The Sutton Academy

Knowledge Rich Curriculum Plan

Year 11 Foundation – Geometry 2

Lesson Objective	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this, students need to already know that…*	Assessment
To learn how to convert metric units for measures.	• Students will know how to convert units for length including mm, cm, m, km. • Students will know how to convert units for mass including mg, g, kg, tonnes. • Students will know how to convert units for volume including ml, cl, l. • Students will know how to make simple conversions between units of length including mm, cm, m, km. • Students will know how to make simple conversions between units of mass including mg, g, kg, tonnes. • Students will know how to make simple conversions between units of volume including ml, cl, l. **Opportunity for challenge:** • Students will know how to make multi-step conversions between different units of length, mass and volume. E.g. mm to m etc.	**Convert** – change/ swap to **Metric** – A system of measurement that uses the meter, litre, and gram as base units of length (distance), capacity (volume), and weight (mass) **Capacity –** the maximum amount that something can contain. **Volume** – the amount of space inside a 3D object **Mass** – the weight of an object Vocabulary may be split up into the sections of the lesson.	• Students need to know how to multiply and divide by powers of 10.	
To learn how to calculate the perimeter of shapes	• Students will know how to calculate the perimeter of rectangles, squares, parallelograms and triangles	**Perimeter –** the distance around the outside of a shape **Area –** the amount of space inside a 2D shape **Quadrilateral –** a four-sided shape **Parallelogram** – a four-sided shape with two pairs of parallel opposite sides.	• Students should already know how to name different 2D shapes	
To learn how to calculate area	• Students will know how to calculate the area of rectangles, squares, parallelograms and triangles • Students will know how to calculate the area of compound shapes involving rectangles, squares, parallelograms and triangles	**Compound –** something that is composed of two or more separate elements; a mixture. **Compound shape –** a shape made up of two or more geometric shapes	• Students need to know how to recognise different quadrilaterals	
To learn how to calculate the area of a trapezium Add compound	• Students will know that the formula for the area of a trapezium is $\frac{1}{2}(a+b)h$ where a and b are the parallel sides and h is the height of the trapezium • Students will know how to calculate the area of a trapezium • Students will know how to calculate the area of compound shapes involving trapezia • Students will know how to solve worded problems involving the area of a trapezium • Students will know how to work backwards to find missing lengths given the area of a trapezium	**Trapezium –** a quadrilateral with one pair of sides parallel.	• Students need to know how to calculate the area of squares, rectangles, triangles and parallelograms	
To learn how to calculate circumference	• Students will know how to calculate the circumference of a circle using the formula - πd, giving their answer to a suitable degree of accuracy • Students will know how to use inverse operations to find the missing radius or diameter when given the circumference. • Students will know how to solve problems involving circumference of circles. • Students will know how to find the perimeter of semi-circles	**Circumference –** the perimeter of a circle **Perimeter –** the distance around the outside of a shape **Arc –** a part of a curve, a part of the circumference of a circle **Radius –** a straight line from the centre to the circumference of a circle or sphere	• Students need to know how to identify the different parts of a circle	

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		Diameter – a straight line passing from side to side through the centre of a body or figure, especially a circle or sphere		
To learn how to calculate the area of a circle	• Students will know how to calculate the area of a circle using the formula πr^2 • Students will know how to calculate the area of a circle using the formula πr^2, without a calculator leaving answers in terms of π. • Students will know how to use inverse operations to find the missing radius or diameter when given the area. • Students will know how to solve problems involving the area of circles. • Students will know how to find the area of semi-circles and simple compound shapes		• Students need to know how to identify the different parts of a circle	
To learn how to calculate missing sides using Pythagoras' Theorem	• Students will know how to find missing lengths in a right-angled triangle using Pythagoras' theorem • Students will know that to prove a triangle is right angled using Pythagoras' theorem they will substitute the values into the formula. • Students will know how to solve worded problems using Pythagoras' theorem	**Hypotenuse** – the longest side in a right-angled triangle. It can always be found opposite the right angle **Theorem** – a statement that has been proved, or can be proved	• Students will need to know how to square numbers	
To learn how to solve problems using Pythagoras' Theorem	• Students will know how to solve worded problems using Pythagoras' theorem • Students will know how to solve problems involving multiple right-angled triangles using Pythagoras' theorem		• Students will need to know how to find missing sides using Pythagoras' theorem	
To learn how to calculate missing sides and angles in right angled triangles using trigonometry	• Students will know that $Sin = \frac{Opposite}{Hypotenuse}$ • Students will know that $Cos = \frac{Adjacent}{Hypotenuse}$ • Students will know that $Tan = \frac{Opposite}{Adjacent}$ • Students will know how to use the formula triangles for SOHCAHTOA to find missing sides. • Students will know how to calculate missing sides in right angled triangles using SOHCAHTOA • Students will know how to calculate missing angles in right angled triangles using SOHCAHTOA	**Trigonometry –** Relationships between side lengths and angles of triangles **Hypotenuse** – the longest side in a right-angled triangle. It can always be found opposite the right angle **Adjacent** – next to, in maths the adjacent side in a right-angled triangle is the side that is adjacent to the angle, forming the angle with the hypotenuse **Opposite** – for right angled triangles the opposite is the side opposite the angle that we know or are trying to find.	• Students need to know how to rearrange formulae • Students need to know how to substitute numbers into formulae • Students need to know how to use a calculator	
To learn how to calculate missing sides and angles in right angled triangles using trigonometry	• Students will know how to solve worded problems involving SOHCAHTOA • Students will know how to solve multi-step problems involving more than one right-angled triangle using SOHCAHTOA.		• Students need to know how to calculate missing sides and angles using SOHCAHTOA	

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