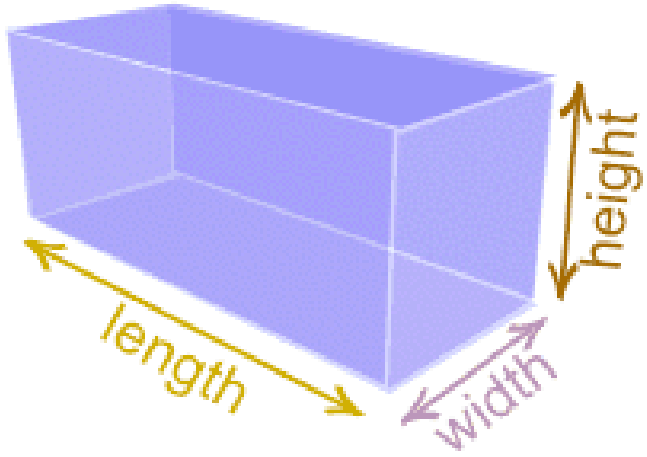
8.1

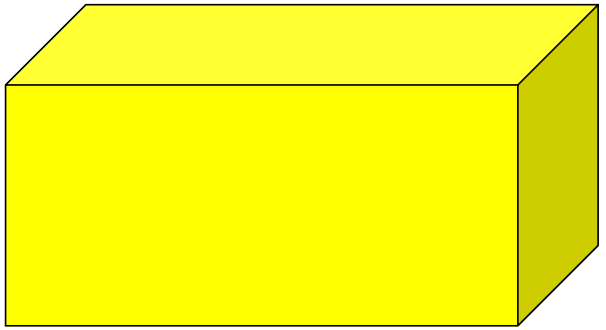
Three Dimensional Figures

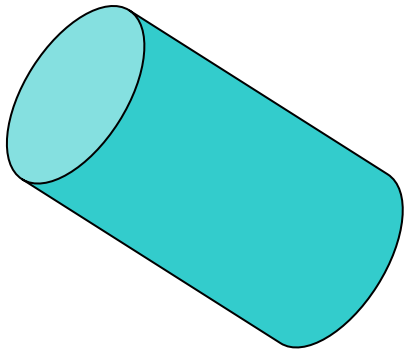
What are three-dimensional figures?

A **three-dimensional (3D) figure** is an object that has _____, _____, and _____, which means that it can be measured in three directions.



A three-dimensional figure encloses a part of _____; in other words it can hold something (water, air, etc.)





Features of a Three-Dimensional Figure

Face

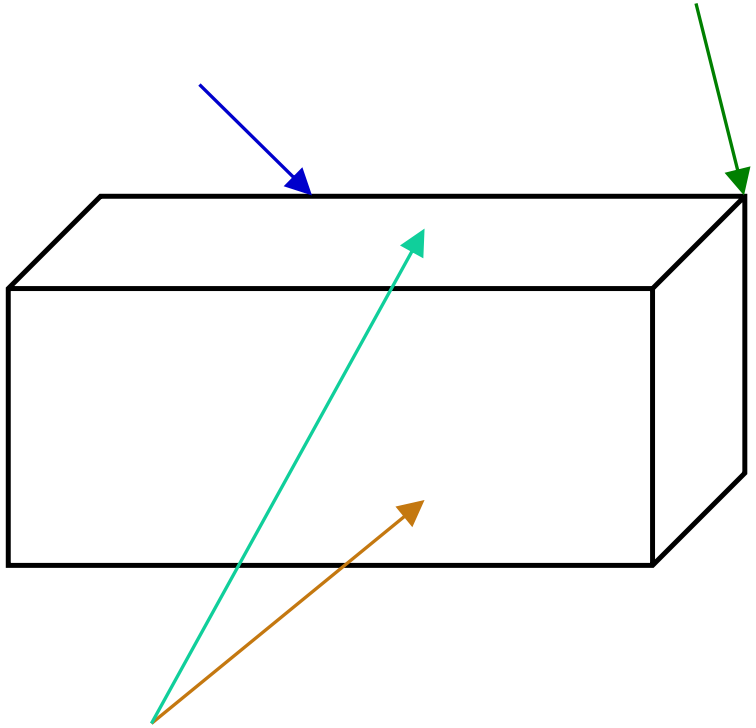
the _____ surface of a figure

Edge

formed by two faces of a 3-D figure _____ a side

Vertex (plural: vertices)-

the _____ at which three or more edges meet



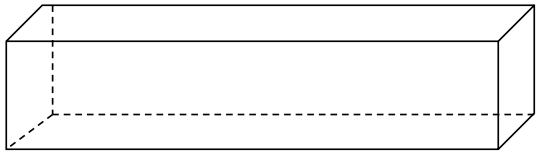
Two main types of Three-Dimensional Figures

