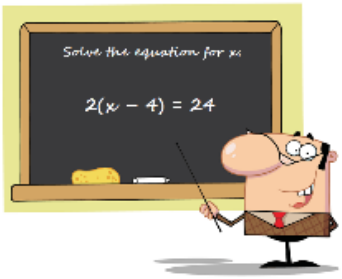
Y10 Unit 2 Overview-Algebra and Shape:

Test Date: WB 20th January, 2020.

Target grade for tests:

You will learn about:



- Algebraic equations
- Similar shapes
- Maps, scale drawings and bearings
- Area and perimeter of shapes including circles
- Volume of right prisms

You will be able to:

- Solve linear equations with the unknown on both sides of the equation.
- Find approximate solutions to linear equations using a graph.
- Measure line segments and angles in geometric figures, including interpreting maps and scale drawings and use of bearings.
- Identify, describe and construct similar shapes, including on coordinate axes, by considering enlargement.
- Interpret plans and elevations of 3D shapes.
- Use scale factors, scale diagrams and maps.
- Identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference.
- Know the formulae: circumference of a circle = $2\pi r = \pi d$, area of a circle = πr^2.
- Calculate perimeters and areas of circles and composite shapes.
- Know and apply formulae to calculate volume of right prisms (including cylinders).

Lesson Overview	**Key Words**
SOLVING EQUATIONS • Identify the correct order of undoing the operations in an equation • Solve linear equations with the unknown on one side when the solution is a negative number • Solve linear equations with the unknown on both sides when the solution is a whole number, negative number or fraction • Solve linear equations with the unknown on both sides when the equation involves brackets • Recognise that the point of intersection of two graphs corresponds to the solution of a connected equation • Check the solution to an equation by substitution INVESTIGATING ANGLES • Identify alternate angles and know that they are equal • Identify corresponding angles and know that they are equal • Use knowledge of alternate and corresponding angles to calculate missing angles in geometrical diagrams • Establish the fact that angles in a triangle must total 180° • Use the fact that angles in a triangle total 180° to work out the total of the angles in any polygon • Establish the size of an interior angle in a regular polygon • Know the total of the exterior angles in any polygon • Establish the size of an exterior angle in a regular polygon VISUALISING AND CONSTRUCTING • Know the vocabulary of enlargement • Find the centre of enlargement • Find the scale factor of an enlargement • Use the centre and scale factor to carry out an enlargement with positive integer (fractional) scale factor	**Refer to http://studymaths.co.uk/glossary.php for definitions of the key words** Algebra, algebraic, algebraically Unknown Equation Operation Solve Solution Brackets Symbol Substitute Graph Point of intersection **Notation** The lower case and upper case of a letter should not be swapped when worked with algebra 2a is used rather than a2. Division is written as a fraction Degrees Right angle, acute angle, obtuse angle, reflex angle Vertically opposite Geometry, geometrical Parallel Alternate angles, corresponding angles Interior angle, exterior angle Regular polygon **Notation** Dash notation to represent equal lengths in shapes and geometric diagrams Arrow notation to show parallel lines

- Know and understand the vocabulary of plans and elevations
- Interpret plans and elevations
- Use the concept of scaling in diagrams
- Measure and state a specified bearing
- Construct a scale diagram involving bearings
- Use bearings to solve geometrical problems

CALCULATING SPACE (AREA, PERIMETER AND VOLUME)

- Know the vocabulary of circles
- Know that the number π (pi) = 3.1415926535…
- Recall π to two decimal places
- Know the formula circumference of a circle = 2πr = πd
- Calculate the circumference of a circle when radius (diameter) is given
- Calculate the radius (diameter) of a circle when the circumference is known
- Calculate the perimeter of composite shapes that include sections of a circle
- Know the formula area of a circle = πr^2
- Calculate the area of a circle when radius (diameter) is given
- Calculate the radius (diameter) of a circle when the area is known
- Calculate the area of composite shapes that include sections of a circle
- Know the formula for finding the volume of a right prism (cylinder)
- Calculate the volume of a right prism (cylinder)

Similar, Similarity
Enlarge, enlargement
Scaling
Scale factor
Centre of enlargement
Object
Image
Scale drawing
Bearing
Plan, Elevation

Notation

Bearings are always given as three figures; e.g. 025°.
Coordinates must have a comma &brackets
Circle
Centre
Radius, diameter, chord, circumference
Pi
(Right) prism
Cross-section
Cylinder
Polygon, polygonal
Solid

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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Use the code in the front of your guide to access your free online revision

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 – Use formulae involving fractions, decimals or negative numbers (Y10, 11). Transform formulae. Be aware of common scientific formulae. Use simple formulae. Understand angle as a measure of turn. Measure and draw angles. Recognise 2-D representations of 3-D shapes. Make simple 3-D models from nets. Know and use the formula for the area of a rectangle. Calculate areas of sectors. Calculate lengths and areas in plane shapes. Use the formulae for the volume of a cuboid.
Business – Use formulae involving fractions, decimals or negative numbers (Y10, 11). Use simple formulae (Y11).
Technology- Make simple 3-D models from nets.

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