

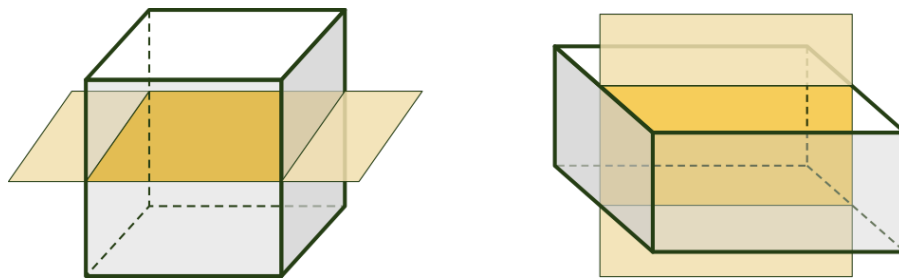
Solids: Sections

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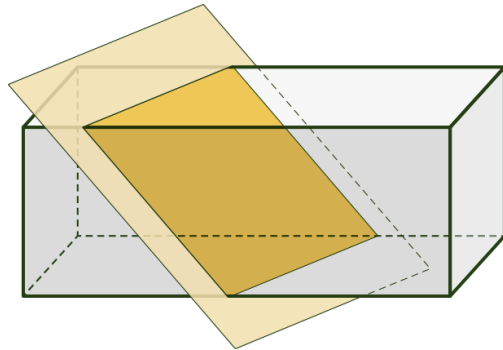
If a plane slices through a solid, the resulting intersection is a 2-D plane figure. (The "intersection" is generally not a physical slicing, but rather an abstraction.) In terms of geometry, this intersection of a plane with a solid figure is called a **cross section**.

Rectangular Prism

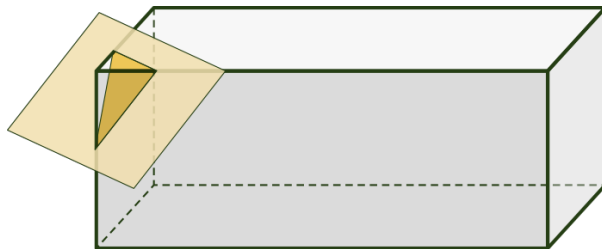
Consider a rectangular prism. You could make a cut that is parallel to a base. Or, you could make a cut that is perpendicular to a base. Either way, the resulting cross section is a rectangle. The plane intersection parallel to the base of a prism is a figure *congruent* to the base.



On the other hand, if you slice a rectangular prism diagonally, the cross section is a parallelogram.

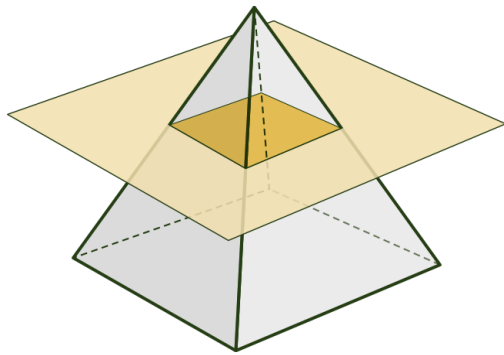


If you slice a rectangular prism across the corner, the cross section is a triangle.

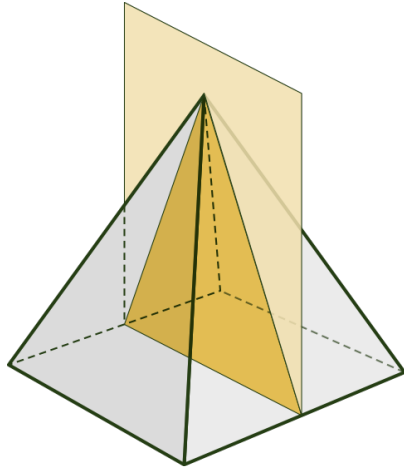


Right-Rectangular Pyramid

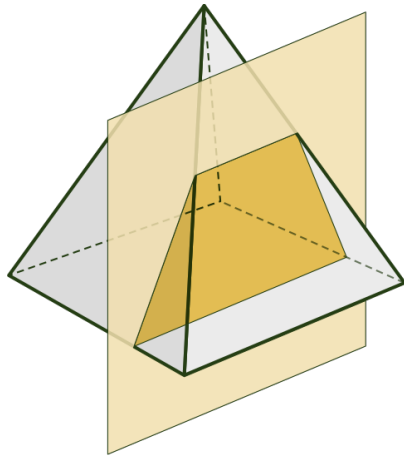
Now think about a pyramid. When you slice a right-rectangular pyramid with a plane parallel to the base, the cross section is a rectangle. A plane intersection parallel to the base of any pyramid is a figure *similar* to the base.



If you slice a right-rectangular pyramid with a plane perpendicular to the base through the vertex, you get a triangle.



Suppose you slice a pyramid perpendicular to the base but not through the top vertex. The intersection of the pyramid and the plane is a trapezoidal cross section.



You can slice other figures as well:

- The plane intersection of a sphere is a circle.
- A plane intersection of a cube can be a square, a triangle, a pentagon, or a hexagon.
- A plane intersection of a cone is a circle, an ellipse, a parabola, or a hyperbola, depending on the angle at which the plane cuts the cone.