Prism

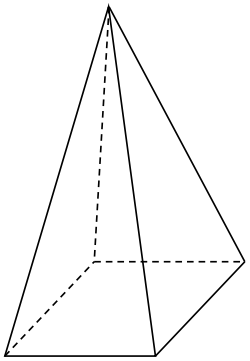
- Has at least three faces that are rectangles
- Has two congruent faces on the top and bottom called **bases**
- The shape of the base tells what type of prism the figure is

Pyramid

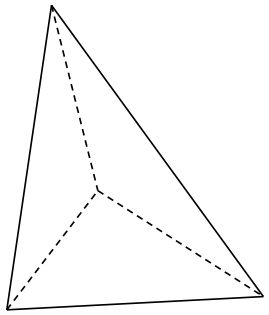
- Has at least three faces that are triangles
- Has only one base
- The shape of the base tells what type of pyramid the figure is



Rectangular Prism



Rectangular Pyramid



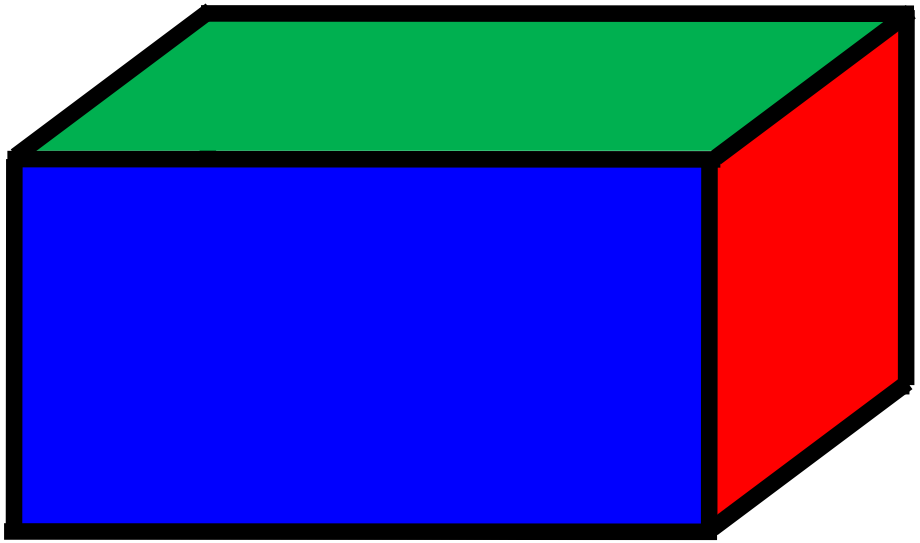
Triangular Pyramid

What's the **name** of this shape?

How many **faces** does it have?

How many **edges** does it have?

How many **vertices** does it have?

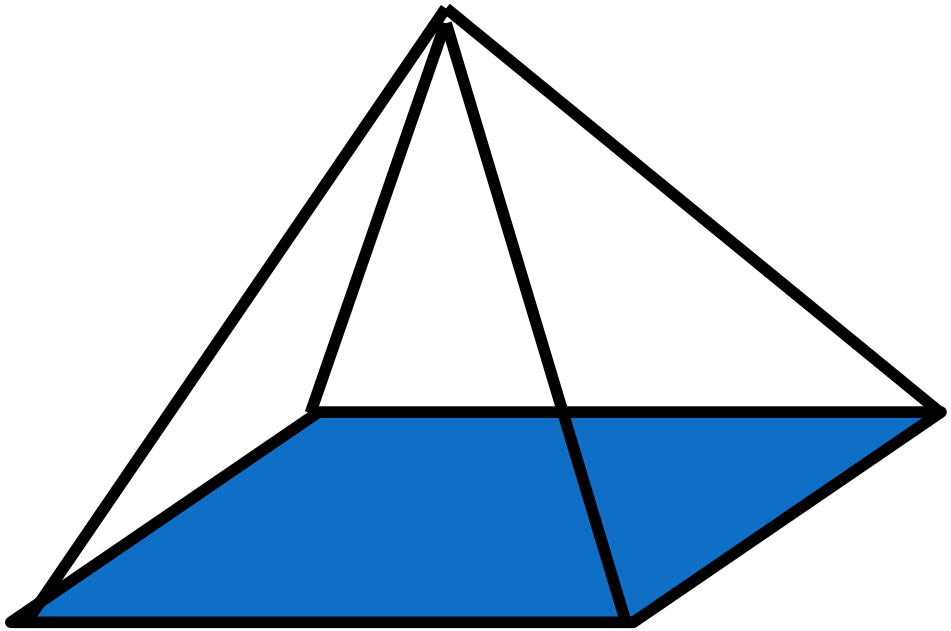


What's the **name** of this shape?

