Mental Maths Homework Hints   06/04/20
(3D Shape Facts)

Dear Parents,

This week the children are exploring 2D and 3D shapes. The tables below outline revision of 2D shapes and properties of 3D shapes. It would be useful for your child to go over these shape facts each night so that their understanding of shape and their recall of shape facts improves.

- You could play the 'Who am I' shape game. For example you could ask your child:

I have 6 faces

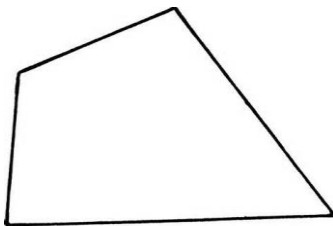I have 8 vertices (corners)

I have 12 edges (sides)

Who am I?

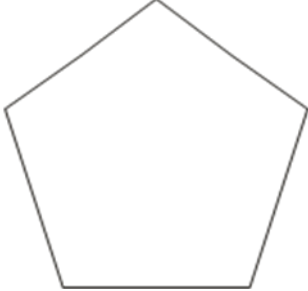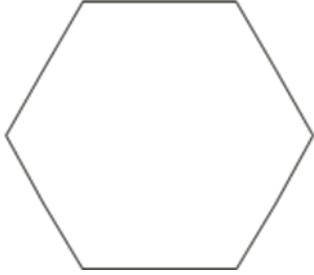 Answer = A cube.
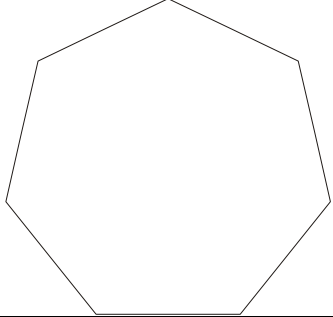
- Work through different shapes in this way.

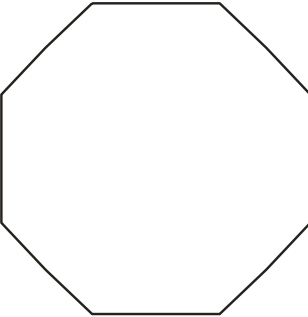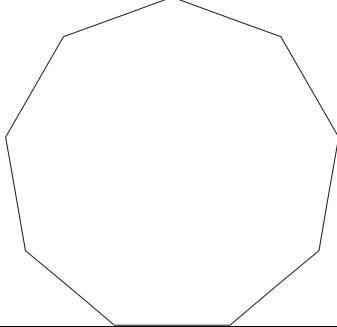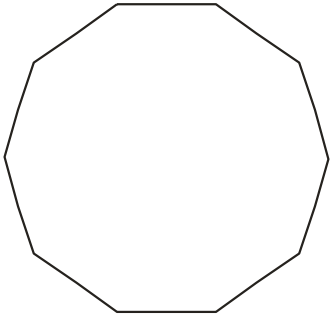
2D Shapes - Revision from last week

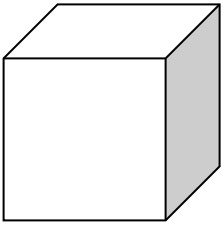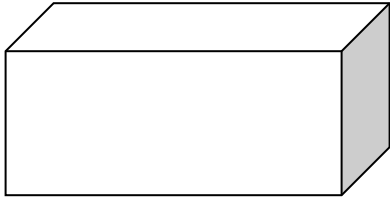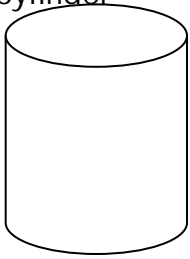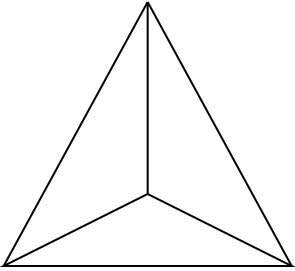You need to be able to name and recognise, the regular and irreglar forms of, the following polygons:
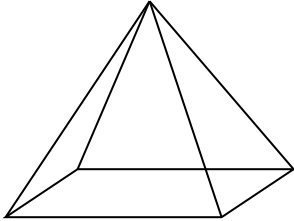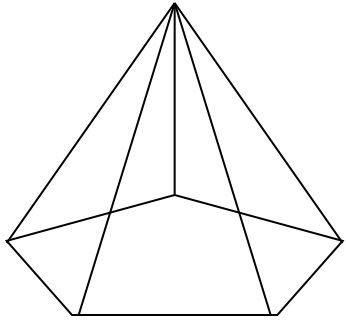
   Quadrilateral (any 4 sided shape)

