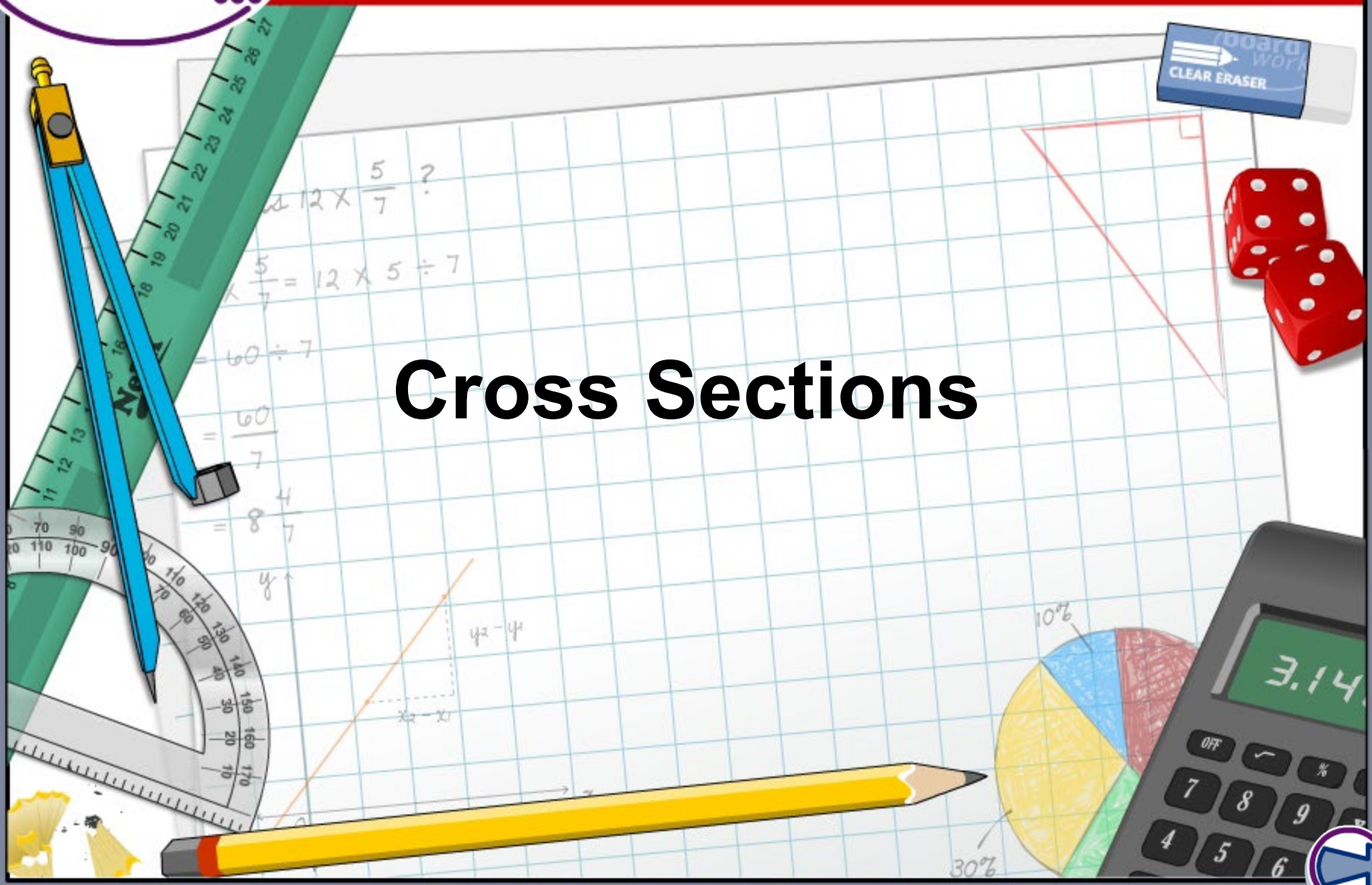
Cross Sections



Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

What is a cross section?

Imagine slicing through a solid 3-D shape. The 2-D shape produced is called a **cross section**.

