



2D Shapes

2.2.8

Word Wall: shapes, 2D, circle, rectangle, square, triangles – equilateral, isosceles, right and scalene.

Introduction

Students will describe the features of two-dimensional shapes, draw them and use materials to make models of these.

Resources

- 2D shapes: circle, rectangle, square,
- triangles – equilateral, isosceles, right and scalene. Use commercial attribute blocks or cut from cardboard: 2D Shapes
- Mystery Box – Cardboard box about 25x25x35cm with a lid. Cut holes in each side (leaving a flap) as in the diagram.
- Geo-linking strips (or matchsticks and pop sticks)

Time / Classroom Organisation

Each activity process may be introduced in a small or whole group context. Allow 20-25 minutes for each part of this activity. Use every opportunity to identify and describe the properties of 2D shapes in the environment.

Australian Curriculum---Year level: Two

Describe and draw two-dimensional shapes, with and without digital technologies ([ACMMG042](#))

Proficiency Strand:

Reasoning – describing connections between 2D and 3D representations



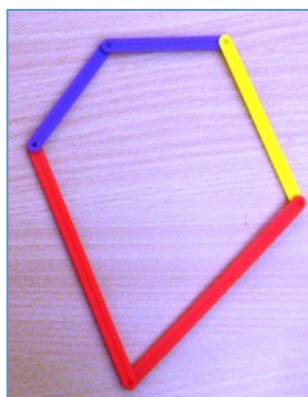
**Catholic Education
Diocese of Cairns**

Learning with Faith and Vision



Activity Process--- Sorting and Constructing 2D Shapes

1. Hold up two shapes e.g. square and rectangle. Say: *What is this same about these shapes?* (4 straight sides; the opposite sides are equal lengths) *What is different about these shapes?* (square has 4 sides all the same length and rectangle has 2 long sides and 2 shorter sides). (Note that a square is a type of rectangle – a *regular* rectangle because all the sides are the same length).
2. Give each group of students a collection of 2D shapes to sort into groups of similar attributes. Ask students to record their reason for grouping the objects together and draw the shapes.
3. Make the shapes using geo---linking strips.



These shapes all have 3 straight sides These shapes all have 3 corners (vertices).

These shapes all have 4 straight sides These shapes all have 4 corners (vertices).

These shapes all have 5 straight sides These shapes all have 5 corners (vertices).



4. Bring the group together and reflect on the properties. Pick up each of the geo-link shapes and see which other descriptions would also apply to them.
5. Name the shapes. Some properties will apply to a variety of shapes e.g. *a square, rectangle and a trapezoid all have 4 straight sides and 4 corners (vertices)* but they have other properties that make them different e.g. *a square has all sides the same length.*

Activity Process B

Mystery box – 2D shapes

- Select one 2D shape to secretly place in the mystery box. Replace the lid



- Select a student to put their hands in to the mystery box.
- The student feels the shape inside the mystery box and describes the 2D shape to the rest of the group e.g. *This shape has 4 sides – 2 long sides and 2 short sides.* If students have difficulty describing the shape using geometric language e.g. say: *Can you tell us anything about the lengths of the sides? Are any the same length?*

- From the student's description, the other students name the shape and draw it.
- The shape is then moved from the box and students compare it to their drawing.
- The box then passes to the next student.
- Discussion during and following this activity can focus on language e.g. *What types of descriptions were most helpful in seeing the shape in our minds? Were there any problems with different understandings of meanings of words?*

(Source: Marj Horne, ACU.2010.)

Additional Resources---Shape

Big Ideas **Shape and Line**

- Geometric properties of shapes determine categorisation, design use and relationships
- 2D shapes are faces of 3D shapes and objects
- Shapes have critical and non-critical attributes
- 2D shapes and 3D shapes and objects can be visualised, represented and mentally manipulated
- Shapes that have shared characteristics belong to the same family
- Conventions are used in representing shape
- Angle is the measure of turn or change in direction or the size of the corner of a

- shape
- Lines can be straight or curved
- Intersecting lines form corners or angles

Variations & Extensions

1. **Mystery box – variations:**

Resources: Mystery box and 2D Shapes

One student has the box and feels the 2D shape in the box. The other students ask the questions to support them in guessing the name of the object in the mystery box.



2. **Game: Shape Fan Cards**

Resources: Shape Fan Cards

Ask students attribute

questions:

Show a shape with 3 sides-Learners then hold up a triangle.

3. **2D Shape Bingo**

Resources: Bingo cards and counters

In small groups play 2D shape bingo. Give descriptions of the 2D shapes for students to interpret before they place their counter on the board.

4. **2D Shape Loop Cards---Follow me**

Resources: 2D Follow Me cards

- <http://www.primaryresources.co.uk/maths/mathsA2.htm>
- http://www.sparklebox.co.uk/5081-5090/sb5082.html#.V_xVLzb_rug
- http://www.sparklebox.co.uk/maths/shape-space-measures/shapes/2d.html#.V_xVVjb_rug



Mystery Box



Contexts for Learning

Play:

Tangrams: Allow students to create designs using tangram shapes.

Art: students use coloured geometric shapes to create a picture or piece of artwork.

Investigation:

Question: Peter said that he used two smaller shapes both the same to cover his large shape. If his large shape looked like this: What might the two smaller shapes look like?

Source: Sullivan and Lilburn 2010 *Open-ended Maths Activities*. Oxford University Press; South Melbourne. P 85

Real life experience:

Magazine Hunt: In small groups ask students to create a poster using pictures from magazines on specific 2D shapes.

Routines and Transitions:

Mystery Box: Use the mystery box as students leave the classroom. Get them to feel the object inside and tell you one attribute about it.

Assessment

- Use the mystery box activity to observe students use of geometric language: sides, length, corners (vertices), curved, straight.
- Observe students as they sort and classify shapes in activity process A.
- Ask students to select a shape from the mystery box. They name the 2D shape and describe its properties using geometric language.

Achievement Standard: draw two dimensional shapes

Background Reading

Children learn to visualise the shape through its properties. This task also requires the use of language to connect the visual picture with properties of shapes.

A **polygon** is a closed figure made by joining 3 or more straight line segments, where each line segment intersects exactly two others. Examples of polygons:

A **regular polygon** has all its sides and angles equal.

A **triangle** is a three-sided polygon. The sum of the angles of a triangle is 180 degrees.

A **rectangle** is a four-sided polygon having all right angles. The sum of the angles of a rectangle is 360 degrees.

A **square** is a four-sided polygon having equal-length sides meeting at right angles. A square is a special kind of rectangle. The sum of the angles of a square is 360 degrees.

A **circle** is a perfectly round plane figure. Every point on the line enclosing the circle is at the same distance from the centre. A circle is not a polygon.

A **Rhombus** is a four-sided polygon having all four sides of equal length. The sum of the angles of a rhombus is 360 degrees.

A **Trapezoid** is a four-sided polygon having exactly one pair of parallel sides. The two sides that are parallel are called the bases of the trapezoid. The sum of the angles

of a trapezoid is 360 degrees.

For more detail please go to:

<http://www.mathleague.com/help/geometry/polygons.htm#polygon>

Year three NAPLAN Numeracy test links

2D shapes --- properties

Links to Related MAGs

1.1.9 2D Shapes