List of quadrilaterals: square, rectangle, rhombus, kite, trapezium, parallelogram.

pentagon (5 sides)	hexagon(6 sides)	heptagon (7sides)
octagon(8 sides)	Nonagon (9 sides)	Decagon (10 sides)

3D shapes

cube	cuboid	cylinder
Faces: 6 Vertices: 8 Edges: 12	Faces: 6 Vertices: 8 Edges: 12	Faces: 3 Vertices: 0 Edges: 2
Triangular based pyramid (a **tetrahedron** is a triangular based pyramid where all the face are the same size.)	Square based pyramid	Pentagonal based pyramid
Faces: 4 Vertices: 4 Edges: 6	Faces: 5 Vertices: 5 Edges: 8	Faces: 6 Vertices: 6 Edges: 10
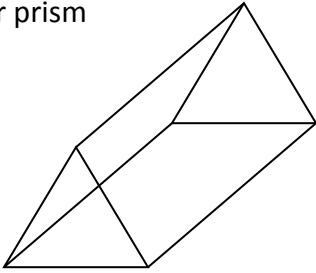
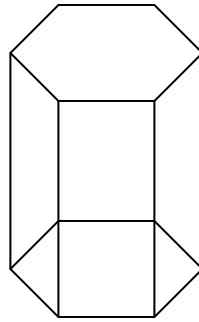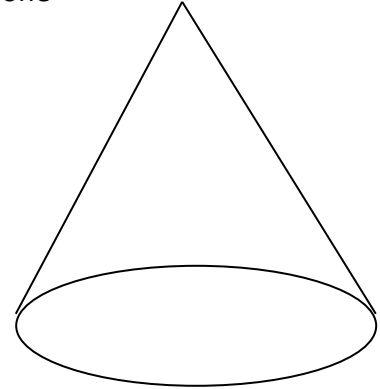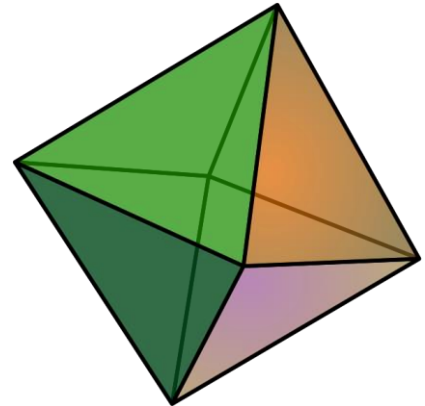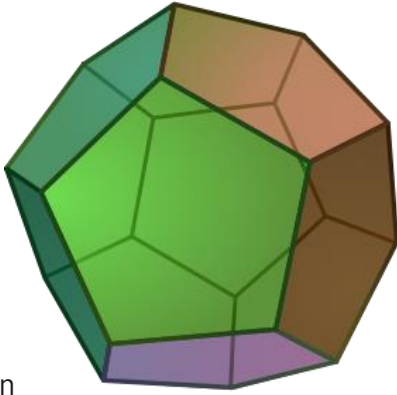|		
Triangular prism Faces: 5 Vertices: 6 Edges: 9	Hexagonal prism Faces: 8 Vertices: 12 Edges: 18	cone Faces: 2 Vertices: 1 Edges: 1
Sphere Faces: 1 Vertices: 0 Edges: 0	Hemisphere Faces: 2 Vertices: 0 Edges: 1	Octahedron (a regular octahedron has eight equilateral triangular faces) Faces: 8 Vertices: 6 Edges: 12

  Dodecahedron A regular dodecahedron is composed of 12 regular pentagonal faces,. Faces: 12　　　Vertices: 20　　　Edges: 30	Definition Issues Edges are defined to be straight, therefore a cylinder would have no edges. This often appears to run against common sense. If you allowed curved edges, a cylinder would have two. A cone technically has no vertices, due to a vertex having to be a point where two or more straight lines meet; so a cone would have one circular base and one apex (instead of a vertex).

