



The Sutton Academy

Knowledge Rich Curriculum Plan

Year 7 Core – Perimeter and Area

Lesson objective	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success	Feedback
To learn how to calculate the perimeter of 2D shapes.	- Students will know how to calculate the perimeter of rectangles, triangles, trapezia and parallelograms. - Students will know that the units used to represent perimeter are mm, cm and m etc. - Students will know how to calculate the perimeter of compound shapes. - Students will know how to use inverse operations to find the missing lengths of shapes when given the perimeter. Opportunity for challenge: - Students will know how to solve simple real-life problems involving perimeter.	Perimeter – the distance around the outside of a shape Compound shape – a shape made up of two or more geometric shapes	Students will know how to calculate the perimeter of a shape drawn on a centimetre grid.	Steps to Success – Perimeter To calculate the perimeter, add the length of all of the sides together. Remember even if there are only two measurements on the shape if it has 4 sides you will need to add 4 numbers. Steps to Success – Perimeter of compound shapes Step 1: Firstly, identify whether or not you need to find any missing lengths, if it is necessary subtract the smaller length from the larger length. Step 2: Add up the lengths of all the sides. Step 3: Don't forget to write your units – cm or mm or m.	
To learn how to calculate the area of rectangles, parallelograms and triangles.	- Students will know how to find the area of a shape that is represent on a cm grid. - Students will know how to calculate the area rectangles. - Students will know how to calculate area of a parallelogram. Opportunity for challenge: - Students will know how to use area to solve simple real-life problems.	Area – the amount of space inside a 2D shape Parallelogram – a four-sided shape with two pairs of parallel opposite sides.	Students will know how to find the area of a shape that is represent on a cm grid.	Steps to Success – Area of shapes Step 1 – Identify the formula from the list needed: - Area of a Square/Rectangle = Base x Height - Area of a Parallelogram = Base x Height - Area of a Triangle = $\frac{1}{2}$ x Base x Height Step 2 – Substitute the measurements into the required formula. Step 3 – Don't forget to write your units cm² or mm² or m².	
To learn how find the area of trapezia.	- Students will know how to calculate the area of a trapezium. Opportunity for challenge: - Students will know how to use inverse operations to find the height or missing side of a trapezium.	Area – the amount of space inside a 2D shape Trapezium – a quadrilateral with one pair of sides parallel.	Students need to know how to substitute values into an expression/formulae.	Steps to Success – Area of trapezia $\frac{1}{2}(a+b)h$ Step 1: Label your trapezium, a and b are the parallel lengths of your trapezium and h is the perpendicular height. Step 2: Substitute a, b and h into the formula $\frac{1}{2}(a + b)h$. Step 3: Calculate using BIDMAS. Step 4: Don't forget to write your units - cm² or mm² or m². To calculate the missing sides of a trapezia, the inverse operations of $\frac{1}{2}(a + b)h$ will be used. Key formulae: Trapezia: $Area = \frac{1}{2}(a + b)h$	
To learn how find the area of compound shapes.	- Students will know how to calculate the area of compound shapes. Opportunity for challenge: - Students will know how to use inverse operations to find the missing sides of a compound shape.	Compound shape – a shape made up of two or more geometric shapes	Students need to know how to find the area of rectangles and triangles.	Steps to Success – Area of compound shapes Step 1: Firstly, identify whether or not you need to find any missing lengths, if it is necessary subtract the smaller length from the larger length. Step 2: Divide the compound shape into smaller shapes, and calculate the area of each individual shape. Step 3: To find the total area of the compound shape, add the area of the individual shapes together. Step 4: Don't forget to write your units - cm² or mm² or m².	

