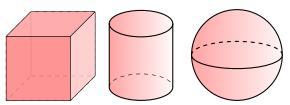
THREE-DIMENSIONAL SHAPES

A THREE-DIMENSIONAL SHAPES

Definition Solid Geometry -

Solid geometry studies three-dimensional shapes, such as cubes, cylinders, and spheres. The diagrams show examples of these shapes.



Definition Surface —

A surface is the exterior of a three-dimensional shape.

Definition Face -

A face is a flat surface of a three-dimensional shape.

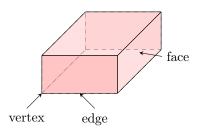
Definition Edge -

An edge is a line segment where two faces meet.

Definition Vertex -

A vertex is a point where two or more edges meet.

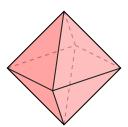
 $\mathbf{E}\mathbf{x}$:



B POLYHEDRON

Definition Polyhedron -

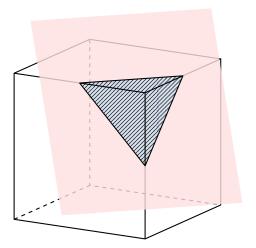
A polyhedron is is a three-dimensional shape with polygonal flat faces.



C CROSS SECTIONS

Definition Cross Section -

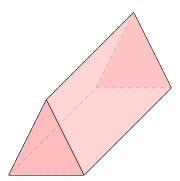
A cross section of a solid is a flat shape created when a plane cuts through the solid.



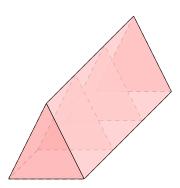
Definition Uniform Cross Section

A uniform cross section means the cross section of a solid has the same size and shape at every point along its length.

Ex: Does this solid have a uniform cross section?

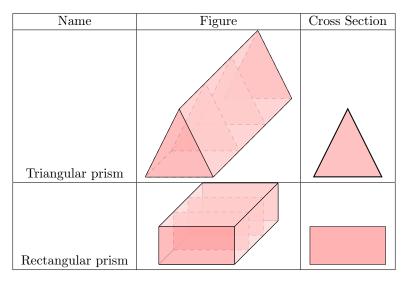


Answer: When sliced perpendicular to its length, each cross section is a triangle of the same size and shape. So, it has a uniform cross section. The solid is a triangular prism.



Definition **Prism** -

A **prism** is a polyhedron with a uniform cross section that is a polygon. Prisms are named according to the shape of their base.



D CLASSIFICATION

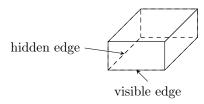
Definition Classification

Name	Shape	Faces	Edges	Vertices
Cube (square prism)		6 (flat)	12	8
${f Sphere}$		1 (curved)	0	0
Square Pyramid		5 (flat)	8	5
Cylinder		3 (1 curved, 2 flat)	0	0
Cone		3 (1 curved, 1 flat)	0	0

E DRAWING THREE-DIMENSIONAL SHAPES

Method Drawing 3D Shapes -

When drawing 3D shapes, some edges are hidden because they are at the back of the shape. We call these **hidden edges**. To show the shape clearly, we use dotted lines for hidden edges. This helps us see the shape and its depth.

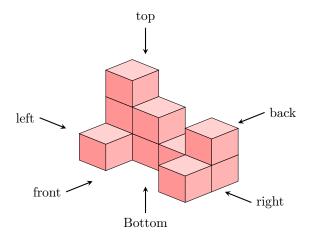


F MULTI-VIEW PROJECTION

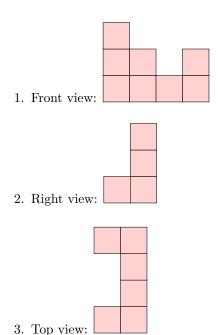
Definition Multi-view Projection

A multi-view projection is a way to draw a 3D shape using 2D views. You show how the shape looks from different sides, like the front, right, and top, to help understand its form.

Ex: Draw the front, right, and top views of this solid.



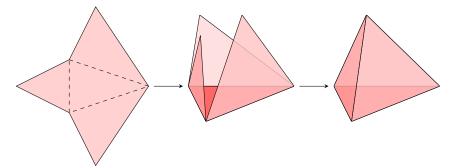
Answer:



G SOLID CONSTRUCTIONS

Definition **Net**

A **net** is a flat 2D shape that can be folded along its edges to form a 3D solid. Dashed lines show where to fold.



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