

Cross Sections of Prisms and Pyramids

Grade 7 math · Test · Standards: 7.G.A.3

Name: _____ Date: _____ Class: _____

This test covers cross sections of rectangular prisms and pyramids cut by planes parallel or perpendicular to the base: naming shapes, finding dimensions and computing areas. Sketch the plane when it helps. Calculators are not allowed. Plan on 45 minutes for the 8 questions.

Standards: 7.G.A.3 · **Level:** Grade 7

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Name the Cross Sections (2 points)

Name the shape of each cross section.

- a. A rectangular prism cut parallel to its base (*1 point*)
- b. A rectangular pyramid cut by a vertical plane through its apex (*1 point*)

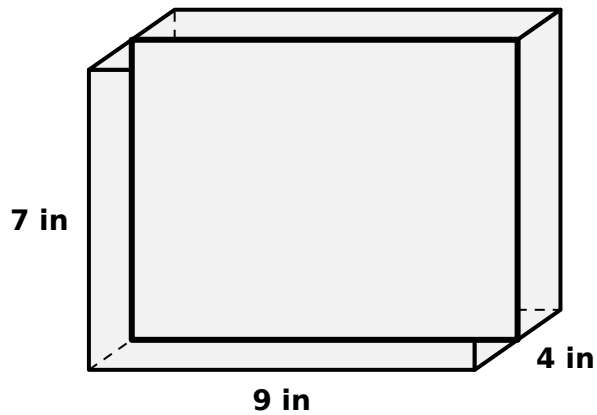
Question 2 A Slice That Misses the Apex (2 points)

An upright flat cut slices a pyramid but misses the apex.

- a. Name the cross section. (*1 point*)
- b. Explain why it is not a triangle. (*1 point*)

Question 3 Vertical Cut of a Prism (3 points)

A prism is cut as shown.

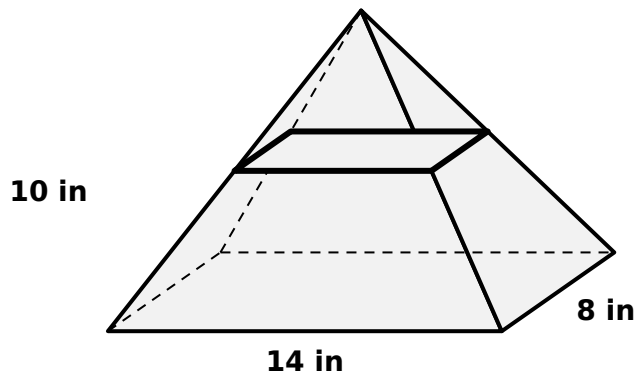


Vertical cut parallel to the 9-by-7 face.

- Name the cross section. (1 point)
- Give its dimensions. (1 point)
- Find its area. (1 point)

Question 4 Parallel Cut of a Pyramid (3 points)

The pyramid is cut by a plane parallel to its base, 5 in below the apex.



Cut 5 in below the apex.

- Name the cross section. (1 point)
- Find its dimensions. (1 point)
- Find its area. (1 point)

Question 5 Triangle Through the Apex (2 points)

For the pyramid in Question 4, a vertical plane through the apex is parallel to the 14 in base edges. Find the dimensions and the area of the cross section.

Question 6 Square or Not? (3 points)

A box-shaped prism has a 6 in by 6 in bottom and stands 11 in tall.

- Find the dimensions of a cross section parallel to the base. (1 point)
- Find the dimensions of a cross section perpendicular to the base. (1 point)
- Which of these cross sections is a square? Explain. (1 point)

Question 7 Fish Tank (3 points)

A fish tank measures 30 in by 12 in by 15 in. It contains water 10 in deep.

- Find the area of the water's surface. (1 point)
- Find the volume of the water. (1 point)
- Find the area of the wet part of a vertical cross section parallel to the 30-by-15 face. (1 point)

Question 8 Find the Flaw (2 points)

Dana says, "Every cross section of a pyramid is a triangle."

- Describe a cut of a rectangular pyramid that is not a triangle. (1 point)
- Name the shape of that cross section. (1 point)