3D shapes have faces (sides), edges and vertices (corners).
Faces

Face

A **face** is a flat or curved surface on a 3D shape. For example a cube has six faces, a cylinder has three and a sphere has just one.

Edges

An edge is where two faces meet. For example a cube has 12 edges, a cylinder has two and a sphere has none.

Vertices

A vertex is a corner where edges meet. The plural is vertices. For example a cube has eight vertices, a cone has one vertex and a sphere has none.

3D Shapes

Name	Surfaces		Edges		Vertices	Picture
	Flat	Curved	Flat	Curved		
sphere	0	1	0	0	0	
cube	6	0	12	0	8	
cuboid	6	0	12	0	8	
cone	1	1	0	1	0	
cylinder	2	1	0	2	0	
square-based pyramid	5	0	8	0	5	
tetrahedron	4	0	6	0	4	
triangular prism	5	0	9	0	6	
pentagonal prism	7	0	15	0	10	
hexagonal prism	8	0	18	0	12	
octagonal prism	10	0	24	0	16	
octahedron	8	0	12	0	6	

You will need these 3D shapes.
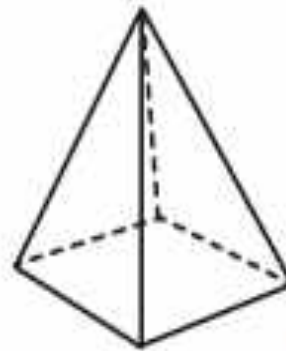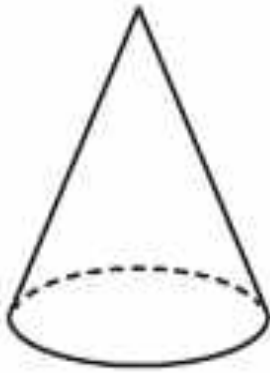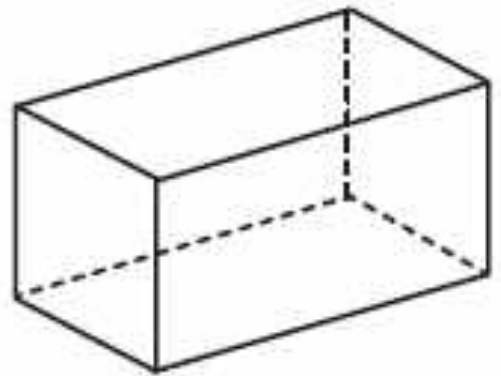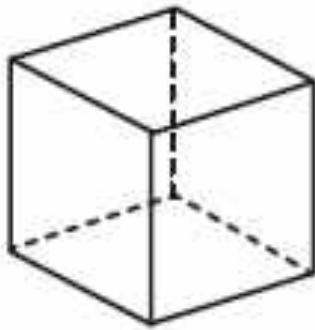
Task

Focusing on one of these 3D shapes shown, describe it to someone at home. Use the word bank below to help you with your description. Once you have described a 3D shape, move onto another of your choice from the examples shown. Refer to your MM facts to help you with your description.

Square	Rectangle	Rectangular	Circle
Circular	Triangle	Triangular	Curved
Face	Corner	Edge	Equal	Point

Match the following 3D shapes with the correct properties shown. Check our MM Facts for accuracy.
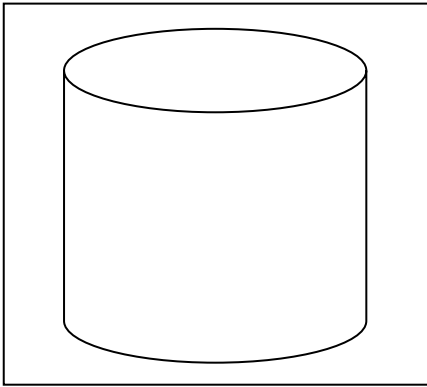
6 square faces

