

## Y8 Unit 2 Overview-Shape: Angles and construction:

Test window: 9<sup>th</sup> December 2019 – 20<sup>th</sup> December 2019

Target grade for tests:

You will learn about:

- 2D and 3D shapes.
- Angles.

You will be able to:

- Identify 3D shapes, including cubes and other cuboids, from 2D representations.
- Explore the properties of rectangles.
- Investigate polygons.
- Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.
- Draw given angles, and measure them in degrees ( $^{\circ}$ ).
- Identify angles at a point and one whole turn (total  $360^{\circ}$ ); angles at a point on a straight line and  $\frac{1}{2}$  a turn (total  $180^{\circ}$ ); other multiples of  $90^{\circ}$ .
- Communicate your methods verbally, using a range of mathematical vocabulary.



### Lesson Overview

#### INVESTIGATING ANGLES

- Know that angles are measured in degrees and estimate acute, obtuse and reflex angles.
- Know that a reflex angle is greater than  $180^{\circ}$  and estimate reflex angles.
- Identify and find angles at a point.
- Identify and find angles at a point on a straight line.
- Use a protractor to measure and draw angles less than  $180^{\circ}$ .
- Use a protractor to measure and construct angles greater than  $180^{\circ}$ .

#### **Extension:**

- *Identify vertically opposite angles.*
- *Know that vertically opposite angles are equal.*
- *Use known facts to find missing angles.*
- *Explain reasoning.*

#### VISUALISING AND CONSTRUCTING

- Identify 3D-shapes from photographs and sketches.
- Identify 3D-shapes from nets.
- Identify 3D-shapes from diagrams on isometric paper.
- Construct diagrams of 3D-shapes on isometric paper.

#### **Extension:**

- *Use mathematical language to describe 3D shapes.*
- *Construct 3D shapes from given nets.*
- *Use 'Polydron' to construct nets for common 3D shapes.*
- *Draw accurate nets for common 3D shapes.*
- *Find all the nets for a cube.*
- *Use a net to visualise the edges (vertices) that will meet when folded.*
- Use squared paper to guide construction of 2D shapes.
- Complete tessellations of given shapes

#### INVESTIGATING PROPERTIES OF SHAPES

- Use the properties of rectangles to find missing lengths and angles.
- Use the properties of rectangles to find points on a coordinate grid.
- Know the difference between a regular and an irregular polygon.
- Use the properties of regular polygons to find points on a coordinate grid.

### Key Words

Refer to <http://studymaths.co.uk/glossary.php> for definitions of the key words

Protractor

Measure, Nearest

Construct

Sketch

Cube, Cuboid, Cylinder, Pyramid, Prism

Net

Edge, Face, Vertex (Vertices)

Visualise

Quadrilateral, Square, Rectangle, Parallelogram,

(Isosceles) Trapezium, Kite, Rhombus, Delta, Arrowhead

Triangle, Scalene, Right-angled, Isosceles, Equilateral

Polygon, Regular, Irregular

Pentagon, Hexagon, Octagon, Decagon, Dodecagon

Circle, Radius, Diameter, Circumference, Centre

Parallel

Diagonal

Angle, Degrees

Right angle

Acute angle

Obtuse angle

Reflex angle

Protractor

Vertically opposite

#### **Notation**

Dash notation to represent equal lengths in shapes and geometric diagrams

Right angle notation

Arc notation for all other angles

The degree symbol ( $^{\circ}$ )

**Extension:**

- Know the definitions of special triangles.
- Know the definitions of special quadrilaterals.
- Classify 2D shapes using given categories; e.g. number of sides, symmetry.
- Know the angle sum of a triangle.
- Know the angle sum of a quadrilateral.
- Use the angle sum of a triangle to find missing angles.
- Find the missing angle in an isosceles triangle when only one angle is known.
- Use the angle sum of a quadrilateral to find missing angles.

**Suggested reading or support/ challenge available**



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

[www.mymaths.co.uk](http://www.mymaths.co.uk)

login: **penryn**

password: **octagon**

[www.hegartymaths.com](http://www.hegartymaths.com)

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

<https://vle.mathswatch.com/vle/>

login: school username followed by **@penryn-college**

password: **Penryn2016**

**Use your revision guide**

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

[www.justmaths.co.uk/online](http://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 multiplication (Chinese, Russian).
- 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** – Mathematical names of 3-D shapes.

Make simple 3-D models from nets. Recognise 2-D representations of 3-D shapes. Use co-ordinates in the first

Quadrant. Understand angle as a measure of turn. Measure and draw angles.

**Technology**- Make simple 3-D models from nets.

**Art** – Mathematical names of 3-D shapes.

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