3D Objects - Stage 1

Week 5-6 Term 3, 2021

Overview:

For the next 2 weeks, you will be having lots of fun with different 3D objects. Be sure to put your Mathematical thinking caps on and get ready to learn! These lessons will help you to develop your understanding and confidence of 3D objects. Many of these lessons include hands-on activities and investigations that you can play with your family and friends… You might even want to FaceTime a classmate and complete it with them. The Stage 1 teachers at Sans Souci know you will have lots of fun!

Some of these lessons will require a device but you won't need to print this resource, simply complete your work on a piece of paper or in an exercise book. Don't forget to take a picture of your work if you are proud of it and want to show your classmates and your teacher.

Outcomes:

- Describes mathematical situations and methods using everyday and some mathematical language, actions, materials, diagrams and symbols **MA1-1WM**
- Sorts, describes, represents and recognises familiar three- dimensional objects, including cones, cubes, cylinders, spheres and prisms **MA1-14MG**

Language:

Year 1:
Students should be able to communicate using the following language: object, cone, cube, cylinder, sphere, prism, surface, flat surface, curved surface, face.
In geometry, the term 'face' refers to a flat surface with only straight edges, as in prisms and pyramids, e.g. a cube has six faces. Curved surfaces, such as those found in cones, cylinders and spheres, are not classified as faces. Similarly, flat surfaces with curved boundaries, such as the circular surfaces of cones and cylinders, are not faces.

Year 2:
Students should be able to communicate using the following language: object, shape, two dimensional shape (2D shape), three-dimensional object (3D object), cone, cube, cylinder, sphere, prism, surface, flat surface, curved surface, face, edge, vertex (vertices).The term 'vertex' (plural: vertices) refers to the point where three or more faces of a three dimensional object meet (or where two straight sides of a two-dimensional shape meet). In geometry, the term 'edge' refers to the interval (straight line) formed where two faces of a three-dimensional object meet.

Lesson 1

WALT - We are learning to:

- Recognise and classify the features of familiar three dimensional objects (ACMMG022 & ACMMG043).

Resources needed:

- A device
- Paper, pencils and eraser
- Objects around the house

Activities

1. Watch the video on 2D shapes and 3D objects to help start your thinking. Write down or discuss with your parent/caregiver the main differences between 2D shapes and 3D objects.
2. Create a list of all of the 2D shapes and 3D objects that you know.
3. Can you identify the similarities and differences of these shapes and objects? Can you group them based on the things they have in common and their differences? Explain your reasoning to your parent/caregiver and don't forget to write it down or draw pictures to explain.
4. Walk around your house and see if you can find any 3D objects. If you can, take pictures and/or draw and label them to share with your class and teacher.
    - Cube
    - Sphere
    - Cone
    - Cylinder
    - Rectangular Prism
    - Triangular Prism
    - Square-Based Pyramid
    - Triangular Pyramid
5. Post a picture on google classroom in your assigned week 5 work. We can't wait to see it!

Lesson 2

WALT - We are learning to:

- Recognise and classify the features of familiar three dimensional objects (ACMMG022 & ACMMG043).
- Use the term ‘face’ to describe the flat surfaces of 3D objects with straight edges and distinguish between ‘flat surfaces’ and ‘curved surfaces’.

Resources needed:

- A device
- Paper, pencils, ruler and eraser
- Objects around the house

1. Using a ruler, draw the faces of the following 3D objects and write how many there are. Some objects have more than one face and they are not always the same! You will need to think really hard about what you are going to draw! It might help you to find an everyday item that is a 3D object to help you. Be warned: some of these are really tricky! Just try your best.
    - Cube
    - Sphere
    - Cylinder
    - Cone
    - Rectangular Prism
    - Triangular Prism
    - Square-Based Pyramid
    - Triangular Pyramid
2. Look at the faces that you have drawn, Do you recognise any of these shapes? How do the names of these shapes help you to identify 3D objects? Can you write your explanation or discuss it with an adult or older sibling?
3. Group the 3D objects into 2 groups: curved and flat faces. You can do this by drawing or finding objects around the house. Think about whether you can trace a curved face and why or why not?

4. Before watching the video can you list the main properties of 3D shapes? Watch the video all about 3D objects to learn more about their properties to see if you were correct!
5. Post a picture on google classroom in your assigned week 5 work. We can't wait to see it!