How many **faces** does it have?

How many **edges** does it have?

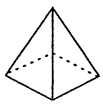
How many **vertices** does it have?



Pyramids and Prisms

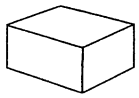
A polyhedron is a solid figure in which all the sides are polygons. Pyramids and prisms are polyhedrons.

A **pyramid** has one base. All the other faces meet at a single point.



This is a square pyramid because the base is a square.

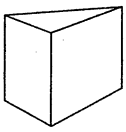
A **prism** has two congruent bases.

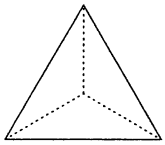


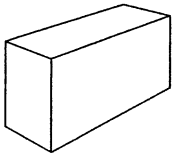
This is a rectangular prism because the bases are rectangles.

Identify each polyhedron as a **pyramid** or a **prism.** Use the shape of the base as your label. (The bases shown are triangular, rectangular, pentagonal, hexagonal, or octagonal.)

A.

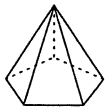


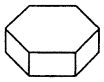


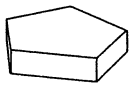


_____ _____ _____

B.

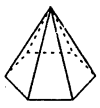


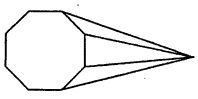




_____ _____ _____

C.





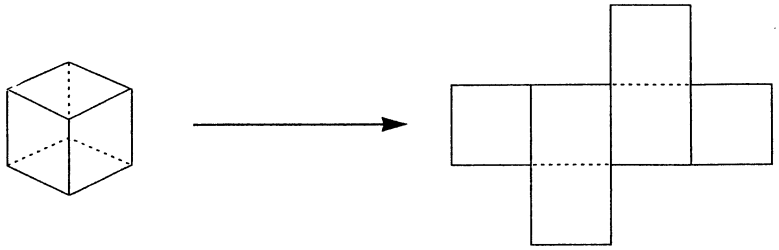
_____ _____ _____

D. Why aren't cylinders, cones, and spheres polyhedrons?

_____

Polyhedron Nets

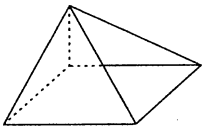
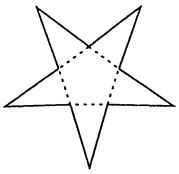
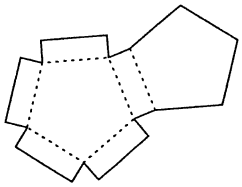
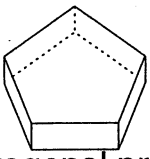
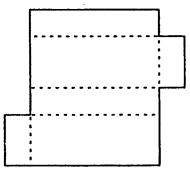
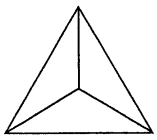
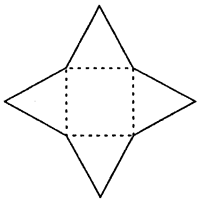
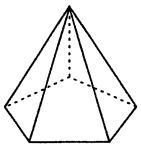
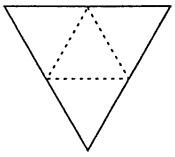
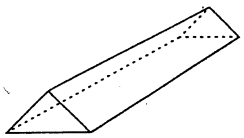
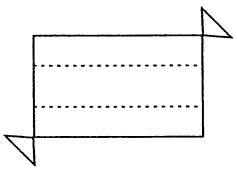
A polyhedron is a solid figure in which all the sides are polygons. A polyhedron's **net** is made by unfolding the polyhedron so that all of its faces are visible.



6 square faces

A solid cube makes this **net** when it is unfolded.
The net has 6 sides. Each side is a square.

Match each solid with its net and a description of its faces.

	SOLID	NET	FACES
1.	 square pyramid		6 rectangular faces
2.	 rectangular prism		1 square face 4 triangular faces
3.	 pentagonal prism		1 pentagonal face 5 triangular faces
4.	 triangular pyramid		2 pentagonal faces 5 rectangular faces
5.	 pentagonal prism		2 triangular faces 3 rectangular faces
6.	 triangular prism		4 triangular faces