Lesson objective	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success	Feedback
To learn how to find the circumference of a circle.	- Students will know how to calculate the circumference of a circle when given the diameter. - Students will know how to find the circumference of a circle. - Students will be able to leave answers in terms of π and rounded to an appropriate degree of accuracy. Opportunity for challenge: - Students will know how to calculate the circumference of a - semi circle/$\frac{1}{4}$ circle/$\frac{3}{4}$ circle.	Radius – a straight line from the centre to the circumference of a circle or sphere Diameter – a straight line passing from side to side through the centre of a body or figure, especially a circle or sphere π – the ratio of a circle's circumference to its diameter. Circumference – the perimeter of a circle	- Students need to know how to round to a given decimal place or significant figure. - Students need to know how to substitute value into expressions/formulae	Steps to Success: Circumference of a circle Step 1: Find the diameter of your circle, if you are given the radius, double it to find the diameter. Step 2: Substitute your diameter into the formula – $\pi \times d$ Step 3: Type your calculation in the calculator. Step 4: Write your answer from the calculator, check to see if the question wants you to round or answer in terms of π. Steps to Success: Circumference of a semi-circle/quarter circle Step 1: Find the diameter of your circle, if you are given the radius, double it to find the diameter. Step 2: Substitute your diameter into the formula – $\pi \times d$ Step 3: Divide the circumference of the circles by 2 for semi circle, 4 for quarter of a circle. Step 4: Add the diameter onto the circumference of the semi circle	
To learn how to find the area of a circle.	- Students will know how to calculate the area of a circle when the radius is given. - Students will know how to calculate the area of a circle when a diameter is given. - Students will be able to leave answers in terms of π and rounded to an appropriate degree of accuracy. Opportunity for challenge: - Students will know how to calculate the area of a - semi circle/$\frac{1}{4}$ circle/$\frac{3}{4}$ circle.	Area – the amount of space inside a 2D shape	- Students need to know how to round to a given decimal place or significant figure. - Students need to know how to substitute value into expressions/formulae	Steps to Success: Area of a circle Step 1: Find the radius of your circle, if you are given the diameter, half it to find the radius. Step 2: Substitute your radius into the formula – πr^2 Step 3: Type your calculation in the calculator. Step 4: Write your answer from the calculator, check to see if the question wants you to round or answer in terms of π Steps to Success: Area of a semi circle/quarter circle Step 1: Find the radius of your circle, if you are given the diameter, half it to find the radius. Step 2: Substitute your radius into the formula – $\frac{\pi r^2}{2}$ for a semi circle or $\frac{\pi r^2}{4}$ for a quarter circle. Step 3: Type your calculation in the calculator. Step 4: Write your answer from the calculator, check to see if the question wants you to round or answer in terms of π	
To consolidate understanding of area and perimeter.	- Students will know how to find the perimeter of shapes, including compound shapes. - Students will know how to find the circumference of circles and semi circles. - Students will know how to find the area of rectangles, triangles, parallelograms, compound shapes, trapezia and circles		Students will be able to identify the formulae used for each shape.	Use steps from previous lessons.	
To learn how to calculate missing sides using Pythagoras' Theorem.	- Students will know how to find the hypotenuse, using Pythagoras' theorem - Students will know that the hypotenuse is the longest side in a right-angled triangle.	Hypotenuse – the longest side in a right-angled triangle. It can always be found opposite the right angle	Students will need to substitute values into expressions/formulae	Steps to Success: Using Pythagoras' Theorem to find the hypotenuse. Step 1: In order to find the missing side of a triangle using Pythagoras' theorem, we need to work out which side corresponds to each of the letters a, b and c in the equation $a^2+b^2=c^2$, remembering that the longest side is the hypotenuse which	

Lesson objective	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success	Feedback
	Opportunity for challenge: - Students will know how to find the shorter sides of the triangle using Pythagoras' theorem. Students will know that they subtract when finding the shorter side. - Students will know how to identify whether they need to add or subtract when using Pythagoras' theorem. They will know that it is important to label the sides.	Theorem – a statement that has been proved, or can be proved	Students need to be able to square and square root numbers.	is known as c. a and b will be either one of the two perpendicular sides. Step 2: Label your diagram. Step 3: Next we substitute the values into the equation $a^2 + b^2 = c^2$ Step 4: Calculate the square numbers and then add the values (BIDMAS). Step 5: Don't forget to square root your value to get the length of the side. Step 6: Round your answer to an appropriate degree of accuracy if necessary. Step 7: Check that your answer looks right. Is the hypotenuse the longest side? Steps to Success: Using Pythagoras' Theorem to find one of the perpendicular sides. Step 1: In order to find the missing side of a triangle using Pythagoras' theorem, we need to work out which side corresponds to each of the letters a, b and c in the equation $a^2 + b^2 = c^2$, remembering that the longest side is the hypotenuse which is known as c. a and b will be either one of the two perpendicular sides. Step 2: Label your diagram. Step 3: Next we substitute the values into the equation $a^2 + b^2 = c^2$ Step 4: Rearrange the equation to get either $a^2 = c^2 - b^2$ OR $b^2 = c^2 - a^2$ Step 5: Calculate the square numbers and then add the values (BIDMAS). Step 6: Don't forget to square root your value to get the length of the side. Step 7: Round your answer to an appropriate degree of accuracy if necessary. Step 8: Check that your answer looks right. Is the hypotenuse the longest side?	

Mini-Assessment 9