Lesson 3

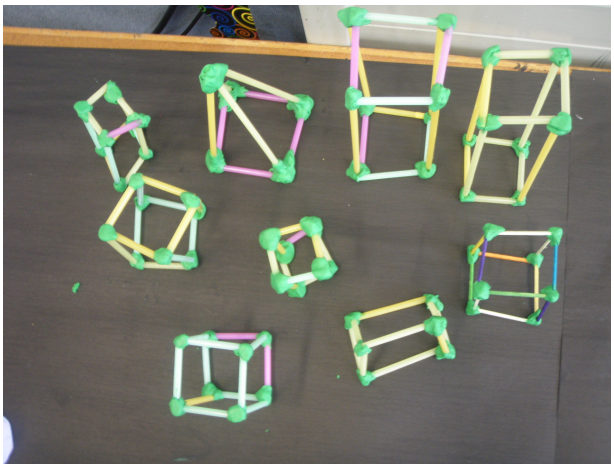
WALT - We are learning to:

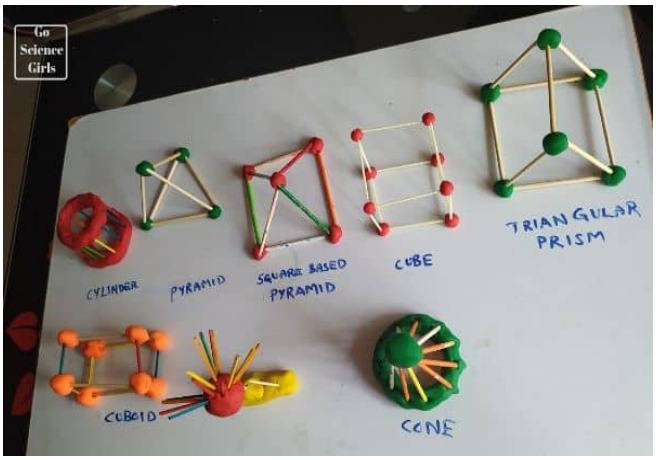
- Recognise and classify the features of familiar three dimensional objects (ACMMG022 & ACMMG043).

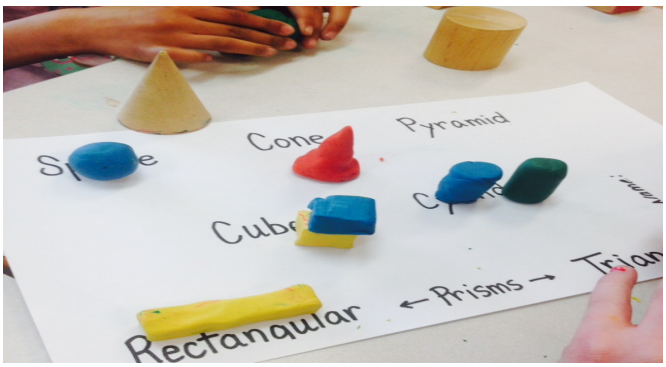
Resources needed:

- A device
- Paper, pencils, ruler
- Playdough or straws/toothpicks/match sticks and bluetack - *note: if you make it out of playdough you will be able to use this for lesson 6.*

1. Open up the 3D objects poster to have a look at the shapes and use it as a reference for this task.
2. You will need to make the 8 shapes out of the resources stated above. Down below you will find some examples to help guide you. Feel free to post these on google classroom as we would love to see!







3. Think about which 3D objects can stack, slide or roll. Choose 3 of them and write your prediction about whether you think they stack, slide or roll. Test your prediction using everyday 3D objects.
4. Watch the video on 3D Objects - Stack, Slide or Roll and see if you were correct!
5. Post a picture on google classroom in your assigned week 5 work. We can't wait to see it!

Lesson 4

WALT - We are learning to:

- Recognise and classify the features of familiar three dimensional objects (ACMMG022 & ACMMG043).

Resources needed:

- A device
- Paper, pencil and eraser
- Optional worksheet attached on following page

1. Watch the 3D object song and start to think about the properties/terms that these objects have.
2. Use a maths dictionary to explore the meanings of the terms:
    - Faces
    - Vertices
    - Edges
    - Curved surface
    - Flat surface
    - Vertex
    - Apex

    You don't need to write these down, just read and familiarise yourself with these important terms!
3. Play the interactive powerpoint - 3D Object Identify Properties and match the objects correctly! **You will need to open this powerpoint in google slides to interact with it.** If you don't have access to the powerpoint you can write the answers on a sheet of paper.
4. Learn to draw 3D shapes by watching the video and practice labelling their properties.
5. Post a picture on google classroom in your assigned week 5 work. We can't wait to see it!

