

3D Shapes

Learning Objectives: To connect three-dimensional objects with two dimensional representations

Your maths today will be completed in your book. Please take a photo of this work. And upload it to the folder that you have shared with your teacher on google drive. Remember to label you work with maths and today's date 28.04.2020.

Click on the links below to take you to different parts of this lesson.

Today we have:

[Warm up](#)
[Video tutorial](#)
[Slides tutorial](#)
[Enabler activities](#)
[Core activities](#)
[Extender activities](#)

Warm Up

Enabler

Twelve Teddies all sat down at a cafe which had 4 tables. Show how the teddies might have sat at each table.

Core

$$\square \times \square = 36$$

What numbers could go into each box?

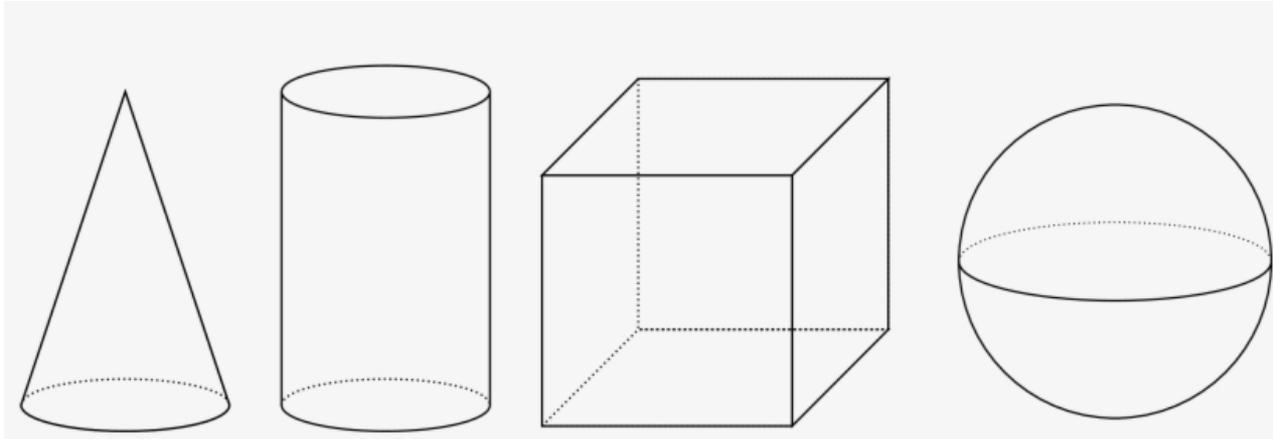
Extender

How could you calculate 24×4 if the 4 button on your calculator was broken and you had to use your calculator?

Video Tutorial



Solid shapes are often simply called solids. They can be empty or fill inside.



cone

cylinder

cube

sphere

Mathematical everyday living (buildings, architecture, ball games, ect.) has a lot to do with shapes. It is therefore important to be able to recognise, name and draw the following solid shapes which occur regularly in Maths and the world we live in. Solid shapes have a length a breadth and a height and we often call them 3-dimensional.

Solid shapes can be split into three main groups.

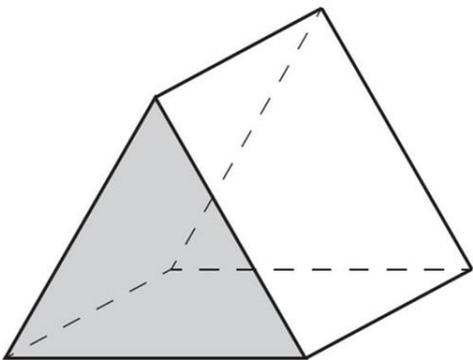
1. Prisms

2. Pyramids

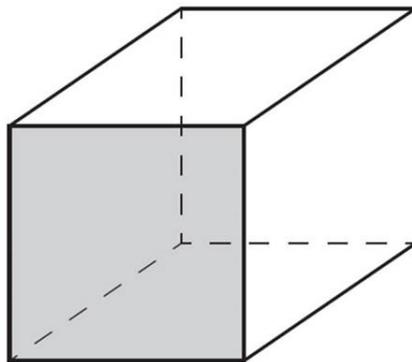
3. Neither

Prisms

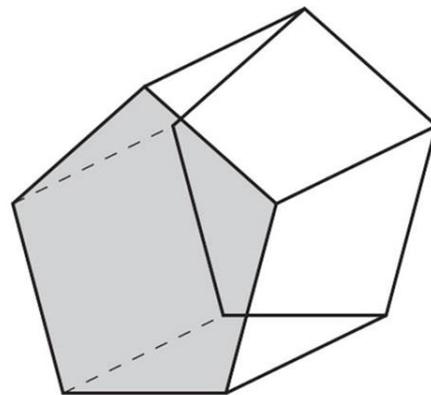
A prism is named according to its cross-section. The cross-section is the constant shape which runs through the figure.



