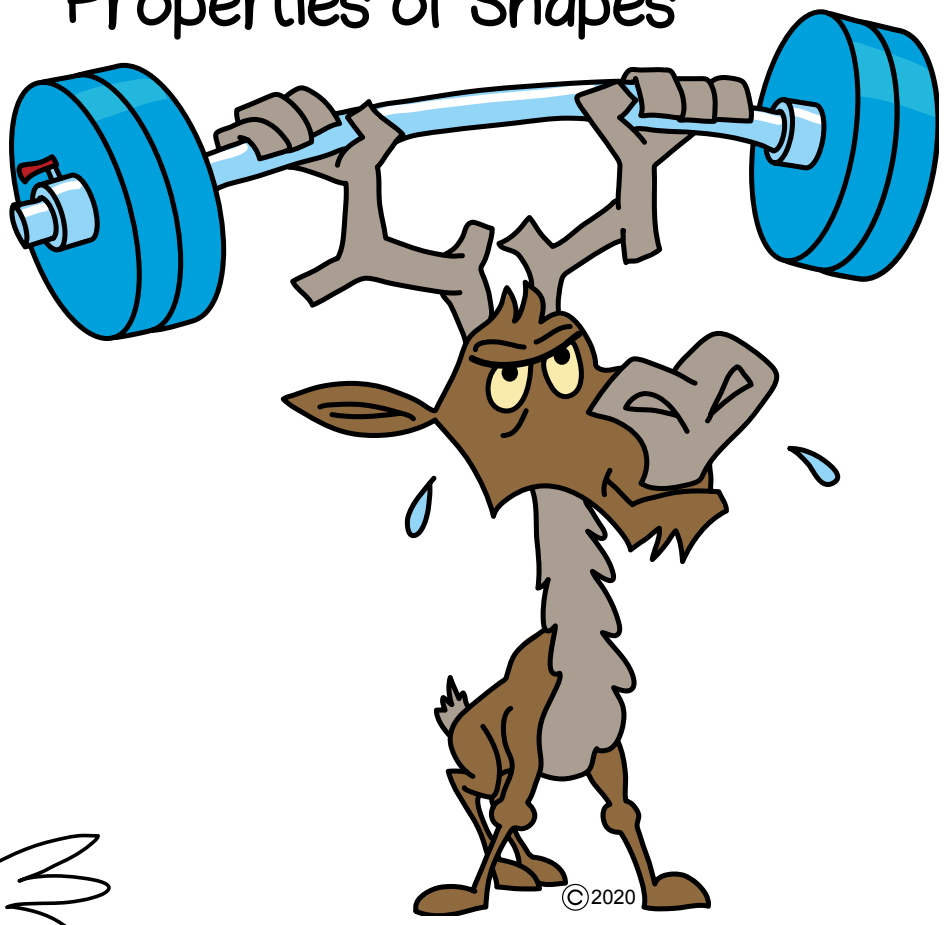
Colin and Coco's Deliberate Practice

Year 6 Unit 7

Geometry
Properties of Shapes



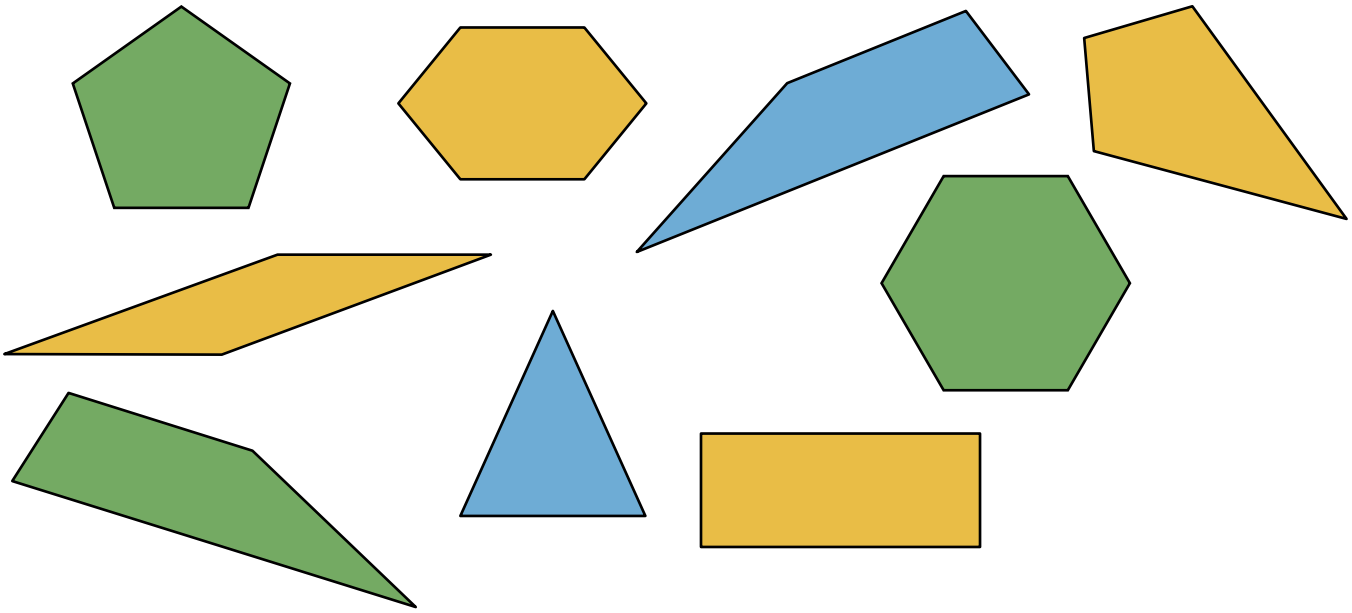
Contents

This pack of deliberate practice is designed to be used flexibly to secure the manageable steps of this unit.
The table below indicates which activities are linked to which mangeable steps.

	Do It	Challenge It	Play It
Classify 2D shapes using given categories; e.g. number of sides, symmetry	1	1	
Draw 2-D shapes given angles			1
Draw 2-D shapes given dimensions and/or angles	2		
Recognise and describe 3-D shapes		2	2
Classify 3-D shapes including cylinders, cones and spheres		2	
Draw nets of 3-D shapes		3	
Construct diagrams of 3-D shapes on isometric paper			3
Know the names and relationships of the parts of a circle	3		

