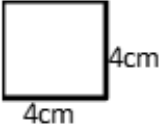
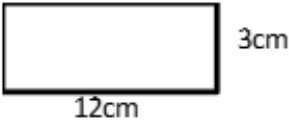




How does this unit link to prior learning?					
- Multiplication - Area of squares and rectangles - Nets of 2D shapes					
Prior Knowledge Check					
1. Calculate: a) $16 \times 3 =$ b) $14 \times 2 =$ c) $6 \times 6 \times 6 =$ d) $8 \times 4 \times 5 =$ 2. Find the area: a)  b)  3. Draw any net that would make a cube					
What will you be learning about?			How does this link to the wider curriculum?		
- Find the perimeter, area and volume of a range of common shapes. - Convert units of measure.			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 the following topics, and exam practice every fortnight.					
1. Perimeter		RAG	2. Area		RAG
Calculate the perimeter of rectangles, parallelograms and triangles.			Calculate the area of rectangles, parallelograms and triangles.		
3. Problem solving with area and perimeter			4. Area of a Trapezium		
- Estimate lengths, areas and costs. - Calculate a missing length, given the area.			- Calculate the area and perimeter of trapezia. - Find the height of a trapezium given its area.		
5. Units of Area			6. Perimeter of compound shapes		
Convert between area measures.			Calculate the perimeter of shapes made from triangles and rectangles.		
7. Area of compound shapes			8. Surface area of cubes and cuboids		
- Calculate the area of shapes made from triangles and rectangles. - Calculate areas in hectares and convert between ha and m².			Calculate the surface area of a cube and cuboid.		

9. Surface area of prisms Calculate the surface area of a prism				10. Volume of cubes and cuboids Calculate the volume of a cube and cuboid.			
11. Volume of prisms Calculate the volume of a prism.				12. Surface area and Volume Solve problems involving surface area and volume.			
13. Units of volume Convert between measures of volume.				14. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.			
15. Assessment Lesson - 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							
Triangle	Trapezium	Length	Width	Compound	Polygon	Volume	

How will this help you in the future?	
- Perimeter, area, and volume are important math skills used in everyday life and many careers. - Perimeter is used to measure the distance around objects, such as: Calculating fencing for a yard Measuring trim needed for a room - Area helps measure how much space something covers, including: Buying carpet, paint, tiles, or grass Volume measures how much space something can hold, such as: Water in a tank Concrete needed for a project Capacity of a box or container - Many careers use these skills daily, including: Builders, architects, engineers, and interior designers Chefs and bakers measuring ingredients Landscapers designing gardens and outdoor spaces - In adult life, these skills help with: - Budgeting and shopping - Home improvement projects - Organizing space effectively	



Autumn Learning Journey for Maths

Year 10F Unit 2 Quadratic Equations and Graphs

Ad Astra

How does this unit link to prior learning?			
• Square Numbers • Substitution • Expand and simplify brackets • Roots			
Prior Knowledge Check			
1. What is $(-4)^2$? 2. $y = 2x + 5$. What is y when $x = 3$? 3. Expand (and simplify): a) $3(x - 7)$ b) $x(x + 1)$ c) $2(x - 4) + 5(x + 2)$ 4. What are the values of $\sqrt{36}$? (2 solutions)			
What will you be learning about?		How does this link to the wider curriculum?	
• Expand single and double brackets, including squaring single brackets. • Recognise quadratic expressions. • Recognise and plot and use graphs of quadratic functions. • Solve quadratic equations. • Factorising quadratic expressions.		• 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 the following topics, and exam practice every fortnight.			
1. Expand single brackets • Expand single brackets	RAG	2. Expanding double brackets • Multiply double brackets. • Recognise quadratic expressions. • Square single brackets.	RAG
3. Plot a straight-line graph • Plot the graphs of linear functions		4. Plot quadratic graphs • Plot graphs of quadratic functions. • Recognise a quadratic function.	
5. Using quadratic graphs • Solve quadratic equations $ax^2 + bx + c = 0$ using a graph. • Solve quadratic equations $ax^2 + bx + c = k$ • Using a graph to find the turning point and the y intercept.		6. Factorise single brackets • Factorise single brackets.	

