Lode Heath School

Mathematics Department

**Year 11 Foundation
Autumn Term**

Assignment Title	Unit 1: Right-angled triangles	Set	Autumn

Summary of Unit 1	Key Words
To use Pythagoras' Theorem and trigonometry to solve problems to do with right-angled triangles.	Triangle, right angle, angle, Pythagoras' Theorem, sine, cosine, tan, trigonometry, opposite, hypotenuse, adjacent, ratio, elevation, depression, length, accuracy.

Prior Knowledge:

1) What do the angles add up to in a triangle?

2) Round the following numbers

   a) 3.675 (2dp)   b) 54.693 (1dp)   c) 7.9632 (3sf)   d) 75245 (2sf)

3) Calculate:

   a) $3^2 + 5^2$ b) $\sqrt{3^2+4^2}$ c) $\sqrt{10^2+12^2}$

4) Solve:

   a) $3 = \dfrac{x}{10}$ b) $2 = \dfrac{x}{12}$ c) $0.5 = \dfrac{2}{x}$

Learning Journey

Level	Task Description
3-5	**1.1 Pythagoras' theorem 1** Understand Pythagoras' theorem. Calculate the length of the hypotenuse in a right-angled triangle. Solve problems using Pythagoras' theorem.
3-5	**1.2 Pythagoras' theorem 2** Calculate the length of a line segment AB. Calculate the length of a shorter side in a right-angled triangle.
4-5	**1.3 Trigonometry: the sine ratio 1** Understand and recall the sine ratio in right-angled triangles. Use the sine ratio to calculate the length of a side in a right-angled triangle. Use the sine ratio to solve problems.
4-5	**1.4 Trigonometry: the sine ratio 2** Use the sine ratio to calculate an angle in a right-angled triangle. Use the sine ratio to solve problems.
4-5	**1.5 Trigonometry: the cosine ratio** Understand and recall the cosine ratio in right-angled triangles. Use the cosine ratio to calculate the length of a side in a right-angled triangle. Use the cosine ratio to calculate an angle in a right-angled triangle. Use the cosine ratio to solve problems.
4-5	**1.6 Trigonometry: the tangent ratio** Understand and recall the tangent ratio in right-angled triangles. Use the tangent ratio to calculate the length of a side in a right-angled triangle Use the tangent ratio to calculate an angle in a right-angled triangle. Solve problems using an angle of elevation or depression.
4-5	**1.7 Finding lengths and angles using trigonometry** Understand and recall trigonometric ratios in right-angled triangles. Use trigonometric ratios to solve problems. Know the exact values of the sine, cosine and tangent of some angles.
Assignment Title	Unit 2: Perimeter, area and ... Set ... Autumn

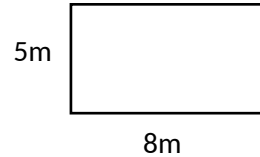|	volume 2		

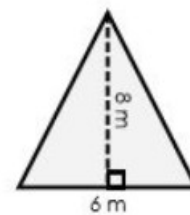| Summary of Unit 2	Key Words
Calculate the circumference, area, radius or diameter of a circle. Find the area of semicircles and sectors. Find the surface area and volume of 3D solids.	Circumference, radius, diameter, area, π, semicircle, sector, segment, perimeter, composite, volume, cylinder, surface area, pyramid, cone, sphere, percentage, cross section, degrees, formulae, substitution, prism.

Prior Knowledge:

1. Calculate the perimeter and area of this rectangle:

    5m

    8m

2. Write a definition for the radius of a circle.

3. Find the area of a triangle shown.

    8 m

    6 m

LEARNING JOURNEY

Level	Task Description
3	**2.1 Circumference of a circle 1** Calculate the circumference of a circle. Solve problems involving the circumference of a circle.
3	**2.2 Circumference of a circle 2** Calculate the circumference and radius of a circle. Work out percentage error intervals.
3	**2.3 Area of a circle** Work out the area of a circle. Work out the radius or diameter of a circle. Solve problems involving the area of a circle. Give answers in terms of π.
3-4	**2.4 Semicircles and sectors** Understand and use maths language for circles and perimeters. Work out areas of semicircles and quarter circle and perimeters. Solve problems involving sectors of circles.
4-5	**2.5 Composite 2D shapes and cylinders** Solve problems involving areas and perimeters of 2D shapes. Work out the volume and surface area of cylinders.
4-5	**2.6 Pyramids and cones** Work out the volume of a pyramid. Work out the surface area of a pyramid. Work out the volume of a cone. Work out the surface area of a cone.
5	**2.7 Spheres and composite solids** Work out the volume of a sphere. Work out the surface area of a sphere. Work out the volume and surface area of composite solids.