Lesson 5

WALT - We are learning to:

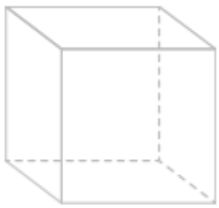
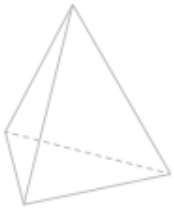
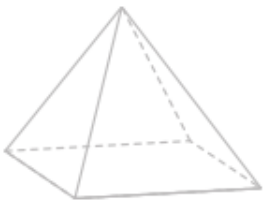
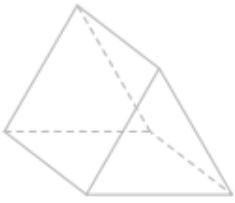
- Recognise that 3D objects look different from vantage points and orientations (ACMMG022 & ACMMG043).

Resources needed:

- A device that has a camera
- Paper, pencil and eraser
- Objects from around the house
- Worksheet attached (or you can draw up your own table)

1. Using a tissue box or rectangular lunch box, discuss with a parent/caregiver how it looks different from different perspectives.
2. Draw the top, front and side view of the tissue box or lunch box and label it.
3. Collect different 3D objects from around your house and use a camera to take pictures from the different views.
4. Draw the following shapes 3 different views (top, front and side) and label them.
    - Cube
    - Sphere
    - Cylinder
    - Cone
    - Rectangular Prism
    - Triangular Prism
    - Square-Based Pyramid
    - Triangular Pyramid
5. Complete the attached worksheet about the properties of 3D objects. You do not need to print this worksheet out if you don't have a printer. You can use a ruler and draw up a table on plain paper.
6. Post a picture on google classroom in your assigned week 5 work. We can't wait to see it!

3D Object Properties

Trace the shape	Name	Edges	Faces	Vertices	Curved surfaces	Flat surfaces
						
						
						
						
						
						
						

Lesson 6

WALT - We are learning to:

- Recognise that 3D objects look different from vantage points and orientations (ACMMG022 & ACMMG043).

Resources needed:

- A device
- Paper, pencil and eraser
- Objects from around the house or previous playdough shapes from lesson 3

1. You will need either your playdough shapes from lesson 3 or some objects from around the house that you are able to cut (e.g. rectangular prism - block of butter, sphere apple/orange etc, cone - icecream). Please ask a parent or carer before you cut any household objects or food..
2. Make predictions on what 2D shapes you think you will see when you cut specific 3D objects. Write the title ‘Cross Section Predictions’ and draw your predictions for each object.
3. Watch Cross sections with playdough video to see how cross sections are made with certain 3D objects.
4. Experiment with your objects by cutting down and across to see what shapes are formed. Draw your results under a new title ‘Actual Cross Sections’.
5. Post a picture on google classroom in your assigned week 6 work. We can’t wait to see it!

Lesson 7

WALT - We are learning to:

- Recognise that 3D objects look different from vantage points and orientations (ACMMG022 & ACMMG043).
- Select and name familiar 3D objects.

Resources needed:

- A device
- Paper, pencil and eraser
- 3D net template OR post it notes

1. Brainstorm what you think a net is when it is associated with 3D objects.
2. Watch the 3D Objects Nets Video
3. Once you have completed the video you have the opportunity to do 1 or more of the following:
    - Draw the nets of each 3D object using a ruler and coloured pencils
    - Make the 3D nets using the 3D Net Templates
    - Use post it notes to make the nets and cut out the other shapes (if they are curved) and join it together with tape or glue. Watch the video of Miss Shuetrim making a cube out of post it notes to help you.
4. Post a picture on google classroom in your assigned week 6 work. We can't wait to see it!

Lesson 8

WALT - We are learning to:

- Recognise and classify the features of familiar three dimensional objects (ACMMG022 & ACMMG043).

Resources needed:

- A device
- Paper, lead pencil + coloured pencils and eraser
- Coloured paper
- Sticky tape / glue
- Any other materials that you would like to use!

1. It is time to get creative and show your understanding of 3D objects! Either find some everyday 3D objects (ie. paper towel rolls, tissue boxes etc) or make some out of paper or cardboard, Use these to create anything you want!
2. Post a picture on google classroom in your assigned week 6 work. We can't wait to see it!

   Some ideas include: