

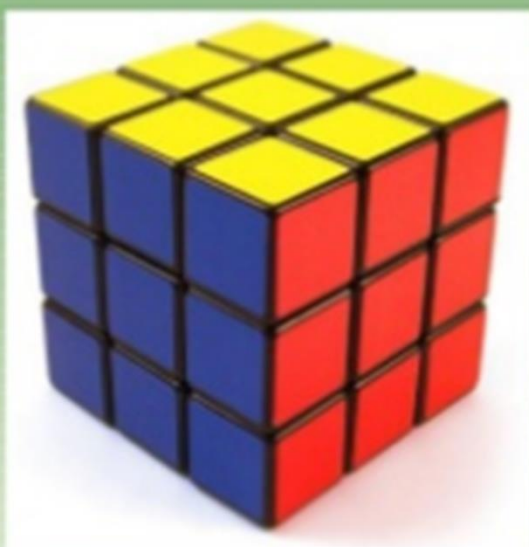
Visualizing Solid Shapes



What Are Shapes?

A shape is a geometrical figure that can be described with mathematics. One way to classify shapes is to describe a bigger shape that the shape fits inside of. For example, two-dimensional shapes like circles will fit inside of a flat plane. Three-dimensional objects like cubes will not fit inside of a plane, because they are not flat.

3-Dimensional Shapes



A 3D shape is a solid which encloses a volume and has length, breadth and height

Properties Of 3 Dimensional Shapes

Three-dimensional shapes have four properties that set them apart from two-dimensional shapes: faces, vertices, edges and volume. These properties not only allow you to determine whether the shape is two- or three-dimensional, but also which three-dimensional shape it is.

What is a Map?

A map is a graphic representation of a portion of the earth's surface drawn to scale, as seen from above.

It uses colors, symbols, scales and labels to represent features found on the ground.

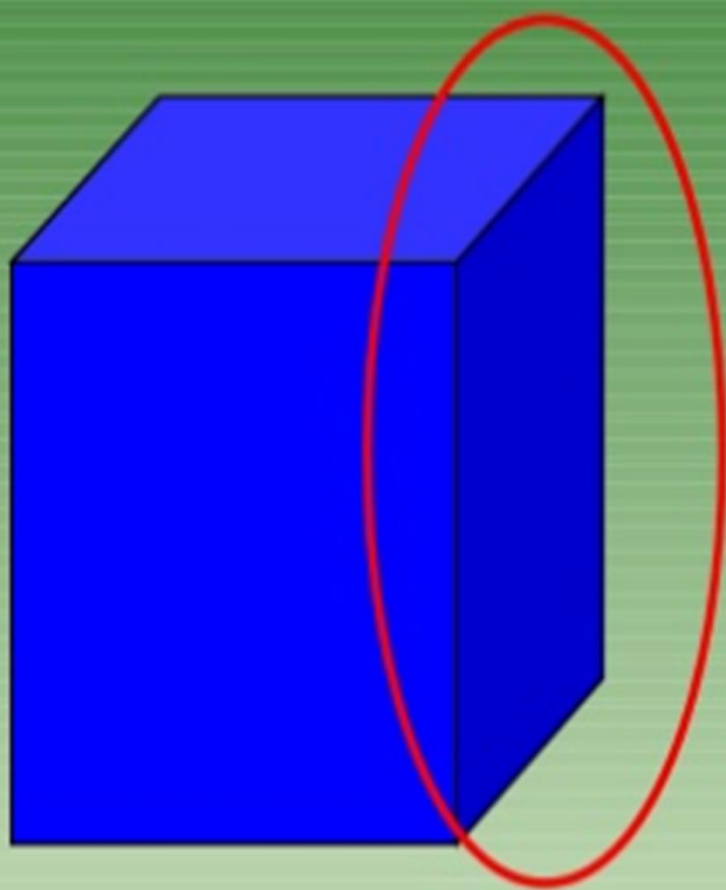


Points to remember

- *A map depicts the location of a particular object/place in relation to other objects/places.*
- *Symbols and colors are used to depict the different objects/places.*
- *There is no reference or perspective in map, i.e., objects that are closer to the observer are shown to be of the same size as those that are farther away.*
- *Maps use a scale which is fixed for a particular map. It reduces the real distances proportionately to distances on paper.*

Platonic Solid	Picture	Number of Faces	Shape of Faces	Number of Faces at Each Vertex	Number of Vertices	Number of Edges	Unfolded Polyhedron (Net)
Tetrahedron		4	Equilateral Triangle (3-sided)	3	4	6	
Cube		6	Square (4-sided)	3	8	12	
Octahedron		8	Equilateral Triangle (3-sided)	4	6	12	
Dodecahedron		12	Regular Pentagon (5-sided)	3	20	30	
Icosahedron		20	Equilateral Triangle (3-sided)	5	12	30	

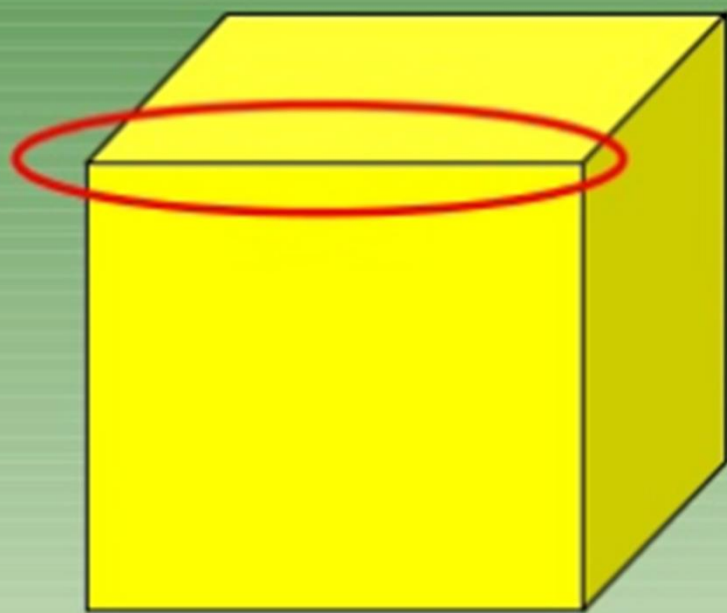
Face



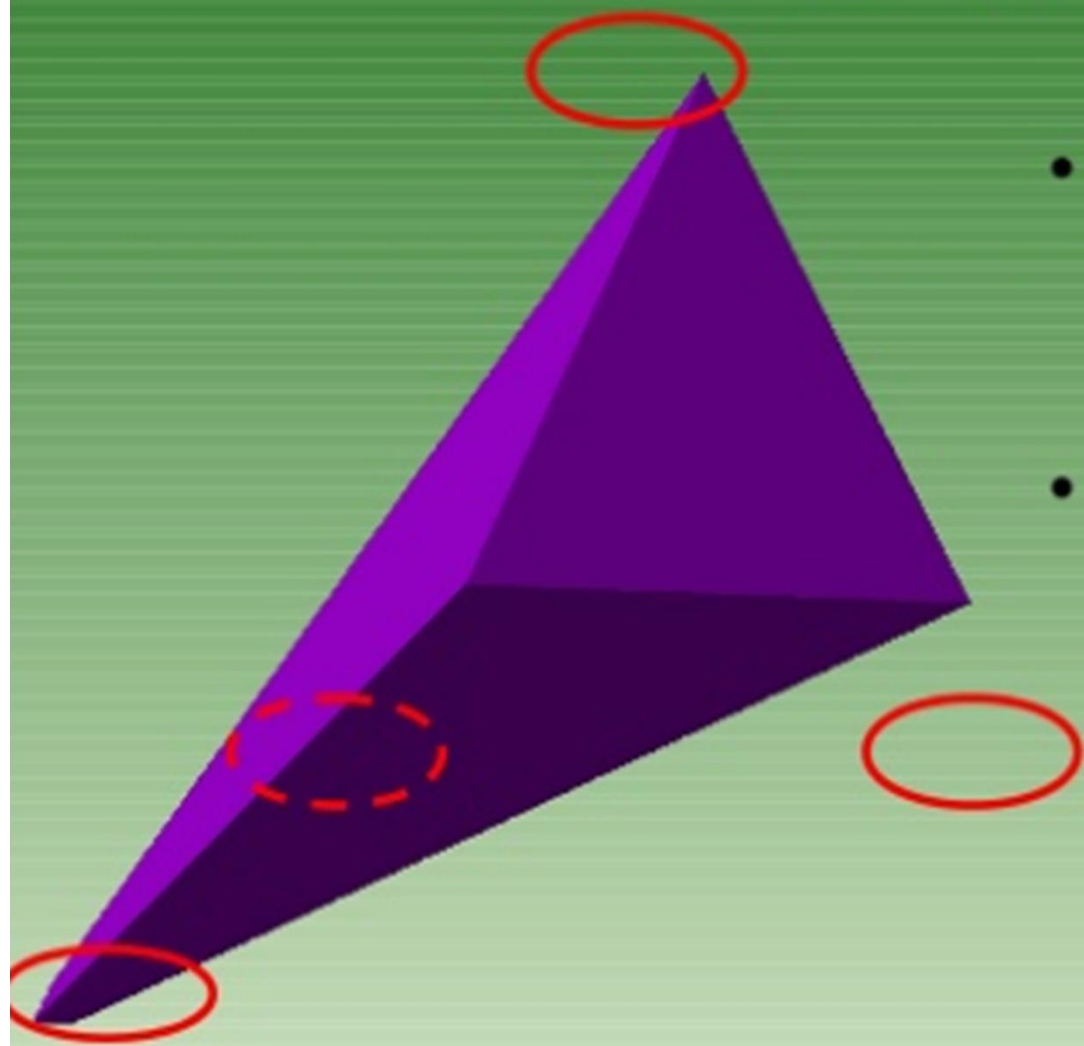
- Part of a shape that is flat.(Or curved)
- E.g. A cube has 6 of these.

Edge

- *The line where two faces meet.*
- *E.g. A cube has 12 of these.*



Vertex (Vertices)

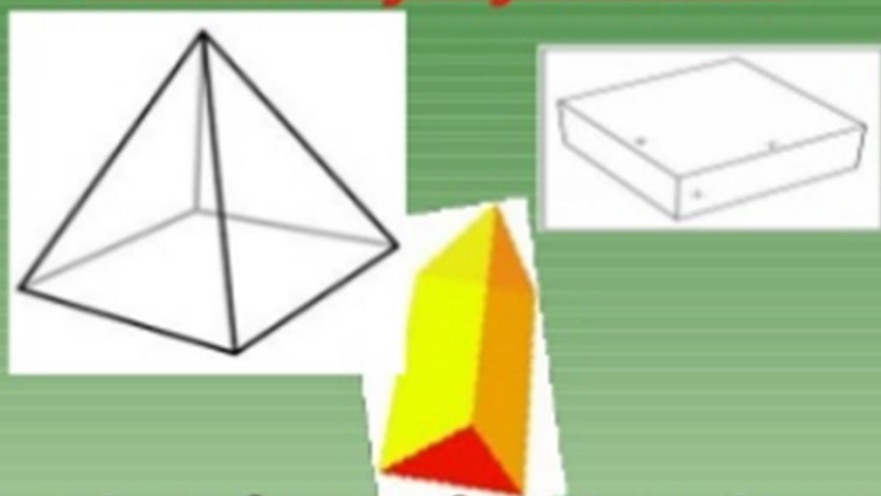


- *The place where three or more edges meet.*
- *This pyramid has 4 of these.*

Polyhedrons

A **polyhedron** is a solid shape bounded by **polygons** whereas **non-polyhedrons** do not have **polygon** shaped faces. Cubes, cuboids, prisms, and pyramids are few examples of **polyhedrons**. Spheres, cones and cylinders are a few examples of **non-polyhedrons**.

These are polyhedrons.



These are not polyhedrons.



The **polygonal regions** forming the polyhedron are known as its **faces**, two intersecting faces meet at a line segment called an **edge** and three edges meet at a point called the **vertex**.

$F+V=E+2$ is known as **Euler's formula** and it holds true for any **polyhedron**. Here F stands for faces, V for vertices and E for the edges of the **polyhedron**.

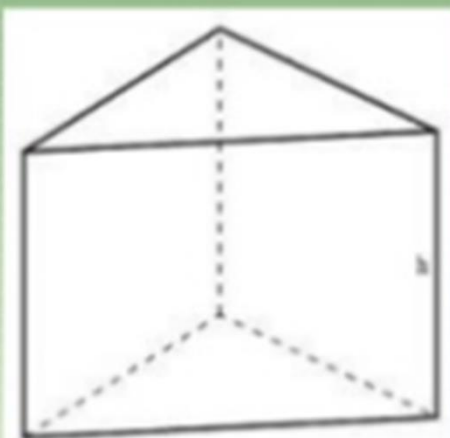
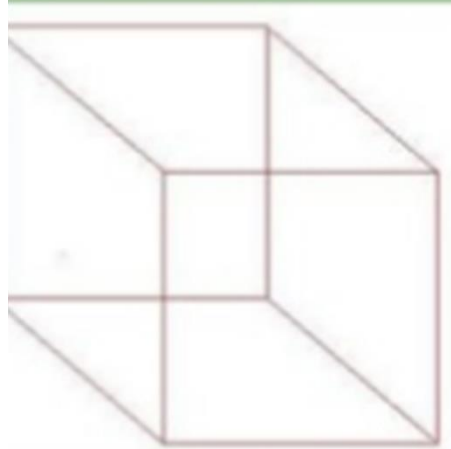
Prisms and pyramids

A prism is a **polyhedron** with parallel congruent polygon bases and sides made of parallelograms.

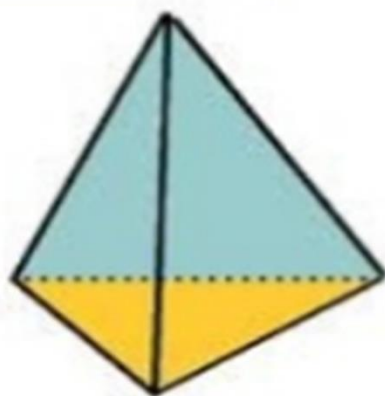
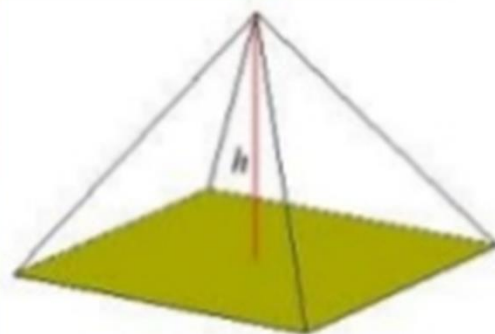
A **pyramid** is a **polyhedron** whose base is a **polygon** of any number of sides and whose lateral faces are triangles with a common vertex.

Prisms and **pyramids** are named after the shape of their base.
Maps represent the location of a place or object in relation to other places or objects.

Prisms

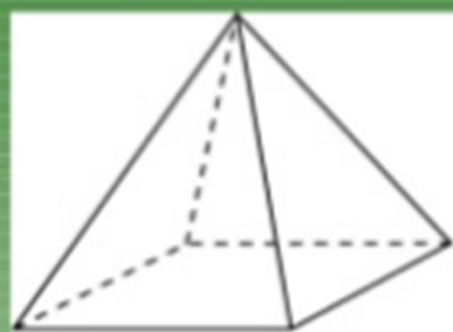


Pyramids



Pyramids

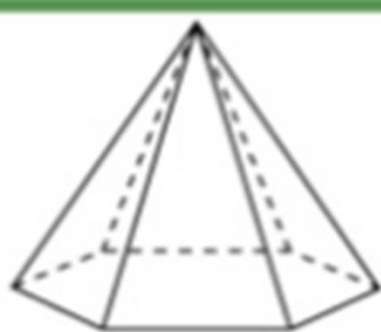
- Pyramids have one face with at least 3 edges, the faces meeting these edges are *ALL* triangles.



square-based
pyramid



triangular-based
pyramid



hexagonal-based
pyramid

NOTE: Pyramids get their name from the shape of their base.

- There are many more pyramids than these ones shown*