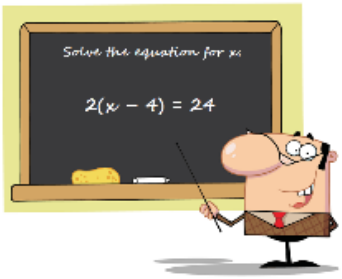
Y10 Unit 2 Overview-Algebra and Shape:

Test Date: WB 20th January, 2020.

Target grade for tests:

You will learn about:

- Iteration
- Trigonometric ratios
- Using Trigonometry
- Pythagoras' theorem



You will be able to:

- Find approximate solutions to equations numerically using iteration.
- Solve two linear simultaneous equations in two variables algebraically.
- Make links to similarity (including trigonometric ratios) and scale factors.
- Know the exact values of sinθ and cosθ for θ = 0°, 30°, 45°, 60° and 90°; know the exact value of tanθ for θ = 0°, 30°, 45° and 60°.
- Know the trigonometric ratios, sinθ = opposite/hypotenuse, cosθ = adjacent/hypotenuse, tanθ = opposite/adjacent.
- Apply Trigonometry to find angles and lengths in right-angled triangles in two dimensional figures.
- Calculate surface area and volume of spheres, pyramids, cones and composite solids.

Lesson Overview	**Key Words**
<u>SOLVING EQUATIONS</u> • Understand and use the concept of decimal search to solve a complex equation • Understand and use the process of interval bisection to locate an approximate solution for a complex equation • Rearrange an equation to form an iterative formula • Use an iterative formula to find approximate solutions to equations • Understand the concept of solving simultaneous equations by substitution • Decide whether to use elimination or substitution to solve a pair of simultaneous equations • Solve two linear simultaneous equations in two variables by substitution • Solve two linear simultaneous equations in two variables by elimination (multiplication of both equations required) • Solve two simultaneous equations in two variables where one is quadratic algebraically • Derive and solve two simultaneous equations in complex cases • Interpret the solution to a pair of simultaneous equations <u>INVESTIGATING PROPERTIES OF SHAPES</u> • Appreciate that the ratio of corresponding sides in similar triangles is constant • Label the sides of a right-angled triangle using a given angle • Choose an appropriate trigonometric ratio that can be used in a given situation • Understand that sine, cosine and tangent are functions of an angle • Establish the exact values of sinθ and cosθ for θ = 0°, 30°, 45°, 60° and 90° • Establish the exact value of tanθ for θ = 0°, 30°, 45° and 60° • Know how to select the correct mode on a scientific calculator • Use a calculator to find the sine, cosine and tangent of an angle	**Refer to http://studymaths.co.uk/glossary.php for definitions of the key words** Unknown Solve Solution set Interval Decimal search Iteration Simultaneous equations Substitution Elimination **Notation** (a, b) for an open interval [a, b] for a closed interval Similar Opposite Adjacent Hypotenuse Trigonometry Function Ratio Sine Cosine Tangent Angle of elevation, angle of depression **Notation** sinθ stands for the 'sine of θ' $\sin^{-1}$ is the inverse sine function, and not 1÷ sin

- Know the trigonometric ratios, sinθ = opp/hyp, cosθ = adj/hyp, tanθ = opp/adj
- Set up and solve a trigonometric equation to find a missing side in a right-angled triangle
- Set up and solve a trigonometric equation to find a missing angle in a right-angled triangle
- Use trigonometry to solve problems involving bearings
- Use trigonometry to solve problems involving an angle of depression or an angle of elevation

CALCULATING SPACE

- Know the formula for the surface area of a sphere (curved surface area of a cone)
- Use Pythagoras' theorem to find lengths in a pyramid
- Find the surface area of a sphere (cone, pyramid)
- Identify how to find the surface area of a composite solid
- Solve practical problems involving the surface area of solids
- Know the formula for, and find the volume of a sphere (cone, pyramid)
- Identify how to find the volume of a composite solid
- Solve practical problems involving the volume of solids

(Composite) solid
Sphere, Pyramid, Cone
Perpendicular (height), (slant height)
Surface area
Volume

Notation
π
Abbreviations of units in the metric system: km, m, cm, mm, mm^2, cm^2, m^2, km^2, mm^3, cm^3, km^3

Suggested reading or support/ challenge available

Support is available from a Maths teacher in '*MORALE*' in M1 daily from 1:30pm -1:45pm

Pixl Maths App

login: PY2415

username: surname followed by first initial

password: first name

www.hegartymaths.com
Go to student login at the top… find your school, enter your details and then set up your password…

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www.justmaths.co.uk/online

login: PenrynStudent

password: Penryn

Cross curricular

SMSC:
1.1 Exploring, understanding and respecting cultural diversity e.g. exploration of different methods of calculation.
3.1 Developing personal qualities and using social skills (regular paired/ group work communication).
3.2 Participating, cooperating and resolving conflicts (paired/group activities).
4.2 Experiencing fascination, awe and wonder of mathematics.
4.4 Using imagination and creativity in learning.
Literacy:
Verbal communication of understanding using key words in the correct context. Development of written communication of methods and strategies to problem solve.
NAC:
Science –Know and use the formula for the area of a rectangle. Calculate areas of sectors. Calculate lengths of circular arcs. Calculate areas of sectors. Calculate lengths and areas in plane shapes. Use the formulae for the volume of a cuboid.

Research	Note-making	Group work & discussion	Memorisation	Precision & accuracy	Independence	Reflection