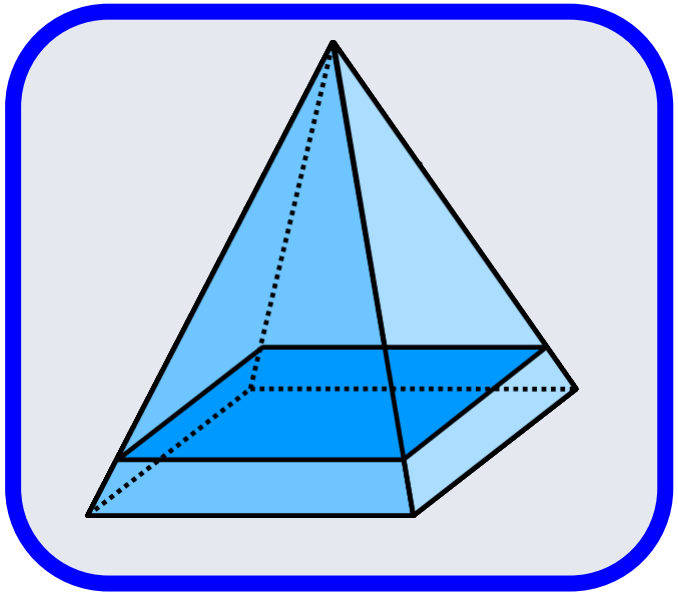
A 3-D shape can have many different cross sections. For example, a cucumber can be cut in different directions to show different cross sections shapes.

A cross section is defined as where a plane intersects a 3-D shape.

Pyramid cross sections

Many different cross sections can be produced by slicing the same solid in different places.

What shape is produced when slicing a right rectangular pyramid parallel to the base? Sketch and describe the cross section.

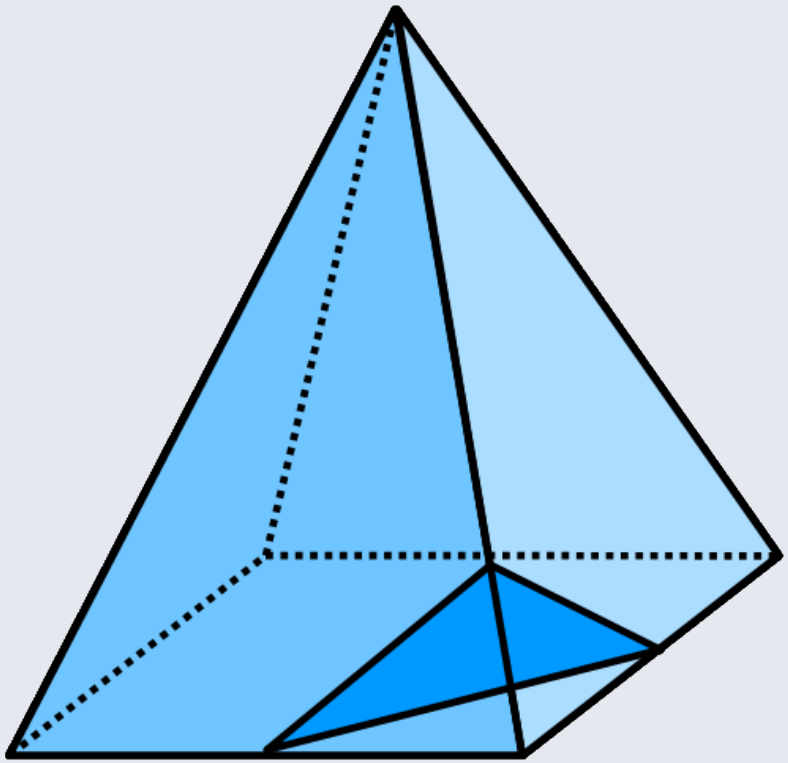


a rectangle

The base of the pyramid is a **rectangle**. Any cross section made by cutting parallel to the base will be rectangular.

