Cross-Sections and Nets

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CONCEPT **1** # Cross-Sections and Nets

Here you'll learn different ways of representing three-dimensional objects in two dimensions. In particular, you'll learn about cross-sections and nets.

What if you were given a three-dimensional figure like a pyramid and you wanted to know what that figure would look like in two dimensions? What would a flat slice or an unfolded flat representation of that solid look like? After completing this Concept, you'll be able to use cross-sections and nets to answer questions like these.

## Watch This

MEDIA
Click image to the left for more content.
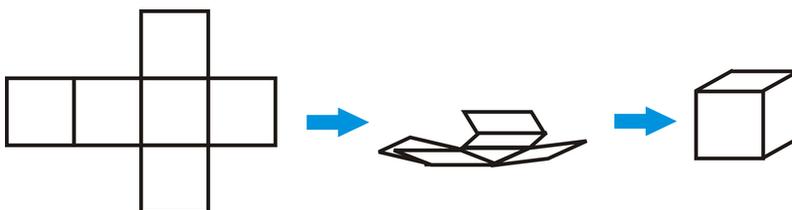
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Guidance

While our world is three dimensional, we are used to modeling and thinking about three dimensional objects on paper (in two dimensions). There are a few common ways to help think about three dimensions in two dimensions. One way to "view" a three-dimensional figure in a two-dimensional plane (like on a piece of paper or a computer screen) is to use cross-sections. Another way to "view" a three-dimensional figure in a two-dimensional plane is to use a net.

Cross-Section: The intersection of a plane with a solid.

The cross-section of the peach plane and the tetrahedron is a *triangle*.
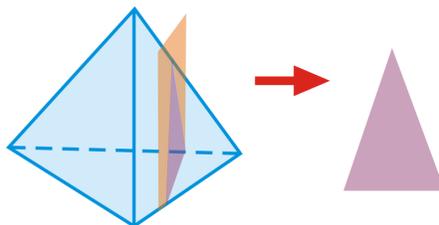
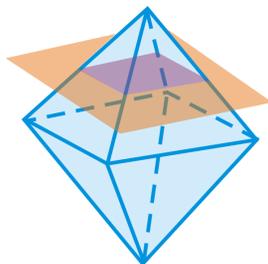**Net:** An unfolded, flat representation of the sides of a three-dimensional shape.

It is good to be able to visualize cross sections and nets as the three dimensional objects they represent.
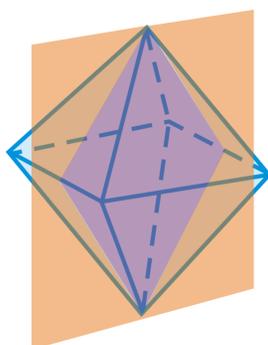
Example A

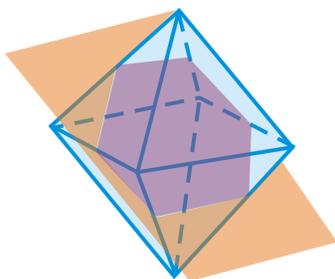What is the shape formed by the intersection of the plane and the regular octahedron?
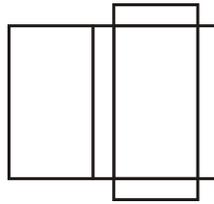
a)

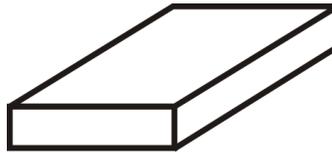

b)

c)

Answer:

a) Square

b) Rhombus

c) Hexagon

Example B

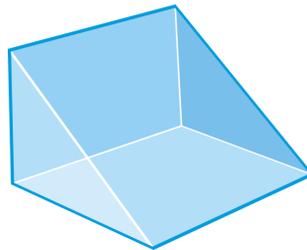What kind of figure does this net create?

2
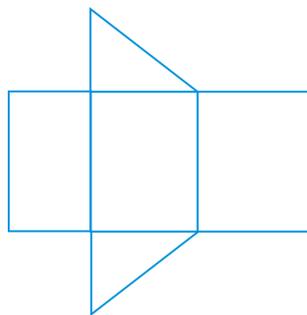
The net creates a rectangular prism.