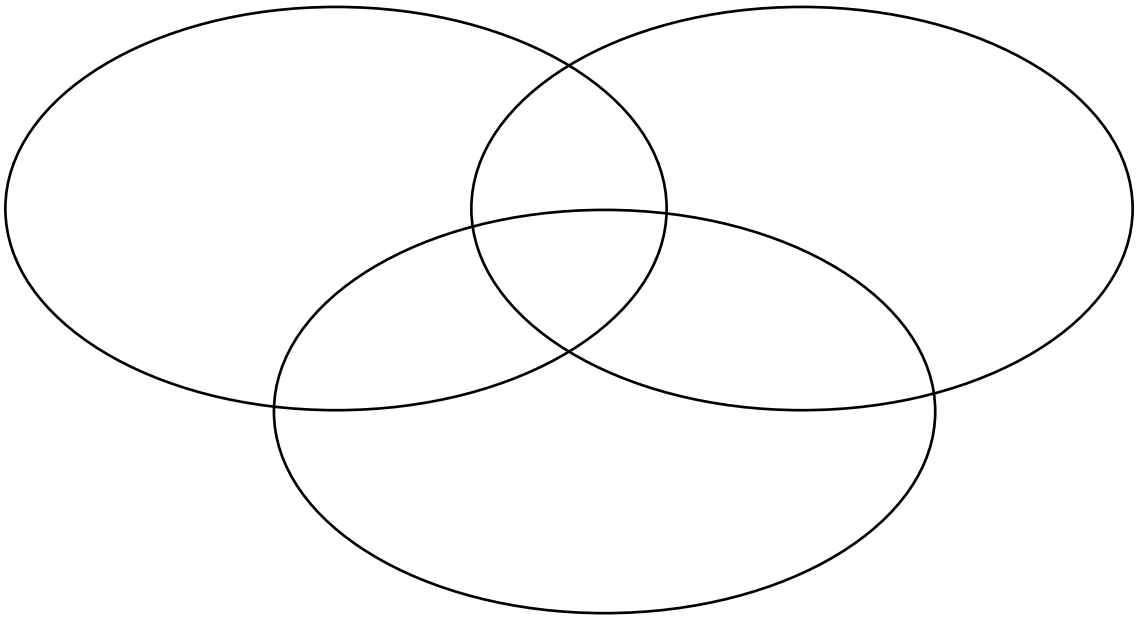
Do It 1

Label the shapes that have more than 2 lines of symmetry with S.
Label the shapes that have two or more pairs of parallel sides with P.



Challenge It 1

Choose criteria for the sets so that it is possible to put a 2-D shape in every section.



Now choose criteria so that it is impossible to put any 2-D shapes in two of the sections.

Draw It

You need:
Ruler and protractor
0 - 9 dice

To play:
Start with a line 8cm long labelled AB.
Player 1 throws the dice to make a 2-digit number of degrees, choosing which number represents tens and which represents ones. Draw the angle of the corresponding size at A and draw a line AC.

Player 2 throws the dice to make a 2-digit number of degrees. Draw the angle of the corresponding size at B and draw a line BC to complete a triangle. (You may need to lengthen the line AC depending on the angles!)

Player 1 measures the side BC in millimetres and that is their score.

Roles are reversed.

To win:
The winner is the first player to score more than 300mm.

Do It 2

Use an angle measurer (protractor) and a ruler to draw the following.

Triangle ABC has:
AB = 7.5cm
Angle at A = 60°
Angle at B = 60°
Draw the full-size triangle accurately.
Measure the side BC.

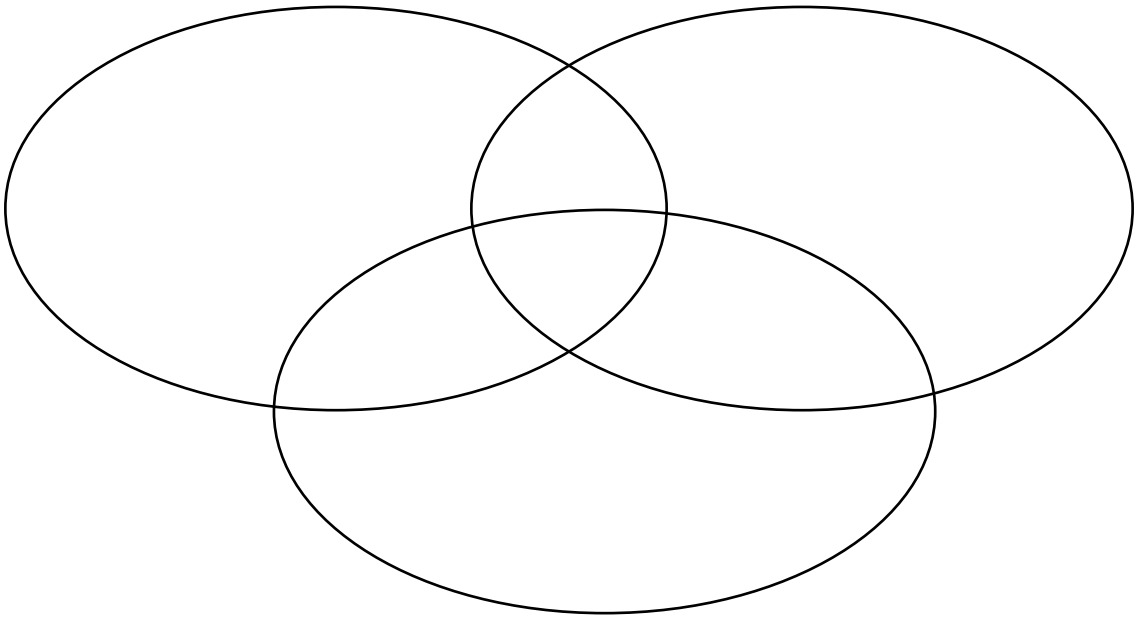
Triangle XYZ has:
XZ = 3cm
Angle at X = 60°
Side XY = 6cm

Draw the full-size triangle accurately.
Measure the angle at Z.