Pyramid cross sections

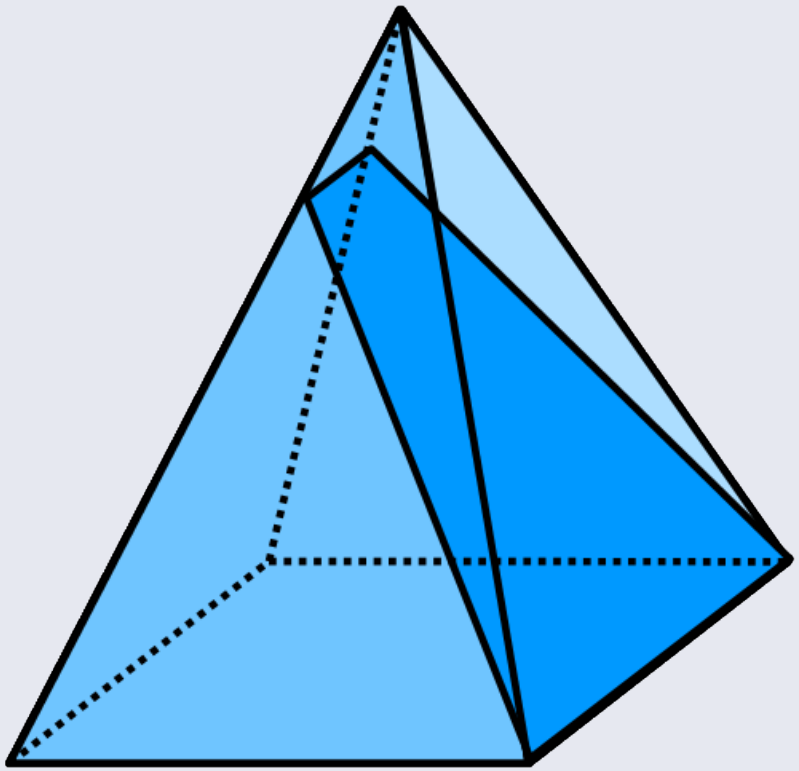
Slicing a right rectangular pyramid can also produce …



… triangles

Pyramid cross sections

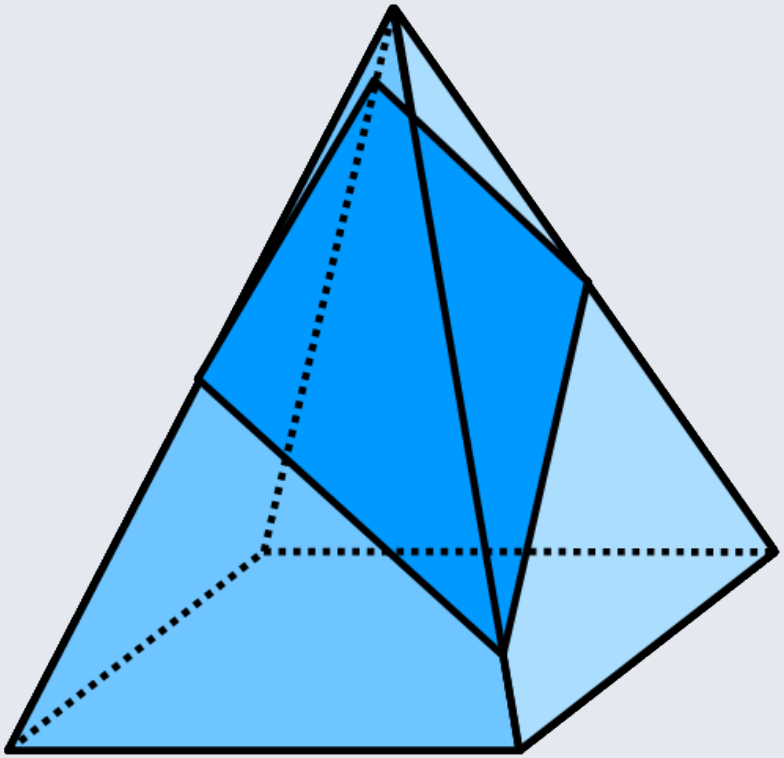
Slicing a right rectangular pyramid can also produce …



