

Properties of Shapes

Maths | Year 5 | Area Overview

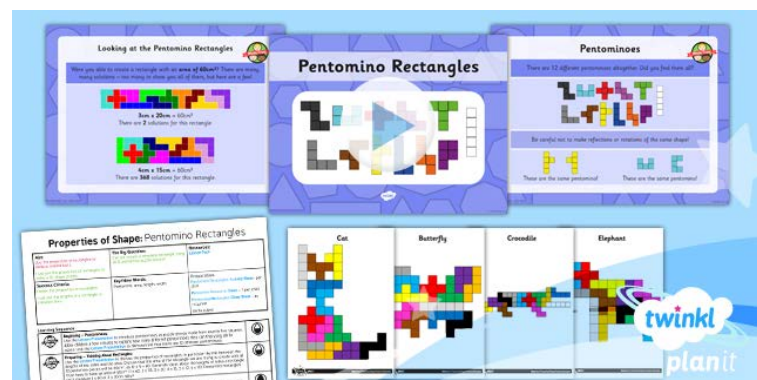
Introduction

In this unit, children begin to relate 3D shapes to their 2D nets. They extend their understanding of angles by measuring and drawing angles using a protractor, and are introduced to reflex angles. Children begin to use known facts about geometric shapes to reason about lengths and angles, and to find missing measurements.

Resources

In addition to your standard maths resources you will need...

- 3D shape construction equipment: 3D Shapes from 2D Representations (Understanding Nets)
- Half circle and full circle protractors: Estimate and Compare Angles (Pizza Angles), Draw and Measure Angles (Protractor Power!)
- Mirrors: Regular and Irregular Polygons (Shape Reasoning)



Solved Lesson Pack: Pentomino Rectangles

This lesson pack contains a detailed lesson plan, a helpful lesson presentation and a set of differentiated activity sheets guiding children to investigate the big question: **can we create a complete rectangle using all 12 pentomino puzzle pieces?**

Assessment Statements

By the end of these lessons...

...all children should be able to:

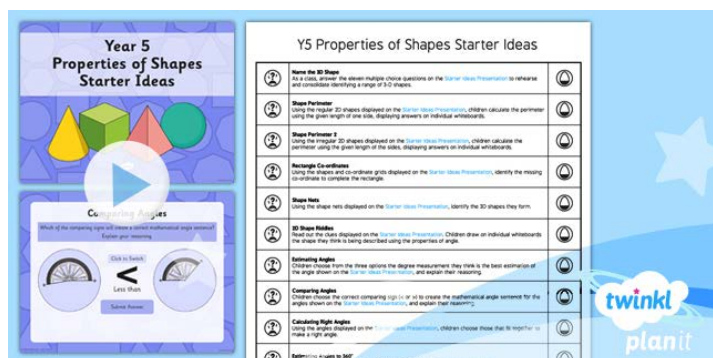
- Identify regular and irregular 2D shapes;
- Identify the net of a cube or cuboid;
- Compare acute, obtuse and reflex angles;
- Know angles are measured in degrees;
- Find angles on a straight line and half a turn.

...most children will be able to:

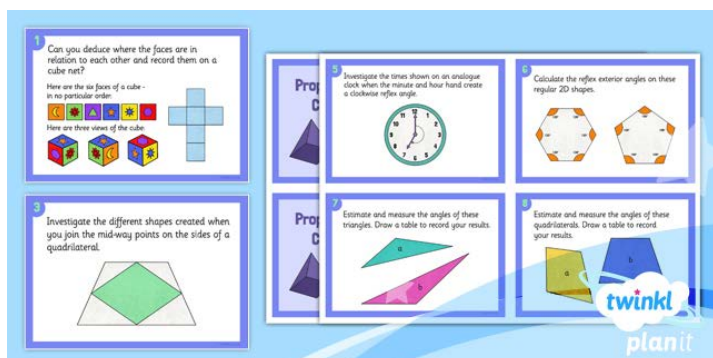
- Reason about 2D shapes based on lengths and angles;
- Identify the nets of a range of 3D shapes;
- Estimate acute, obtuse and reflex angles;
- Measure angles using a protractor;
- Begin to draw angles using a protractor;
- Find angles at a point and one whole turn.

