

Assignment

Write

Describe the three geometric figures that can result from the intersection of a plane with a solid, and sketch an example of each.

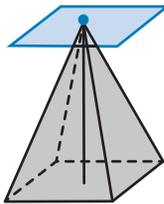
Remember

- A cross-section of a three-dimensional solid can be a point, a line segment, or a two-dimensional figure that is formed by the intersection of the solid and a plane.
- The maximum number of sides of a cross-section equals the number of sides of faces of the solid, if it is a polyhedron.

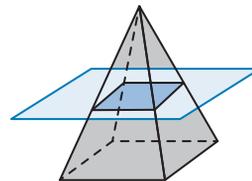
Practice

1. Describe the shape of each cross-section.

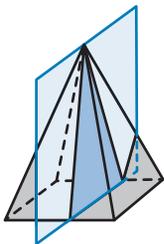
a.



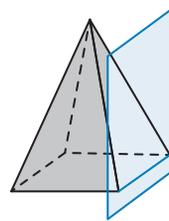
b.



c.

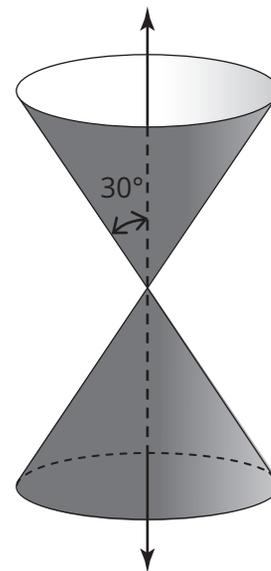


d.



2. Sketch two cross-sections of a pentagonal prism—one cross-section that is parallel to the base and another cross-section that is perpendicular to the base.
3. Sketch two cross-sections of a cone—one cross-section that is parallel to the base and another cross-section that is perpendicular to the base.
4. A solid's cross-section parallel to the base is an octagon. A cross-section of the solid perpendicular to the base is a triangle. Identify the solid.
5. A solid's cross-section parallel to the base is a triangle. A cross-section of the solid perpendicular to the base is a rectangle. Identify the solid.

6. Determine the conic section that results from the intersection of the double-napped cone shown and each plane described.
- A plane that passes through one nappe of the double-napped cone and is perpendicular to the axis of the cone
The intersection is a(n) _____.
 - A plane that passes through one nappe of the double-napped cone and is parallel to the edge of the cone
The intersection is a(n) _____.
 - A plane that passes through both nappes of the double-napped cone and is parallel to the axis of the cone
The intersection is a(n) _____.
 - A plane that passes through one nappe of the double-napped cone and is at an angle of 50° from the axis of the cone
The intersection is a(n) _____.

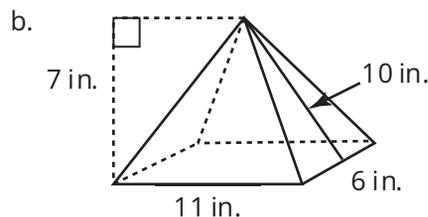
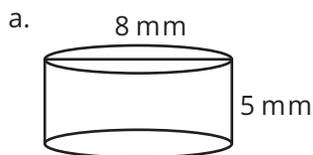


Stretch

Determine whether there is a way that a plane can intersect a rectangular prism so that the resulting cross-section is a hexagon. If there is a way, sketch the plane intersecting the rectangular prism so that a hexagon shape results.

Review

1. Determine the volume and total surface area of each figure.



2. Determine the length of each intercepted arc.

- The measure of the central angle is 75° .
The length of the radius is 16 mm.

- The measure of the central angle is 140° .
The length of the radius is 30 ft.

3. Solve for x by completing the square.

a. $x^2 + 6x - 3 = 8$

b. $x^2 - 10x + 4 = 11$