Triangular Prism
The cross-section is a triangle ▲ which runs through the figure.

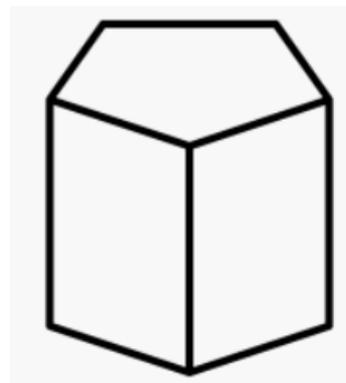
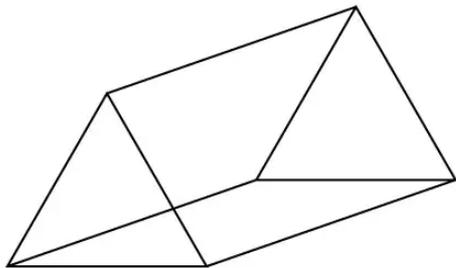
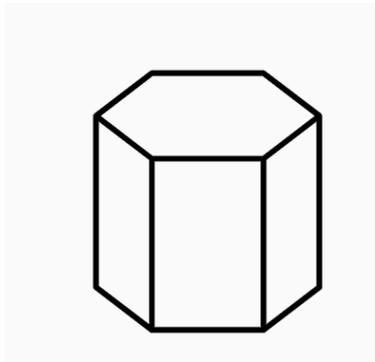


Rectangular Prism
The cross-section is a rectangle ■ which runs through the figure.



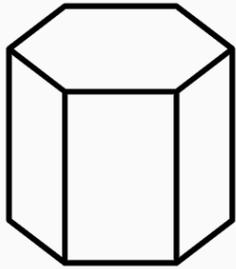
Pentagonal Prism
The cross-section is a pentagon ⬠ which runs through the figure.

Can you label each of these prisms. Remember a prism is named according to its cross-section.

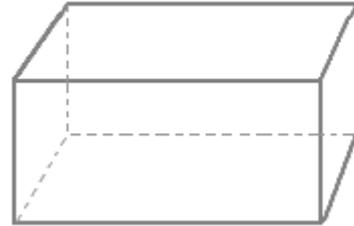


Can you label each of these prisms. Remember a prism is named according to its cross-section.

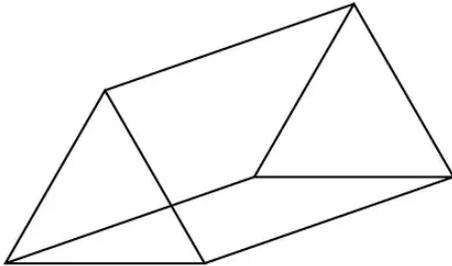
Hexagonal
Prism



Rectangular
Prism



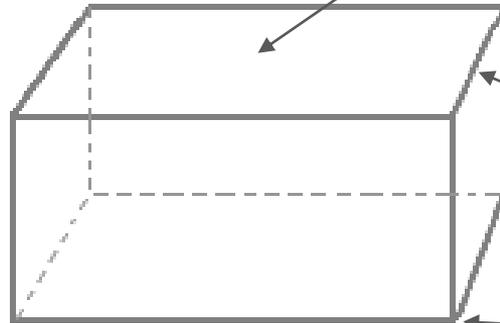
Triangular
Prism



Pentagonal
Prism



**SOME
IMPORTANT
WORDS YOU
MUST KNOW**



FACE - the flat part of the surface

EDGE - the line where the two faces meet

VERTEX - the corner where three or more faces meet

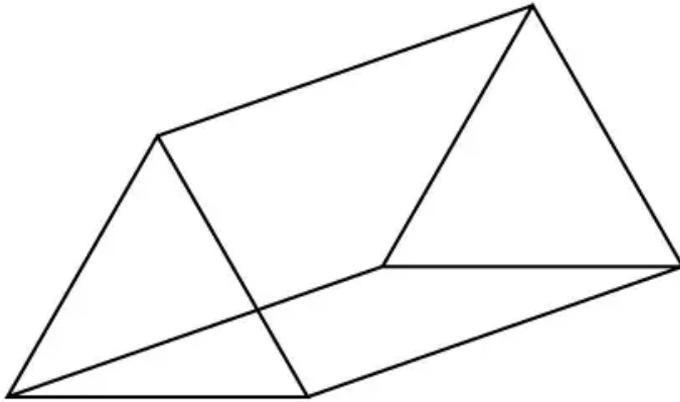
The rectangular prism shown above has:

6 FACES

12 EDGES

8 VERTICES plural of vertex

Can you count how many faces, edges and vertices this triangular prism has?



