



How does this unit link to prior learning?

- Recognise special types of triangles and quadrilaterals.
- Recall basic angle facts (right angle, straight line, triangles, vertically opposite angles, around a point).
- Name polygons and understand the meaning of 'regular polygon'.
- Substitute numbers into an expression.
- Recall square numbers and square roots.
- Identify the hypotenuse.
- Identify the opposite and adjacent sides of a given angle in right-angled triangles.

Prior Knowledge Check

- 1) What do angles around a point add up to?

- 2) What do angles on a straight line add up to?

- 3) What do you know about vertically opposite angles?

- 4) Can you name and describe the key features of:
 - a) An isosceles triangle
 - b) A Parallelogram

- 5) Write down the value of $\sqrt{36}$

What will you be learning about?

To be able to find missing angles in triangles, quadrilaterals, parallel lines and polygons.
 To use Pythagoras' Theorem to find missing sides in right angled triangles.
 To use Trigonometry to find missing sides and angles in right angled triangles

We will develop our learning each week by focusing on:

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| <p>1. Basic Angles Recap</p> <ul style="list-style-type: none"> • Be able to identify topics coming up in this unit. • Be able to recall and use basic angle rules: straight line, around a point, vertically opposite and communicate reasons. | RAG | <p>2. Angle Properties of Triangles and Quadrilaterals</p> <ul style="list-style-type: none"> • Be able to derive and use the sum of angles in a triangle and in a quadrilateral. • Be able to derive and use the fact that the exterior angle of a triangle is equal to the sum of the two opposite interior angles. | RAG |
| <p>3. Interior Angles in Polygons</p> <ul style="list-style-type: none"> • Calculate the sum of the interior angles of a polygon. • Use the interior angles of polygons to solve problems. | | <p>4. Exterior Angles in Polygons</p> <ul style="list-style-type: none"> • Know and apply the sum of the exterior angles of a polygon. • Use the angles of polygons to solve problems. | |

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| <p>5. Angles in Parallel Lines</p> <ul style="list-style-type: none"> Be able to calculate angles in parallel lines using reasoning to support working. Including alternate, corresponding and co-interior angles. | | <p>6. Consolidation Lesson</p> <ul style="list-style-type: none"> Consolidation on all work covered so far on the topic. Long periods of deliberate practice. Should contain exam questions. | | | | |
| <p>7. Pythagoras' Theorem 2 (Finding Longer) Side</p> <ul style="list-style-type: none"> Be able to calculate the length of the hypotenuse in a right-angled triangle. Solve problems using Pythagoras' Theorem. | | <p>8. Pythagoras' Theorem 2 (Finding Shorter Side)</p> <ul style="list-style-type: none"> Be able to calculate the length of a shorter side in a right-angled triangle. Solve problems using Pythagoras' Theorem. Apply Pythagoras' theorem to 3D problems. | | | | |
| <p>9. Trigonometry 1 (Missing Sides)</p> <ul style="list-style-type: none"> Be able to identify and label sides in a right-angled triangle. Use trigonometric ratios to find lengths in a right-angled triangle. Use trigonometric ratios to solve problems. | | <p>10. Trigonometry 1 (Missing Angles)</p> <ul style="list-style-type: none"> Be able to use trigonometric ratios to calculate an angle in a right-angled triangle. Find angles of elevation and angles of depression Apply trigonometric ratios to 3D problems. | | | | |
| <p>11. Exact Trigonometric Ratios</p> <ul style="list-style-type: none"> Know and apply the exact values of the sine, cosine and tangent of 0°, 30°, 45°, 60°, 90°. | | <p>12. Revision Lesson</p> <ul style="list-style-type: none"> Teacher assess topics the class need to revise. Classroom based or Mathswatch. | | | | |
| <p>13. Assessment Lesson</p> <ul style="list-style-type: none"> Do 10-minute top up and go through answers together, students self-assess. Open book assessment done in silence. | | <p>14. Feedback Lesson</p> <ul style="list-style-type: none"> Students 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 | | | | | | |
| Quadrilateral | Parallel | Corresponding | Alternate | Co-interior | Hypotenuse | Polygon |

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| How will this help you in the future? | |
| KS4 | Beyond LHS |

- Revisiting angle facts, parallel line rules, and polygon angle properties prepares students for the GCSE geometry questions that rely heavily on these fundamentals.
- KS4 exam questions assume instant recall of these facts—this unit ensures students already have them secure.
- Pythagoras' Theorem and right-angle trigonometry feature in every GCSE paper.
- Recognising relationships between sides/angles prepares pupils for formula rearrangement later.
- Vocabulary such as *corresponding*, *alternate*, *co-interior*, *interior/exterior angle*, *hypotenuse*, *opposite*, *adjacent*, *ratio* builds the precision needed for 4–5 mark reasoning questions at GCSE. KS4 mark schemes reward correct terminology—this unit embeds it early.
- Trigonometric ratios (sin, cos, tan) are introduced explicitly—this directly links to later work on:
 - Bearings
 - Elevation/depression
 - Non right-angled trigonometry (sine rule & cosine rule)
 - Vectors
- You'll go into KS4 already confident with angle rules, parallel lines and polygons — things GCSE questions expect you to know straight away.
- You'll practise putting numbers into formulas and working things out carefully, which helps a lot with GCSE algebra questions too.
- You won't just learn the rules — you use them to answer multistep questions, just like the ones you'll meet in your GCSEs.
- Establishes transferable skills applicable across KS4 maths e.g., Logical reasoning, diagram interpretation and applying formulas consistently, Using mathematical notation. These skills are required not only in geometry but across algebra, proportion, and problem-solving units at GCSE.

You learn to solve real-life problems

- Figuring out missing lengths, heights and angles is something people genuinely use in building, engineering, design, architecture, DIY and more.
- This unit trains you to think logically and break problems into steps — an important skill in **every job**.

You get better at using formulas — a key workplace skill

- Many jobs use formulas daily (e.g., electricians, mechanics, nurses, engineers, computer technicians).
- Practising Pythagoras and trigonometry help you get comfortable choosing and using the right formula carefully.

You build confidence with diagrams, plans and measurements

- Lots of careers involve reading plans or interpreting diagrams:
 - Architecture
 - Joinery
 - Engineering
 - Graphic design
- Working with shapes, angles and lengths helps you prepare for these.

You practise working carefully and checking your accuracy

- In many careers, mistakes cost time or money.
- This unit trains you to:
 - Show working
 - Check calculations
 - Use feedback
 - Fix errors
- These habits are vital in jobs involving money, measurement, data, safety or planning.

You prepare for careers in STEM

Trigonometry and Pythagoras are used in careers such as:

- Engineering (civil, mechanical, electrical)
- Surveying
- Architecture
- Aviation and navigation
- Computer graphics and game design
- Robotics.

You become better at thinking for yourself

- This unit doesn't just teach facts — it makes you reason, justify, explain and apply ideas.
- Independent thinking helps with:
 - making decisions
 - solving real-life problems
 - budgeting and planning
 - understanding how the world works