7. Factorising quadratic expressions Factorise quadratic expression.			8. Solving quadratic equations algebraically Solving quadratic equations algebraically			
9. Revision Lesson - Select topics you feel the class need to revise. - Classroom based or Mathswatch.			10. Assessment Lesson (non-calculator) - Do 10-minute top up and go through answers together, students self-assess. - Open book assessment done in silence.			
11. 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						
Square	Quadratic	Equation	Brackets	Expand	Plot	Factorise

How will this help you in the future?	
- Quadratic equations and graphs help people understand patterns, relationships, and change. - They are useful for modelling situations where something rises and then falls, such as: - The path of a ball thrown in the air - Business profit and costs - How objects slow down - Graphs help people: - See information clearly - Identify maximum and minimum points - Understand where values increase or decrease - Many careers use quadratic equations and graphs, including: - Engineers and physicists studying motion and designing structures - Architects creating arches and curved designs - Business owners and economists predicting profits and break-even points - Computer programmers and game designers controlling movement and animations - In adult life, these skills help with: - Problem-solving - Analysing data - Making informed decisions using trends and predictions.	



7. . Distance Speed and Time • Calculate rates. • Convert between metric speed measures. • Use a formula to calculate speed and acceleration.		8. Direct Proportion • Use ratio and proportion in measures and conversions.				
9. Inverse Proportion • Worded problems involving inverse proportion.		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						
Ratio	Proportion	Compound	Distance	Time	Density	Mass

How will this help you in the future?
- Multiplicative reasoning helps people understand how quantities change in relation to each other. - It is used for: - Comparing amounts - Scaling up or down - Working with rates, percentages, ratios, and proportions - Everyday examples include: - Calculating discounts, taxes, and interest - Working out fuel consumption - Adjusting recipes for different numbers of people - Many careers rely on multiplicative reasoning, including: - Nurses and pharmacists calculating medication dosages - Builders and engineers scaling plans and mixing materials - Business owners, managers, and accountants working with profits and financial growth - Scientists and technicians analysing data and measurements - In adult life, these skills help with: - Budgeting and shopping wisely - Comparing prices - Managing time effectively - Making accurate decisions.



Spring Learning Journey for Maths

Year 10F Unit 4 Probability

How does this unit link to prior learning?

- Multiplying decimals
- Adding fractions
- Adding decimals
- Percentages
- Probability of an event occurring

Prior Knowledge Check

Calculate:

1) 0.5×0.4

2) $\frac{2}{3} + \frac{1}{5}$

3) $0.26 + 0.43$

4) $\frac{1}{5} \times \frac{4}{7}$

5) What is 5 as a percentage of 20?

6) When rolling a dice what is the probability of it landing on a 5?

What will you be learning about?

- Calculate probabilities for mutually exclusive and exhaustive events.
- Use two-way tables, Venn diagrams, frequency trees and tree diagrams to work out probability.

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 the following topics, and exam practice every fortnight.

1. Calculating probability	RAG	2. Two Way Tables	RAG
• Calculate simple probabilities from equally likely events. • Understand mutually exclusive and exhaustive outcomes.		• Use two-way tables to record the outcomes from two events.	
3. Sample space diagrams • Work out probabilities from sample space diagrams.		4. Experimental probability • Find and interpret probabilities based on experimental data. • Make predictions from experimental data.	
5. Venn diagrams • Use Venn diagrams to work out probabilities. • Understand the language of sets and Venn diagrams.		6. Tree diagrams • Use frequency trees and tree diagrams. • Work out probabilities using tree diagrams. • Understand independent events.	

7. More tree diagrams - Understand when events are not independent. - Solve probability problems involving events that are not independent.				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							
Probability	Event	Mutually exclusive	Independent	Sample space	Venn diagram	Theoretical	

How will this help you in the future?	
- Probability helps people understand chance, risk, and uncertainty. - It supports informed decision-making by estimating how likely something is to happen. - It is used in everyday situations such as: - Insurance and financial decisions - Investments and risk planning - Weather forecasts - Games and news statistics - Many careers use probability, including: - Actuaries, economists, and data analysts predicting outcomes and managing risk - Doctors and medical researchers interpreting test results and success rates - Engineers testing reliability and safety - Business owners and marketers predicting customer behaviour and sales trends - In everyday life, probability helps people: - Think logically - Avoid poor decisions - Make choices based on evidence rather than guesswork	



Spring Learning Journey for Maths

Year 10F Unit 5 Ratio and Proportion



How does this unit link to prior learning?