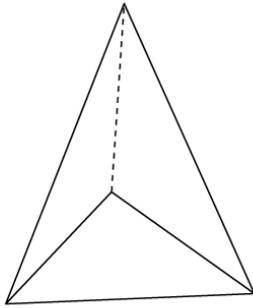
faces

edges

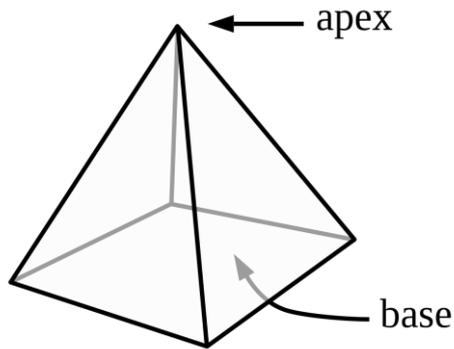
vertices

Pyramids

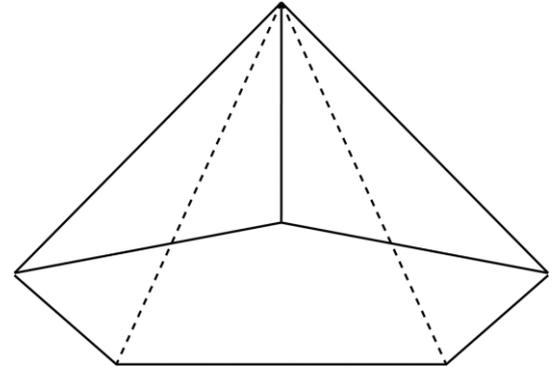
A pyramid is named according to the shape of its non-triangular face. If all its faces are triangular, then it is called a triangular pyramid (also called a tetrahedron)



**Triangular Pyramid
(also called a
tetrahedron)**

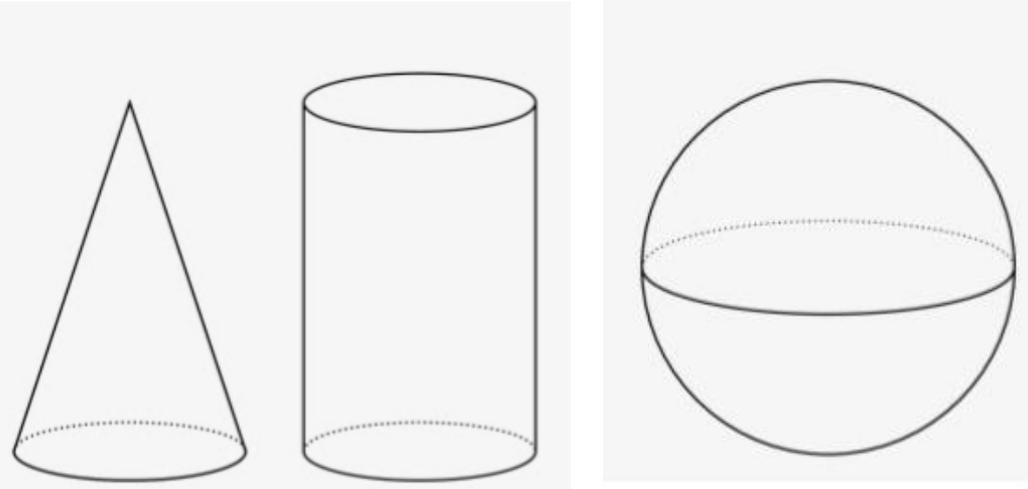


Square Pyramid



Pentagonal Pyramid

We stated previously that some solids are neither prisms nor pyramid. Three very common solids which fall into this group are



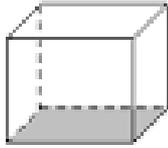
cone

cylinder

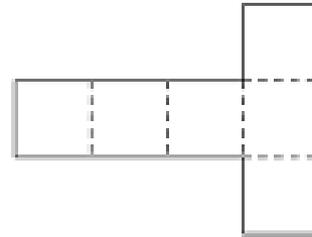
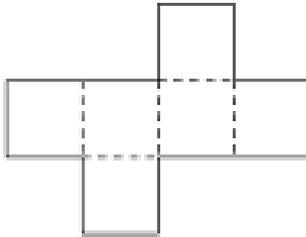
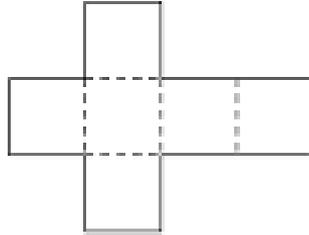
sphere

Nets

It is easy to make a solid shape from a piece of paper or cardboard by first drawing a net of the faces of the solid. The net is made up of different 2D shapes (rectangles, squares, triangles etc). When the net is cut out, and the faces of the net folded along the edges, then the solid or 3D shape is formed.



