



MATHEMATICS



N.S. Yr. 2 P.81

**Describe and classify 3-D and 2-D shapes
according to their properties.**

Equipment

Paper, pencil, ruler

MathSphere

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Concepts

Children should understand and use in practical situations, the following words:

shape, pattern, flat, solid, hollow, side, edge, face, straight, curved, round, circular, triangular, rectangular, surface, point, pointed, corner, sort, make, build, draw, cube, cuboid, sphere, cone, cylinder, circle, triangle, rectangle, square, pentagon, pyramid, hexagon, octagon

At this stage, work with shape should be mainly practical using real shapes, but we include here some simple pages of reinforcement and ideas for games and activities (most children will need help reading the pages from page 6 onwards). Schools will normally be stocked with plastic or similar shapes, both 2-D and 3-D, but parents can quickly and easily make a collection of the most common shapes from empty tins and packets (including those boxes from a popular triangular chocolate bar), and cut 2-D shapes from card.

It is essential that the correct vocabulary is used. 3-D shapes have 'faces', 'edges' and 'corners' (later called 'vertices'). Do not use the word 'sides' with 3-D shapes. 2-D shapes have 'corners' or 'angles' and sides.

Eg. 'This cuboid has six faces and twelve edges. Do all cuboids have six faces and twelve edges?'

Eg. 'This pentagon has five sides and five corners.'

Include much practice at filling the shapes with sand or water and pouring from one to another. This helps with an appreciation of volume, but the handling of the shapes reinforces the curvature or angularity of different shapes. Make this play fun.

2-D and 3-D shapes are all around us. Use opportunities to discuss shapes as you come across them in everyday life (clocks, bath plugs, holes in the road, fencing posts, CDs etc).

Instructions for the following sheets

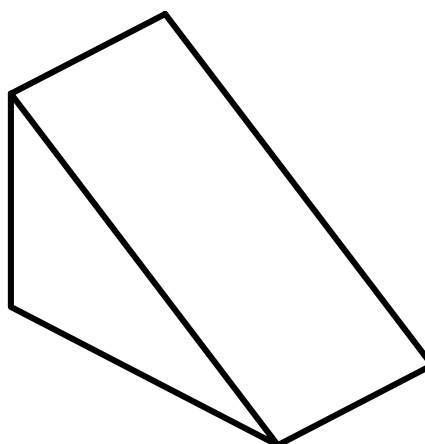
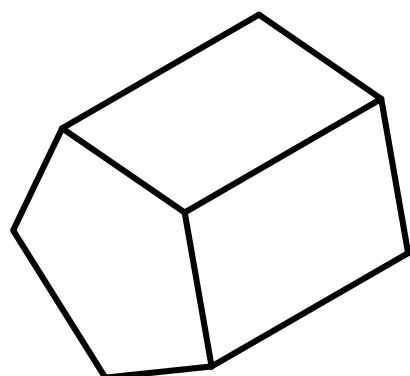
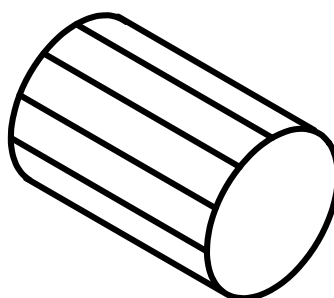
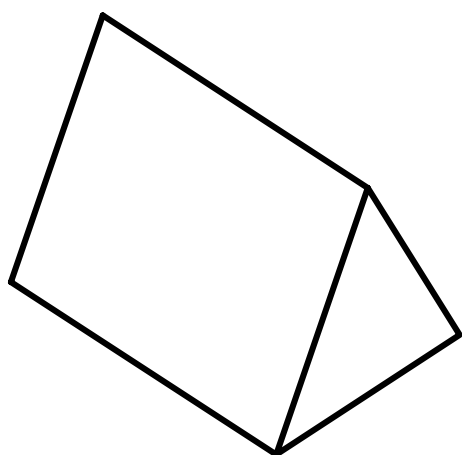
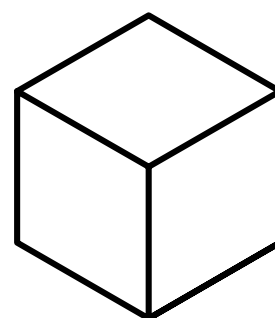
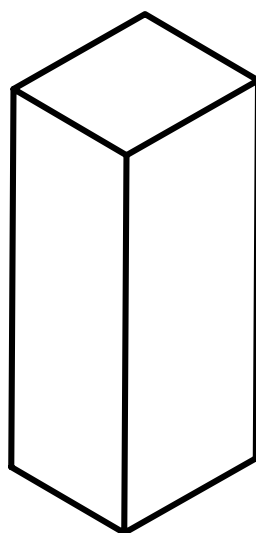
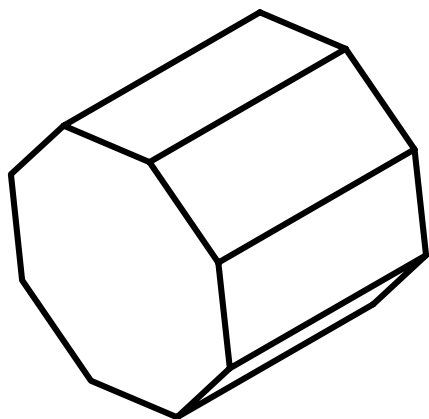
Sheet A Give the children one sheet each and ask them to point to shapes that correspond to the following:

