



3D Objects

1.3.9

Word Wall: 3D shape, cone, sphere, cube, cylinder, flat, face, corner, vertices,

Introduction

Students will sort, describe, name and represent familiar three-dimensional objects.

Resources

- 3D objects: sphere, cube, prism, cylinder, cone.
- A collection of real life 3D objects e.g. **Sphere:** marble, ball, orange; **Cone:** party hat, traffic cone, ice-cream cone; **Cube:** dice, rubix cube, box; **Rectangular prism:** blocks, book, >tissue box; **Cylinder:** candle, can, paper towels.
- Mystery Box – Cardboard box about 25x25x35cm with a lid. Cut holes in each side (leaving a flap) as in the diagram

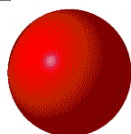
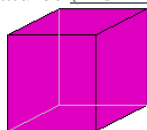


Time / Classroom Organisation

Each activity process may be introduced in a small or whole group context. Allow 15---20 minutes for each part of this activity. Use every opportunity to identify and describe the properties of 3D objects in the environment.

Australian Curriculum Year level One

Recognise and classify familiar two-dimensional shapes and three-dimensional objects using obvious features ([ACMMG022](#))



Activity Process--- Sorting 3D Shapes

1. Place the collection of real life objects in the centre of the group and place 3D shapes in front of you.
2. Hold up each 3D shape and talk about the properties of the shape: e.g. Hold up the sphere and say: *What does this shape look like? (A ball) How do you know that it is a (ball)? (It is round). Can you find a sphere here in our collection? (a marble) Can you think of another sphere that is not here? (an orange, a pea)*
3. Repeat this process for the other shapes using properties: *straight, flat, curved, faces, edges, corners.*
4. Give each student an object.
5. Say: *Find someone who has an object with a similar shape to your shape.* Ask the student to describe how the shapes are the same.
6. Ask the two students who have the same 3D shape to write down the properties that make the shapes the same.
7. The two students use plasticine to build a model of the shape.
8. Ask students to put the groups of similar shapes together and discuss what is the same about these shapes (properties).
9. Label the groups with the shape name and a list of properties as written by the students. Include the models of the 3D shapes:



Activity Process---Mystery Box

Place one set of 3D objects on display



- From the collection of real life objects, select one to secretly place in the mystery box. Replace the lid.
- Select a student to put their hands in to the mystery box.
- Ask the student to feel the shape inside the mystery box and think about how to describe the shape.
- Ask the student to describe the shape to the other students, for example: *this shape has two ends. It has a flat circle shape at each base. It has no corners. It has two edges.*



- Take a note of the student's descriptions for discussion later.
- From the student's description, ask the other students to guess the name of the shape which is inside the box.
- Ask the student with the mystery box to reveal the shape.
- Discuss the description and whether there are other properties that could have been described. Refer to the lists of properties made in activity process A.

Source: Marj Horne, ACU.2010.

Variations & Extensions

1. 3D Shape Match

Resources: Game Board and pictures

This game matches common 3D objects to pictures of real life objects. This game is available for download on www.TeachThis.com.au



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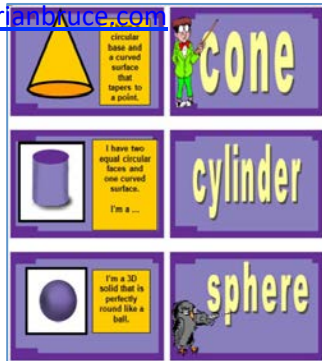


2. 3D Shape Concentration

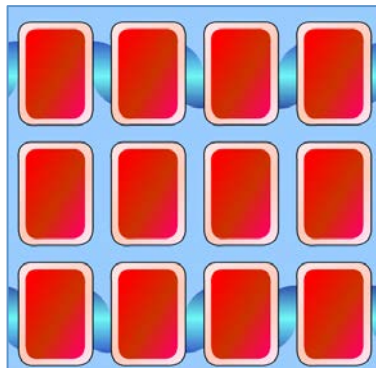
Resources: Game Cards

This game matches common 3D objects. This game is available for download at

www.adrianbaunce.com



Digital Resources <http://www.math-play.com/3d-shapes-game/3d-shapes-game.htm>



Match 3D object with its name

Contexts for Learning

Play:

Allow students to make 3D objects using play dough or plasticine.

Investigation:

Ask students to make a cylinder that a CD-ROM can pass through by rolling a piece of cardboard and using tape to hold it together.

Source: Andrea Hillbrick, 2005. *Tuning In with Task Cards*. Curriculum Corporation: Carlton South, Vic p 21

Real life experience:

In small groups ask students to create 3D object posters by selecting one 3D shape and then either draw pictures or use magazines pictures to create a collage of everyday items that are of that particular 3D shape.

Routines and Transitions:

When transitioning ask students to locate a 3D object in the classroom.

Assessment

Who am I?

- Display the 3D shapes: sphere, cube, prism, cylinder, cone.
- Ask students to select and name a shape from your description.
- *Who am I? I am curved around the middle. I have two ends. My ends are flat circle shapes (cylinder).*
- *Who am I? I have one curved round surface. I am a perfectly round 3D shape like a ball (sphere).*
- *Who am I? I have 6 flat square faces. All the faces are the same size. I have 8 corners (cube)*
- *Who am I? I have 6 flat rectangular faces. I have 8 corners (rectangular prism).*
- *Who am I? I have a flat circular base. My sides are curved. My top is pointed (cone).*

Achievement Standard: describe 2D shapes and 3D objects

Background Reading

Identifying a shape by using the sense of touch rather than sight can assist children 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 **cube** has 6 flat square faces. All faces are the same size; 8 corners (vertices); 12 edges.

A **sphere** has one curved round surface. It is a perfectly round 3D shape like a ball.

A **cylinder** has two ends which are parallel to each other. Each end is exactly the same size circular shape; no corners (vertices); 2 flat faces; 2 edges.

A **cone** has a flat circular base; sides are curved; 1 edge; top is pointed and is called an apex.

A **rectangular prism** has 6 flat rectangular faces; 8 corners (vertices); 12 edges.

For more detail, please go to:

<http://www.mathleague.com/index.php/31-mathleaguewebsite/general/79-spacefiguresandbasicsolids-74111054#spacefigures>

Year three NAPLAN Numeracy test links

3D Objects --- properties

Links to Related MAGs

P.3.9 --- 3D Objects

1.1.9 --- 2D Shapes

2.2.8 --- 2D Shapes

2.3.8 --- 3D Objects