...some children will be able to:

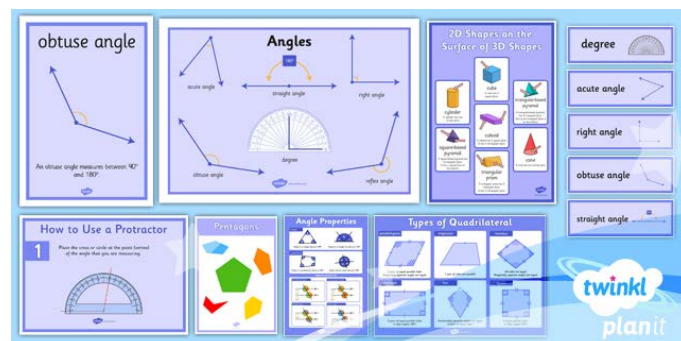
- Calculate missing angles or lengths of 2D shapes using known facts;
- Draw nets of 3D shapes;
- Accurately draw angles using a protractor;
- Calculate missing angles.



Starter Ideas



Challenge Cards



Display Pack

Lesson Breakdown

Identify 3D shapes, including cubes and other cuboids, from 2D representations.

3D Shapes from 2D Representations (1): Understanding Nets

I can relate 3D shapes to 2D nets.

3D Shapes from 2D Representations (2): Cube Model Reasoning

I can solve problems about 2D representations of 3D models.

Home Learning: 3D Shapes All Around Us

Differentiated activity sheets to practise finding and describing 2D and 3D everyday objects in the home environment.

Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Regular and Irregular Polygons (1): Shape Reasoning

I can identify different 2D shapes by reasoning about lengths and angles.

Regular and Irregular Polygons (2): Further Shape Reasoning

I can identify different 2D shapes by reasoning about lengths and angles.

Home Learning: Tessellating Patterns

An open ended activity asking children to create and label a tessellating pattern.

Use the properties of rectangles to deduce related facts and find missing lengths and angles.

Properties of Rectangles (1): Rectangles

I can use known properties of rectangles to find missing lengths and angles.

Properties of Rectangles (2): Rectangle Relations

I can use known properties of rectangles to find missing lengths and angles of other quadrilaterals.

Home Learning: Quadrilateral Robots

Differentiated activity sheets which ask children to identify missing angles in a range of quadrilaterals.

Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.

Estimate and Compare Angles: Biscuit Angles

I can estimate and compare acute, obtuse and reflex angles.

Home Learning: Semaphore Flag Angles

Differentiated activity sheets where children investigate the angles created when they signal their names in semaphore.

Draw given angles, and measure them in degrees.

Draw and Measure Angles (1): Protractor Power

I can draw and measure angles.

Draw and Measure Angles (2): Protractor Power 2

I can draw and measure angles.

Home Learning: Measuring Angles in Pictures

A differentiated activity where children investigate the angles created when different 2D shapes overlap.

Child Friendly

Identify angles which are other multiples of 90° .

Multiples of 90° Angles: Pizza Angles

I can find angles which are other multiples of 90° .

Home Learning: Dartboard Angles

Differentiated activity sheets where the children identify and calculate missing angles which are multiples of 90° .

Identify angles at a point on a straight line and half a turn (total 180°).

180° Angles: Rainbow Angles

I can find angles at a point on a straight line and half a turn.

Home Learning: Tennis Ball Angles

Differentiated activity sheets asking children to identify and calculate missing angles which total 180° .

Identify angles at a point and one whole turn (total 360°).

360° Angles: Cake Angles

I can find angles at a point and one whole turn.

Home Learning: Space Angles

A differentiated activity involving identifying and calculating missing angles which total 360° .