- a) A shape that has a curved surface.
- b) A shape that has six faces.
- c) A shape that has two pentagons.
- d) Shapes with triangular faces.
- e) A shape with square faces.
- f) A shape with two faces that are octagons.
- g) A shape that will roll.
- h) A shape with rectangles for all its faces.

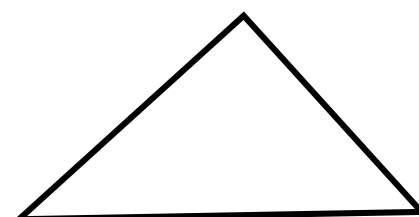
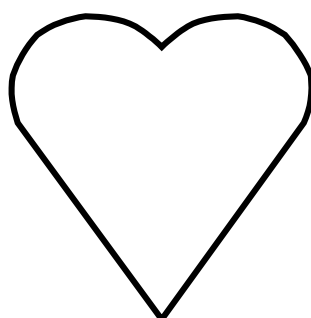
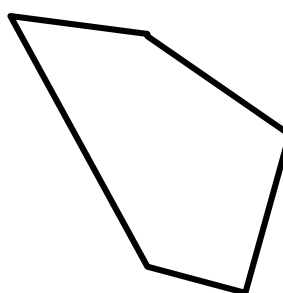
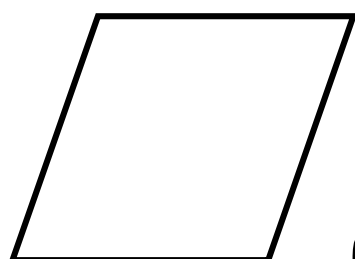
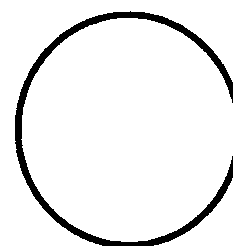
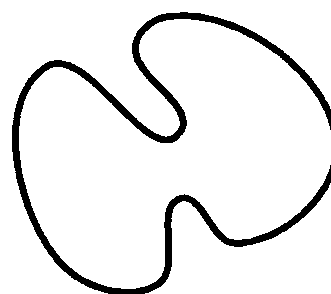
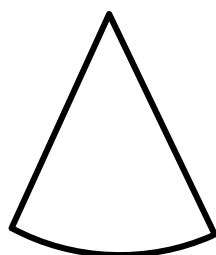
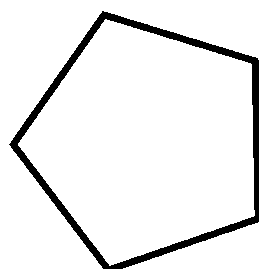
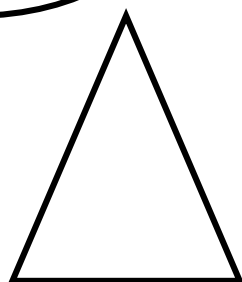
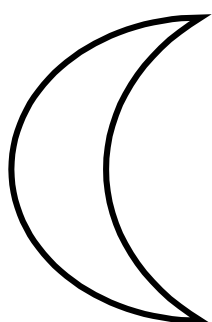
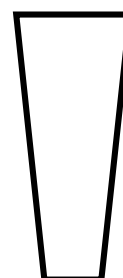
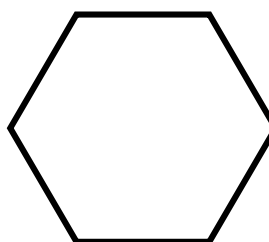
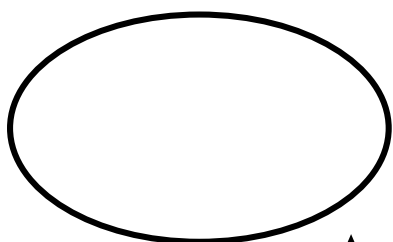
Sheet B Give the children one sheet each and ask them to point to shapes that correspond to the following:

- a) A shape that has two curved sides.
- b) A shape that has five sides.
- c) A shape that has sides of different length.
- d) A shape with sides of the same length.
- e) A shape with no corners.
- f) A shape with a round side.
- g) A shape with four equal sides.
- h) A shape with that has no straight sides.