Example C

Draw a net of the right triangular prism below.

The net will have two triangles and three rectangles. The rectangles are different sizes and the two triangles are the same.

There are several different nets of any polyhedron. For example, this net could have the triangles anywhere along the top or bottom of the three rectangles. Click the site http://www.cs.mcgill.ca/ sqrt/unfold/unfolding.html to see a few animations of other nets.

MEDIA
Click image to the left for more content.

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Guided Practice

1. Describe the cross section formed by the intersection of the plane and the solid.
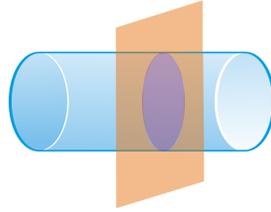
2. Determine what shape is formed by the following net.
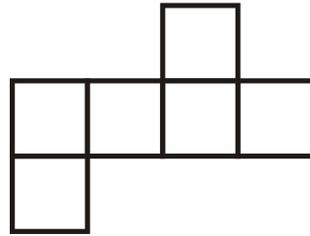
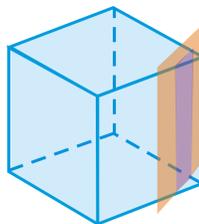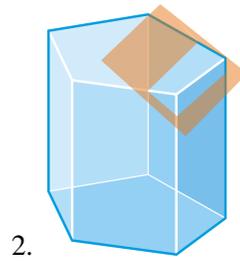3. Determine what shape is formed by the following net.
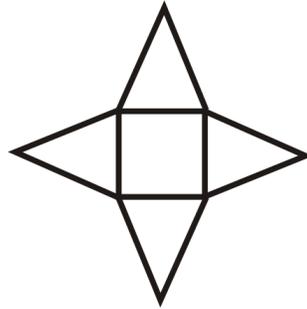
Answers:
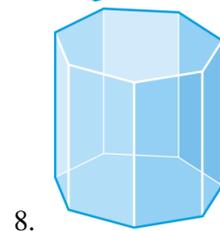
1. A circle.
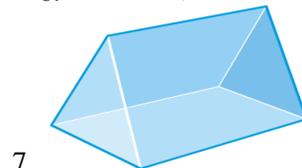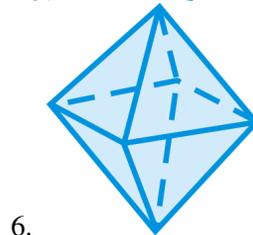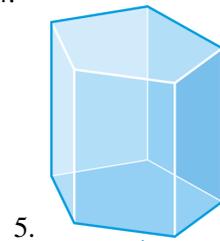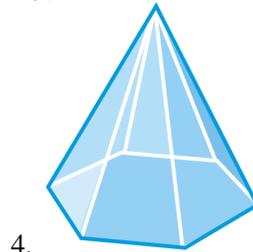
2. A cube.
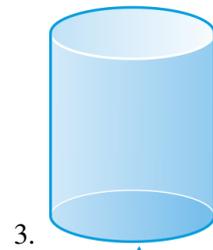
3. A square-based pyramid.

Practice

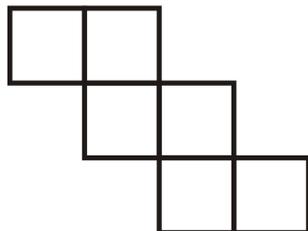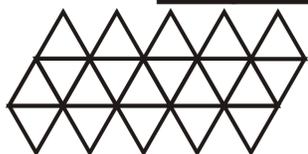Describe the cross section formed by the intersection of the plane and the solid.

1.

2.

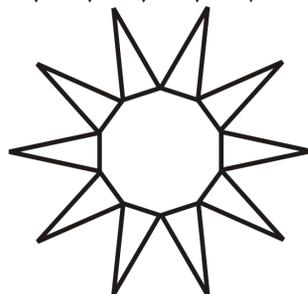Draw the net for the following solids.

3.

4.

5.

6.

7.

8.

Determine what shape is formed by the following nets.

9.

10.

11.

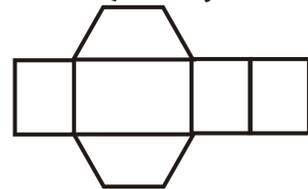12.