - Builds early understanding for problem-solving and reasoning marks, especially where patterns must be explained, not just continued. Position-to-term rules (nth term) - Directly prepares pupils for writing and using nth-term formulas, a key GCSE algebra skill. - Supports higher-tier GCSE questions that link sequences, algebra, and graphs. Coordinates - Essential for GCSE topics including graphs, geometry, transformations, and vectors. Straight-line graphs - Introduces key GCSE graphs such as $y = x$, $y = -x$, and constant graphs. - Builds understanding of parallel lines, which is needed for GCSE algebra and geometry. - Prepares pupils for interpreting statistical graphs and functional relationships. - Lays groundwork for understanding gradient and intercept at GCSE level.	Beyond LHS Sequences - Used when spotting patterns and trends, such as pay increases, bills, or savings growing over time. - Important in jobs that involve planning or forecasting, like business, finance, and project management. Pattern sequences - Used in design, construction, and manufacturing where patterns repeat or grow. - Helps with coding and computer science, where instructions often repeat in patterns. - Useful in everyday life for understanding schedules, routines, and timetables. Position-to-term rules (nth term) - Used in engineering, science, and technology to describe rules that work for any situation. - Develops problem-solving skills needed in apprenticeships and technical jobs. Coordinates - Used in map reading, GPS, and navigation. - Important in careers such as architecture, engineering, surveying, and gaming design. - Helps with planning layouts, such as room design or sports tactics. Straight-line graphs - Used to show information clearly, such as distance over time or money saved. - Important in statistics, science experiments, and business reports. - Helps pupils understand comparisons and trends shown in the media. - Used in science and economics to show how one thing changes when another changes

Summer Learning Journey for Maths

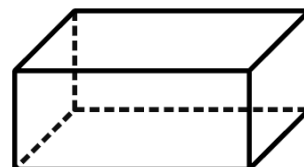
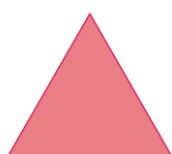
Year 7F Unit 8 Transformations

How does this unit link to prior learning?

- **Name 2D and 3D shapes**
Link to lesson 1 on congruency and similarity
- **Be able to read coordinates**
Link to lesson 2 on reflection and lesson 3 on rotations
- **Be able to multiply numbers**
Link to lesson 4 on enlargement

Prior Knowledge Check

1) Name the following shapes:



2) Read the following coordinates:

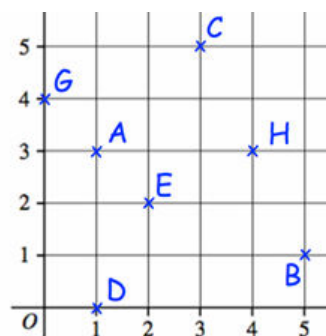
A (,)

B (,)

C (,)

D (,)

E (,)



What will you be learning about?

- Transforming shapes using translation, reflection, rotation and enlargement.

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. Congruency and Symmetry

- Identify congruent shapes.
- Recognise line and rotational symmetry in 2D shapes.
- Identify all the symmetries of 2D shapes.
- Identify reflection symmetry in 3D shapes.

RAG

2. Reflection

- Recognise and carry out reflections in a mirror line.
- Reflect a shape on a coordinate grid.

RAG

3. Rotation

- Carry out rotations on a coordinate grid.

4. Enlargements

- Enlarge shapes using given scale factors.

5. Translations and combined transformations

- Translate 2D shapes.

6. Describing transformations

- Describe rotations on a coordinate grid
- Describe a reflection on a coordinate grid.
- Use the language of enlargement.
- Work out the scale factor given an object and its image.
- Describe translations

7. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.				8. Assessment Lesson (non-calculator) - 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							
Image	Object	Congruent	Reflection	Mirror line	Symmetry	Enlarge	
Coordinate	Angle	Trial	Similar	Translation	Rotation	Transformation	

How will this help you in the future?	
KS4	Beyond LHS
1. Congruency and Enlargements Twin vs. Zoom: You'll move from spotting "identical twins" (congruent) to using "zoom" (similar) math with tricky fractions and negative numbers. Area Trap: You'll learn why doubling a shape's side actually makes the area four times bigger, not just twice as big. 2. Symmetry Proof Power: You'll use symmetry to "prove" facts about shapes, like why certain angles in a circle or triangle must be equal. 3D Slicing: You'll have to imagine "planes of symmetry"—where you could slice a 3D shape (like a cube or pyramid) to get two perfect halves. 3. Reflection Graph Flips: You'll stop using plastic mirrors and start reflecting shapes across specific lines on a grid, like $y = x$. Function Moves: In higher GCSE, you'll learn how to flip entire math "curves" (graphs of equations) upside down or sideways. 4. Rotation The "Pin" Method: You'll learn to use coordinates like (2,3) as a "pin" to swing shapes around a grid with perfect accuracy. Combined Moves: You'll have to solve puzzles where you rotate a shape and then move it somewhere else to find the final "landing spot." 5. Translations Vector Code: You'll stop saying "right and up" and start using column vectors as a shortcut "code" to move shapes.	1. Congruency and Enlargements Architecture: Architects use scale factors to build tiny, perfect models of stadiums and skyscrapers before the real builders start. Phone Cameras: Every time you "pinch-to-zoom," your phone is using scale factors to make the image bigger without ruining the shape. 2. Symmetry Graphic Design: Designers use symmetry to make logos (like Apple or VW) look balanced and professional to the human eye. Building Safety: Engineers use symmetry to make sure bridges and buildings spread weight evenly so they don't fall over. 3. Reflection Video Games: "Ray tracing" in games uses the math of reflections to make light, water, and glass look exactly like they do in real life. Mirror Tech: Scientists use this math to design telescopes that can see deep into space by bouncing light off mirrors. 4. Rotation Robotics: Programmers tell robot arms exactly how many degrees to rotate to pick up a car part or perform surgery. Animation: Animators rotate "skeletons" of digital characters to make them walk, run, and move naturally in movies. 5. Translations and Combined Transformations GPS & Maps: Your phone uses "translation" math to move your little icon across the map as you walk down the street. Coding & UX: App developers use these moves to make buttons slide on and off your screen smoothly when you swipe.

Summer Learning Journey for Maths

Year 7F Unit 9 Probability

How does this unit link to prior learning?			
• Know simple fraction to decimal equivalent Link to lesson 1 on probability scales • Perform calculations with decimals Link to lesson 2 on calculating probabilities • Add fractions with common denominators Link to lesson 3 on probability calculations • Multiply decimal numbers Link to lesson 5 on expected outcomes.			
Prior Knowledge Check			
1) Give the decimal equivalent to the following: a) $\frac{1}{2}$ b) $\frac{1}{4}$ 2) What is $1 - 0.45$? 3) What is $\frac{2}{7} + \frac{3}{7}$? 4) Work out 0.24×100			
What will you be learning about?		How does this link to the wider curriculum?	
• Use appropriate probability language and the 0-1 probability scale. • Calculate probabilities. • Understand that probabilities of an exhaustive set of outcomes, including mutually exclusive events, sum to one.		• 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. The language of probability (<i>GCSE Statistics</i>)	RAG	2. Calculating probabilities (<i>GCSE Statistics</i>)	RAG
• Use the language of probability. • Use a probability scale with words. • Understand the probability scale from 0 to 1.		• List and count outcomes. • Calculate probability based on equally likely outcomes. • Compare probabilities. • Calculate the probability of an event not happening.	
3. More probability calculations (<i>GCSE Statistics</i>)		4. Experimental probability (<i>GCSE Statistics</i>)	
• Calculate probability of A or B happening by counting outcomes.		• Record data from a simple experiment. • Estimate probability based on experimental data. • Make conclusions based on the results of an experiment.	
5. Expected outcomes		6. Revision Lesson	
• Use probability to estimate the number of expected wins in a game. • Apply probabilities from experimental data in simple situations.		• Select topics you feel the class need to revise. • Classroom based or Mathswatch.	

7. Assessment Lesson (non-calculator) - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.				8. 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							
Impossible	Equivalent	Possible	Scale	Biased	Event	Decimal	
Experiment	Fraction	Trial	Outcome	Likelihood	Frequency	Certain	

How will this help you in the future?	
KS4 1. The Language of Probability - Maths Symbols: You'll stop using words like "likely" and start using proper symbols and Venn Diagrams to group different outcomes. - The "Total is 1" Rule: If you add up every single thing that <i>could</i> happen, it must always equal exactly 1. 2. Calculating Probability - Tree Diagrams: You'll learn to draw "maths trees" to show what happens when you do two things in a row, like picking two sweets from a bag. - Listing Everything: You'll get really good at making neat lists so you never miss a possible result when rolling dice or flipping coins. 3. "A or B" and "Not" - The Shortcut: If you want to find the chance of something <i>not</i> happening, you just subtract the "win" from 1. - Adding & Multiplying: You'll learn exactly when to add probabilities ("this OR that") and when to multiply them ("this AND that"). 4. Experimental Probability - Real Data: Instead of just "guessing," you'll use results from real experiments to predict what will happen next. - Spotting Cheats: You'll learn the maths to prove if a coin or a die is "biased" (unfair) just by looking at the results. - Big Numbers: You'll see why doing an experiment 100 times gives a much better answer than just doing it 5 times. 5. Expected Outcomes - Predicting the Future: You'll learn the formula to guess exactly how many times you'll win if you play a game 500 times. - Money Maths: You'll use probability to work out if a deal in a shop is actually a bargain or a rip-off.	Beyond LHS 1. The Language of Probability - Safety Experts: People who check how "likely" it is for a rollercoaster or a bridge to have a problem use this every day. - Weather Reports: When the app says there is a "60% chance of rain," they are using the probability scale you're learning now. 2. Calculating Probability - Game Builders: People who make games like <i>Roblox</i> or <i>Fortnite</i> calculate "drop rates" so that rare items stay rare. - Delivery Drivers: Companies like Amazon calculate the chance of a driver getting to your house on time depending on the traffic 3. "A or B" and "Not" - Insurance: This helps companies decide how much to charge you for car insurance by looking at the chance of you <i>not</i> having a crash. - Money: Investors use this to make sure that if one of their "plans" fails, their other plans are still likely to work. 4. Experimental Probability - Testing Medicine: Scientists test new medicines on small groups of people to see if they are "likely" to work for everyone else. - Voting: Before an election, people ask a small group how they'll vote to "predict" who the next Prime Minister will be. 5. Expected Outcomes - Running a Shop: Owners use this to guess how much milk or bread they need to buy so they don't run out or waste money. - Buying a House: Banks use this to see if you are likely to be able to pay back a loan in the future. - Charity: Charities use these numbers to guess how much money they will raise at a bake sale or a fun run.