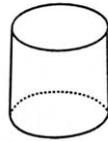
Cube



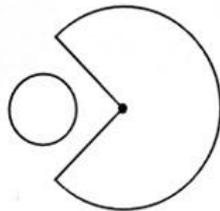
Nets of a Cube

Below are 4 shapes and 4 nets. Can you use the arrows to match each shape to its net?

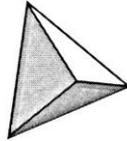
(a)



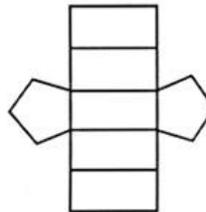
Cylinder



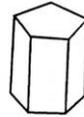
(b)



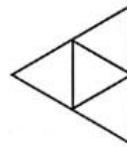
Regular tetrahedron



(c)



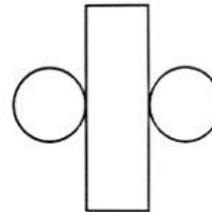
Pentagonal prism



(d)



Cone

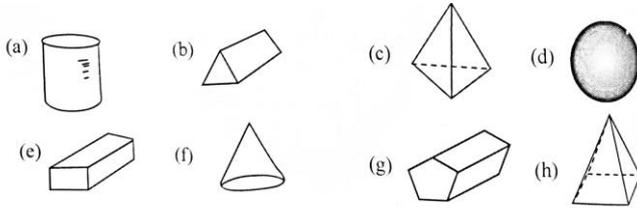


Your Turn

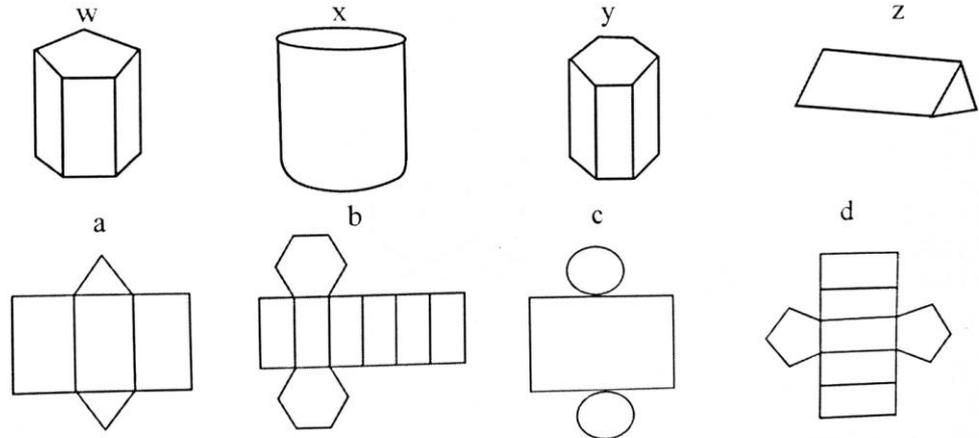
Choose your level and have a go. Remember to complete these activities in your book and upload a photo to the drive you shared with your teacher. The Enabler activity is on this slide. Scroll down for the core and extender activity. Remember you only need to do the enabler, the core or the extender. You don't need to do all of them.

Enabler

1. Name the following solid shapes

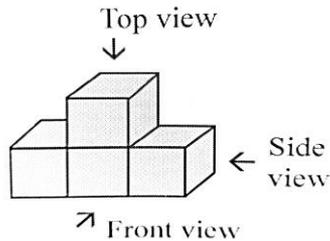


3. Match each solid with its correct net bellow.



1. Four cubes have been joined together to make the solid underneath. In your book sketch

- (a) The front view
- (b) The side view
- (c) The top view



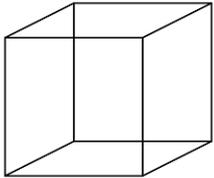
4. Go to the link below and practice matching 3D shapes to their nets