8 vertices

12 edges

3 faces

0 vertices

2 edges

1 face

0 vertices

0 edges

6 faces

8 vertices

12 edges
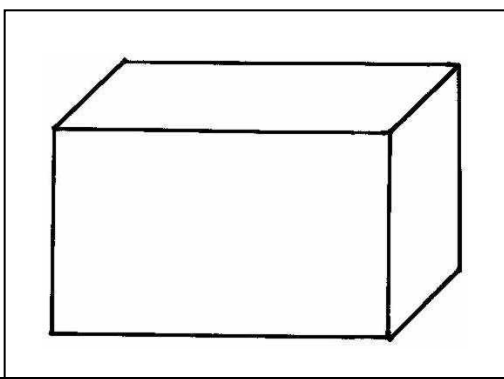
2 faces

1 vertex

1 edge
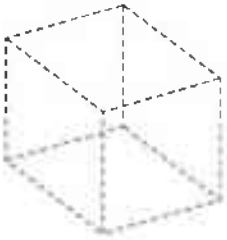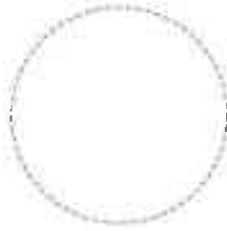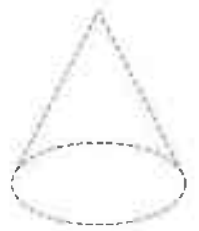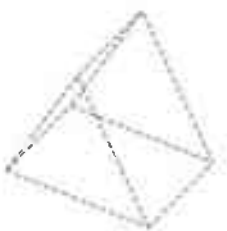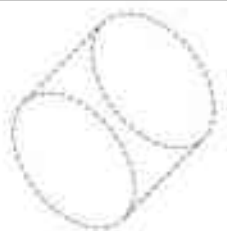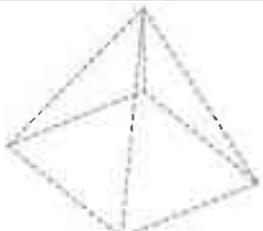
SHAPE

1. Use the dotted outline to draw each 3-D shape. Copy the correct name for each shape. Write the number of faces, edges and corners.

cone cube pyramid sphere prism cylinder

(a) Name

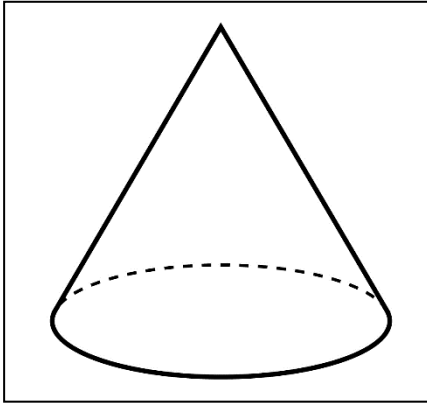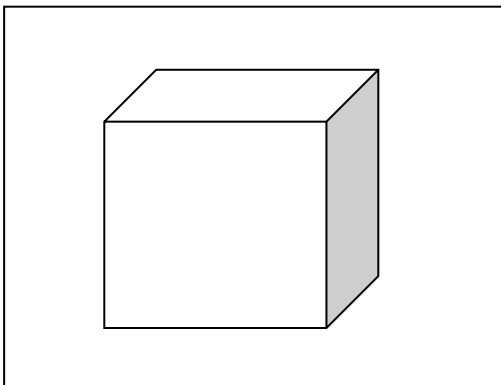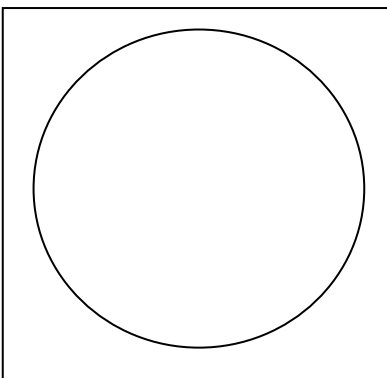| Faces	Edges	Corners

(b) Name

Faces	Edges	Corners

(c) Name

Faces	Edges	Corners

(d) Name

Faces	Edges	Corners

(e) Name

Faces	Edges	Corners

(f) Name

Faces	Edges	Corners

PUPIL NAME

3D Shape Walk

With your parent, go for a walk around your home and garden to look for objects that are 3D shapes. Record your findings in the table below. You can draw pictures or write names of the objects you find. If you don't have access to a printer, draw a similar table on paper or in your home learning book.

Shapes to find: cube, cuboid, cone, cylinder, sphere.

Cube	Cuboid	Cone	Cylinder	Sphere

Write the names of the shapes in the boxes and then write some of the properties.

Shape	Name of the shape (2D/3D)	Properties