- Highest Common Factor and Lowest Common Multiple
- Unit conversions
- Square and cube numbers
- Ratio

Prior Knowledge Check

1. Find the HCF of 20 and 35
2. How many mm is 22cm?
3. What is 2^3 ?
4. How many grams in 4kg?
5. Simplify the ratio 35:49

What will you be learning about?

- Be able to use ratios and proportion to solve a wide range of problems.

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 the following topics, and exam practice every fortnight.

1. Writing ratios	RAG	2. Sharing into a ratio	RAG
• Use ratio notation. • Write a ratio in its simplest form.		• Divide a quantity into 2 parts in a given ratio. • Divide a quantity into 3 parts in a given ratio. • Solve word problems using ratios.	
3. Ratio and Fractions		4. Ratios and measures	
• Express ratios and their fraction equivalent. • Use fractions to solve ratio problems.		• Use ratios to convert between units for scale drawings. •	
5. Using proportion		6. Solve proportion problems.	
• Use the unitary method to solve proportion problems.		• Use the unitary method to solve recipe problems.	
7. Best buys		8. Indirect proportion	
• Solve proportion problems in words. • Work out which product is better value for money.		• Solve problems involving indirect proportion.	

9. Proportion and graphs • Recognise and use direct proportion on a graph. • Understand the link between the unit atio and the gradient			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						
Ratio	Proportion	Share	Function	Fraction	graphical	Compare

How will this help you in the future?
Ratio and proportion help people compare quantities and keep relationships balanced. They are used for: - Scaling amounts up or down - Mixing ingredients - Understanding how quantities relate to each other Everyday examples include: - Following recipes - Mixing paint or chemicals - Reading maps - Comparing prices to find best value Many careers use ratio and proportion, including: - Chefs, bakers, and food manufacturers ensuring consistency - Nurses, pharmacists, and scientists calculating correct dosages and solutions - Builders, architects, and engineers scaling drawings and measurements - Business owners and designers working with pricing, budgeting, and design balance In everyday life, these skills help with: - Problem-solving - Planning - Making fair and accurate decisions



Summer Learning Journey for Maths

Year 10F Unit 6 Transformations

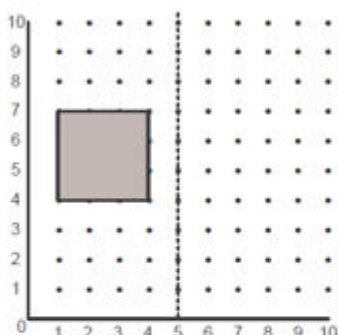
Ad Astra

How does this unit link to prior learning?

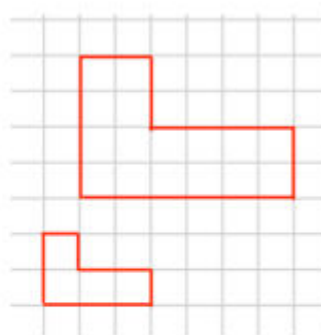
- Reflections
- Scale factors
- Congruent shapes

Prior Knowledge Check

1. Reflect the shape in the mirror line given



2. What is the scale factor?



3. Describe what has happened to shape A to get B



What will you be learning about?

- Be able to carry out and accurately describe all four transformations: rotation, reflection, translation, and enlargement.
- Carry out multiple transformations and describe the combined transformations.

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 the following topics, and exam practice every fortnight.

1. Translation • Translate a shape on a coordinate grid. • Use a column vector to describe a translation.	RAG	2. Reflection • Draw a reflection of a shape in a mirror line. • Draw reflections on a coordinate grid. • Describe reflections on a coordinate grid.	RAG
3. Rotation • Rotate a shape on a coordinate grid. • Describe a rotation.		4. Enlargement • Enlarge a shape by a scale factor. • Enlarge a shape using a centre of enlargement.	
5. Describing enlargements • Identify the scale factor of an enlargement. • Find the centre of enlargement. • Describe an enlargement.		6. Combining transformations • Transform shapes using more than one transformation. • Describe combined transformations of shapes on a grid.	

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							
Reflection	Rotation	Enlargement	Translation	Scale factor	Describe	single	

How will this help you in the future?	
• Transformations (like translation, rotation, reflection, and enlargement) help us understand how shapes and objects move, turn, flip, or change size. These skills are useful in everyday adult life because they help with planning, designing, and solving problems accurately. • Jobs that use transformations • Many jobs use transformations without people always realising it, such as: ○ Architects and builders – to design buildings, floor plans, and structures accurately ○ Engineers – to design machines, bridges, and systems that fit together properly ○ Graphic designers and animators – to rotate, resize, and reflect images and logos ○ Game designers and programmers – to move characters and objects on screens ○ Fashion and product designers – to enlarge or reduce patterns and models • Learning transformations helps build strong problem-solving and visual thinking skills, which are valuable in many careers and everyday situations.	



Summer Learning Journey for Maths

Year 10F Unit 7 Graphs

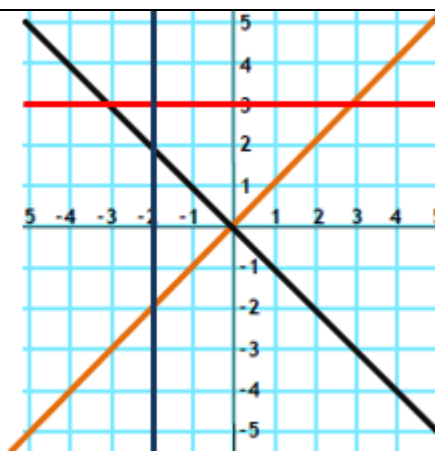
Ad Astra

How does this unit link to prior learning?

- Equation of a line

Prior Knowledge Check

1. Write down the equation of the lines



What will you be learning about?

- Be able to carry out and accurately describe all four transformations: rotation, reflection, translation, and enlargement.
- Carry out multiple transformations and describe the combined transformations.

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 the following topics, and exam practice every fortnight.

1. Coordinates Find the midpoint of a line segment.	RAG	2. Naming Lines on a graphs Recognise, name and plot straight-line graphs parallel to the axes	RAG
3. Linear graphs - Generate and plot coordinates from a rule. - Plot straight-line graphs from tables of values. - Draw graphs to represent relationships.		4. Gradient - Find the gradient of a line. - Identify and interpret the gradient from an equation. - Understand that parallel lines have the same gradient.	
5. $y = mx + c$ - Understand what m and c represent in $y = mx + c$. - Find the equations of straight-line graphs. - Sketch graphs given the values of m and c.		6. Real-life graphs Draw and interpret graphs from real data.	
7. Distance-time graphs - Use distance-time graphs to solve problems. - Draw distance-time graphs. - Interpret rate of change graphs.		8. More real-life graphs - Draw and interpret a range of graphs. - Understand when predictions are reliable.	

9. Revision Lesson • Select topics you feel the class need to revise. • Classroom based or Mathswatch.				10. Assessment Lesson (non-calculator) • Do 10-minute top up and go through answers together, students self-assess. • Open book assessment done in silence.			
11. 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							
Midpoint	Parallel	Gradient	Perpendicular	Interpret	Rate of change	Acceleration	

How will this help you in the future?	
• Algebraic graphs show how one thing changes in relation to another. • They help identify patterns, trends, and relationships. • They are useful in real life for: ○ Making predictions ○ Comparing information ○ Making informed decisions • Examples of everyday uses include: ○ Tracking money ○ Planning journeys ○ Monitoring phone data usage ○ Tracking fitness progress ○ Understanding changes in speed, time, or cost • Being able to read graphs helps people avoid mistakes and understand information clearly. • Many jobs use algebraic graphs, including: ○ Scientists studying experiments and variables ○ Engineers analysing forces, motion, and performance ○ Economists and accountants tracking financial data and trends ○ Doctors and health workers monitoring health data ○ Data analysts interpreting large datasets	