<https://www.studyladder.com.au/games/activity/matching-three-dimensional-objects-with-their-nets-32755?backUrl=/games/mathematics/au-year-five/mathematics-three-dimensional-objects-707>

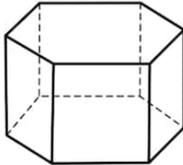
Core

1. Name the following solids

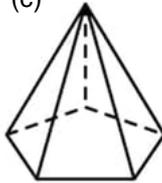
(a)



(b)

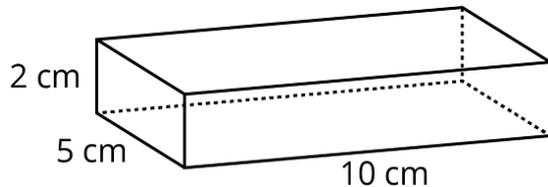


(c)



2. (a) How many faces do each of the solids have in Q1?
(b) How many edges do each of the solids have in Q1?
(c) How many vertices do each of the shapes have in Q1?

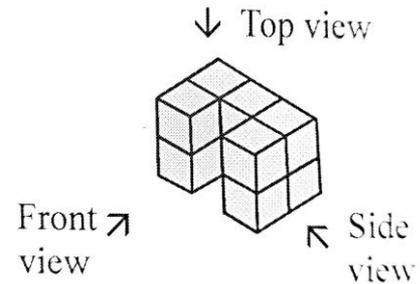
3. Use your grid paper to draw the net for the rectangular prism below.



3. Ten cubes have been placed together to form the solid on the right.

Sketch:

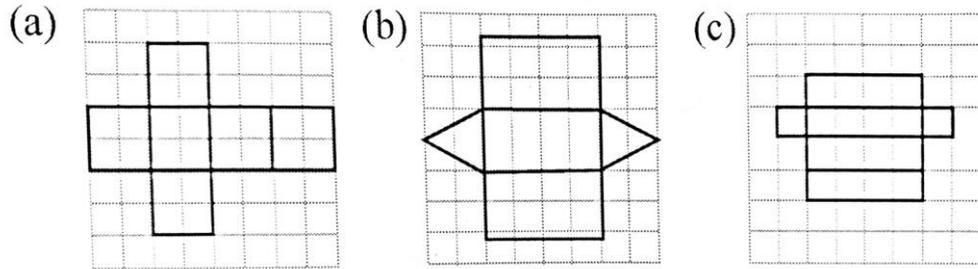
- (a) The front view
(b) The side view
(c) The top view



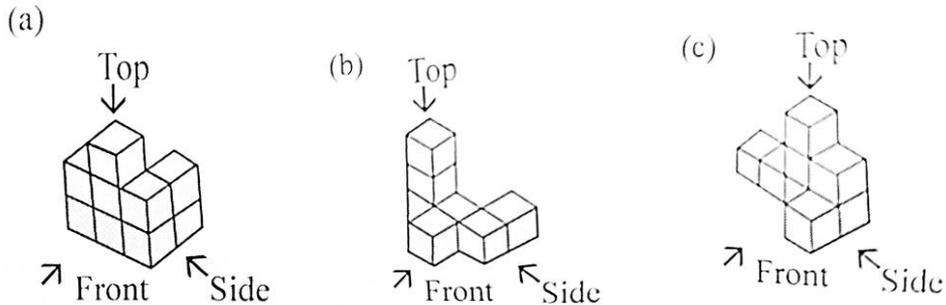
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Extender

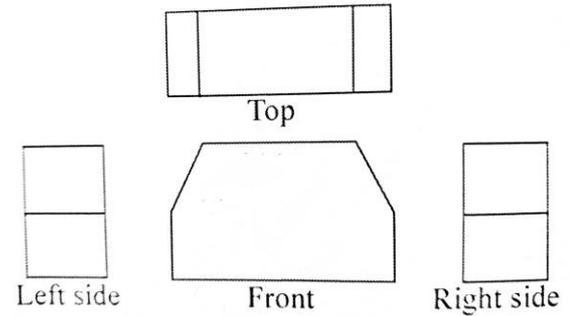
1. Draw the solid shapes on grid paper that are formed by the nets below



2. For the following three solids, draw the front view, the side view and the top view.



3. Below is a solid viewed from 4 different angles, or 4 different elevations. Draw a sketch of the solid.



4. Go to the link below and practice matching 3D shapes to their nets

<https://www.studyladder.com.au/games/activity/matching-three-dimensional-objects-with-their-nets-32755?backUrl=/games/mathematics/au-year-five/mathematics-three-dimensional-objects-707>