Sheet A



Sheet B



3-D Shapes

Find shapes that have:

- a) Six square faces and twelve edges.
- b) One square face and four triangular faces.
- c) Two circular faces and one curved face.
- d) Two triangular faces and three rectangular faces.
- e) Two pentagonal faces and five rectangular faces.
- f) Six rectangular faces.
- g) Eight edges.
- h) Nine edges.
- i) One curved face and no other faces.
- j) Eight corners.

**Can you find all
these shapes?**



2-D Shapes

Find shapes that have:

- a) Six sides.
- b) No corners.
- c) Four angles.
- d) Long sides and short sides.
- e) No straight sides.
- f) One curved edge.
- g) Five corners and five straight sides.
- h) Eight sides.
- i) Big angles.
- j) Sharp angles.

I love all these
shapes and things.



How many shapes with four straight sides can you find?
Can you draw them?

What shape are these objects:

- a) A CD ?
- b) The side of a box ?
- c) The bottom of a drinks can ?

Suggestions for activities with 3-D shapes.

Throughout all this work, place great emphasis on the vocabulary of the names of the shapes plus words such as edge and face. A good grasp of the vocabulary in the early years will be a great asset in future mathematical education.

1. Match the faces of one shape to the faces of another. Eg. Can you stand a square based pyramid on a cube so that the two square faces match?
2. Hide a shape behind your back. Two children take it in turns to ask questions about the shape until one works out its name.
3. Put several shapes on a tray. Remove one when the child's eyes are closed. The child then looks and tries to describe the **features** of the missing shape.
4. One child hides a shape and describes its features to another who has to guess which one it is.
5. Have a 'feely bag' in which you place two shapes. The child puts his/her hand inside and tries to identify the common features of the shapes. Eg. 'They both have six faces.'
6. Using Play dough or plasticine, copy two given shapes. Try to make them a certain size so that one fits on the other as in idea 1.
7. Push Play dough through a hole in a piece of plastic or 'posting' toy so that a prism is formed. Don't worry about the word 'prism' at this stage - that comes later!
8. Using hollow shapes, fill them with sand or water and pour the sand/water from one container to another. Count how many of one shape fill another.

Suggestions for activities with 2-D shapes.

Throughout all this work, place great emphasis on the vocabulary of the names of the shapes plus words such as side and angle. A good grasp of the vocabulary in the early years will be a great asset in future mathematical education.

1. Match the edges of one shape to the edges of another. Eg. Can you fit a square next to a hexagon so that the two sides match?
2. Hide a shape behind your back. Two children take it in turns to ask questions about the shape until one works out its name.
3. Put several shapes on a tray. Remove one when the child's eyes are closed. The child then looks and tries to describe the **features** of the missing shape.
4. One child hides a shape and describes its features to another who has to guess which one it is.
5. Have a 'feely bag' in which you place two shapes. The child puts his/her hand inside and tries to identify the common features of the shapes. Eg. 'They both have three edges.'
6. Using Play dough or plasticine, copy two given shapes. Try to make them a certain size so that one fits next to the other as in idea 1.
7. Draw the shapes onto blank playing cards (or write the names for good readers). Lay out all the cards and match each of the cards to each one of a pile of shapes already on the table. How quickly can the child do this?
8. Examine patterns involving shapes on tiles, curtains and clothes. Try to reconstruct the simpler patterns with your shapes. These can be made from card or plasticine.

Answers

Page 6

Possible answers include the following (depending on the shapes available).

- a) Cube
- b) Pyramid
- c) Cylinder
- d) Triangular prism (no need to know the word 'prism' at this stage)
- e) Pentagonal prism
- f) Cuboid
- g) Pyramid
- h) Triangular prism
- i) Sphere
- j) Cube or cuboid

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Possible answers include the following (depending on the shapes available).

- a) Hexagon
- b) Circle
- c) Any quadrilateral (rectangle, parallelogram etc)
- d) Any suitable shape such as rectangle
- e) Any curved shape such as circle
- f) Semi-circle or other similar
- g) Pentagon
- h) Octagon
- i) Any suitable shape such as regular octagon
- j) Any suitable shape such as pointed triangle

Four sided shapes include squares, rectangles, parallelograms, rhombuses, trapeziums and any irregular quadrilateral.

- a) Circle (with hole)
- b) Rectangle (or other as appropriate)
- c) Circle