… trapezoids,

Pyramid cross sections

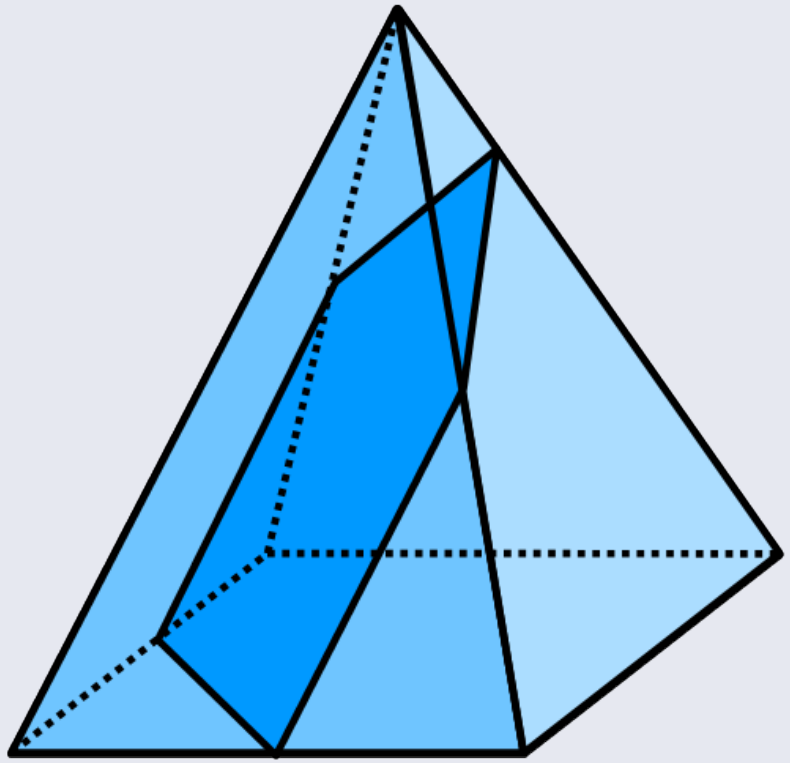
Slicing a right rectangular pyramid can also produce …



… kites,

Pyramid cross sections

Slicing a right rectangular pyramid can also produce …

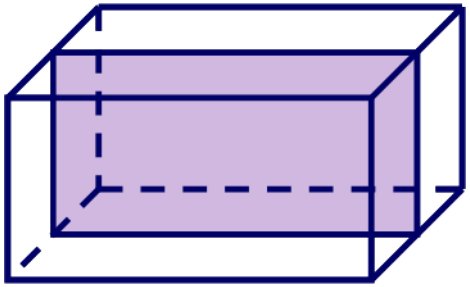


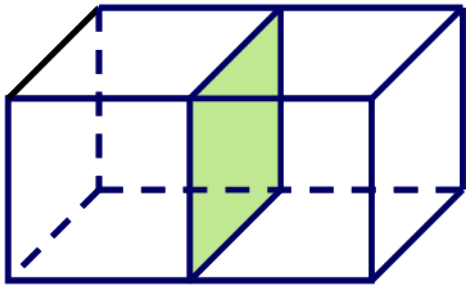
… pentagons.

Are any other polygons possible?

Prism cross sections

A **right rectangular prism** can be sliced to give rectangular cross sections.





Is it possible to slice this right rectangular prism to produce a cross section that is:

a) a right triangle?

b) an equilateral triangle?

c) an isosceles triangle?

d) a rhombus?

e) a pentagon?

f) a hexagon?

Prism cross sections

Cross sections of a cube

triangle

rhombus

pentagon

hexagon

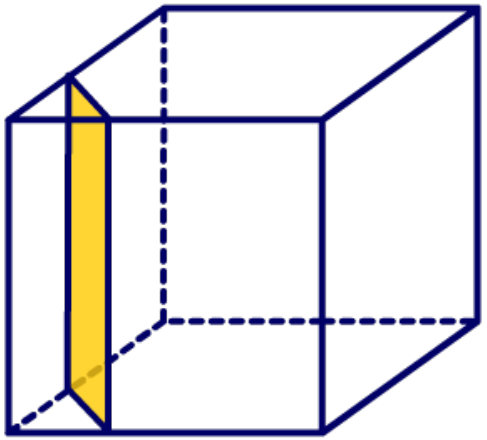
none

Cube cross section

Ben needs to make a rectangular cross section to use as a paint stamp. However, the only wooden shape he has is a cube.

Where should he cut the block to produce a rectangular cross section?

In order to produce a rectangular cross section, Ben should cut diagonally across one of the faces of the cube.



Which cross section?

Read each question and decide which 2-D shape the cross section would produce.

Press **start** to begin.

start