Parallelogram ABCD has:
AB = 7cm
Angle at A = 65°
Angle at B = 115°
Draw the full-size parallelogram accurately.
Measure the side CD.

Challenge It 2

Choose criteria for the sets so that it is possible to put a 3-D shape in every section.



Now choose criteria so that it is impossible to put any 3-D shapes in two of the sections.

Describe and Name the 3-D Shape

Play It 2

You need:
The grid at the bottom of this page
0 - 9 dice

To play:

Take it in turns to throw the dice.
Read the property or shape criteria from the grid.
Name and describe a 3-D shape that satisfies the property and enter it into the grid.
Score a point if you are successful.

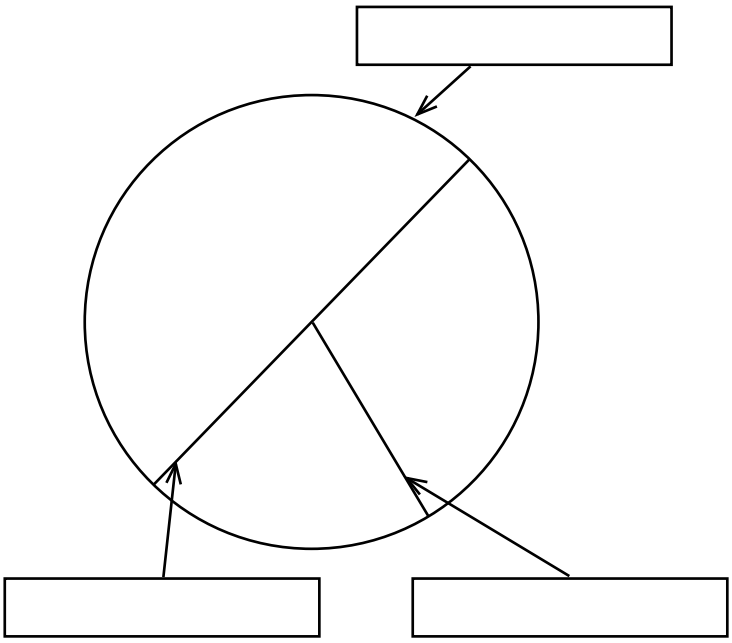
Shapes must not be repeated within the same property.

To win:
The winner is the first player to score 10 points.

Dice throw	Name a 3-D shape that:	3-D Shapes
0	has triangle faces	
1	has a curved face	
2	has at least one square face	
3	has no rectangular faces	
4	has no triangular faces	
5	has more than 6 vertices	
6	has more than 7 faces	
7	has more than 10 edges	
8	has fewer than 6 faces	
9	has at least 1 circular face	

Do It 3

Name the parts of the circle.



Draw the net of a cuboid with
a length of 4cm
a height of 3 cm
a width of 5 cm

Draw the net of a hexagonal based pyramid.

Draw the net of a triangular prism.

Challenge It 3

Draw the net of a triangular prism with the faces in three different arrangements.

Draw the net of a square-based pyramid with the faces in three different arrangements.

Draw the net of a dice with the faces and numbers in three different arrangements. The total on opposite faces always totals 7

Describe and Draw the 3-D Model

Play It 3

You need:
Isometric paper
Connecting cubes

To play: (This is a collaborative activity.)
Start with 5 cubes.
Take it in turns to make a model with the cubes.
Player 1: hide your model from your partner. Describe the model accurately.
Player 2: draw the model on isometric paper.

When finished, check that the drawing matches the model.

Swap roles.

Try using more cubes.