

Grade 7 - Cross-Sections of Three-Dimensional Figures - Worksheet

Common Core 7.G.A.3 · maths-pdf.fr/en/

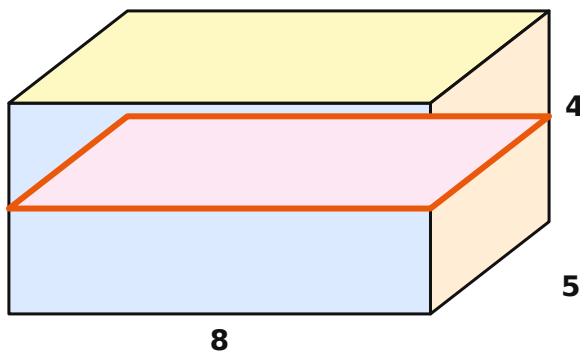
Name: _____ Class: _____ Date: ____/____/____

These 20 problems practice the two-dimensional shapes made when planes slice right rectangular prisms and right rectangular pyramids, including slices parallel and perpendicular to a base (Common Core 7.G.A.3). They start with the basic skill, move to different kinds of numbers and multistep work, and end with six word problems set in everyday situations such as shopping, sports, and travel.

Show every step of your work, and use the answer key only after you have tried each problem.

Grade 7 · Common Core State Standards: **7.G.A.3**

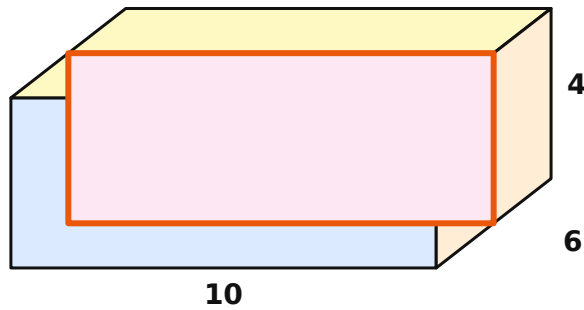
Exercise 1 - Slice parallel to the base



A prism cut parallel to the base.

A plane cuts a rectangular prism that is 8 in by 5 in by 4 in parallel to its 8-by-5 base. Name the cross-section and find its area.

Exercise 2 - Vertical slice (front)



A prism cut parallel to the front face.

A plane cuts a prism with length 10 ft, depth 6 ft, and height 4 ft, parallel to the front face (10 by 4). Find the shape and the area.

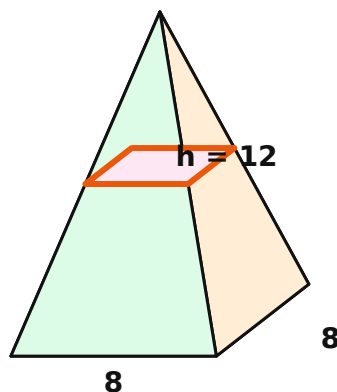
Exercise 3 - Vertical slice (side)

A plane cuts the same prism (10 ft by 6 ft by 4 ft) parallel to the side face (6 by 4). Find the area of the cross-section.

Exercise 4 - Slice of a cube

A cube has edges of 6 cm. A plane cuts it parallel to one face. Name the cross-section and find its area.

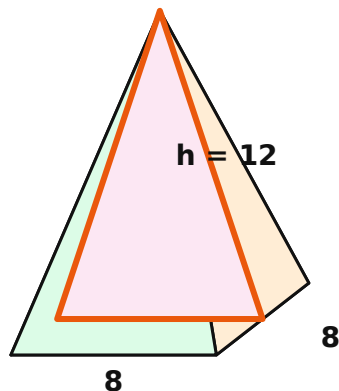
Exercise 5 - Halfway up a pyramid



A pyramid cut halfway up.

A square pyramid has a base side of 8 in and a height of 12 in. A plane parallel to the base cuts it 6 in above the base. Find the shape and the area of the cross-section.

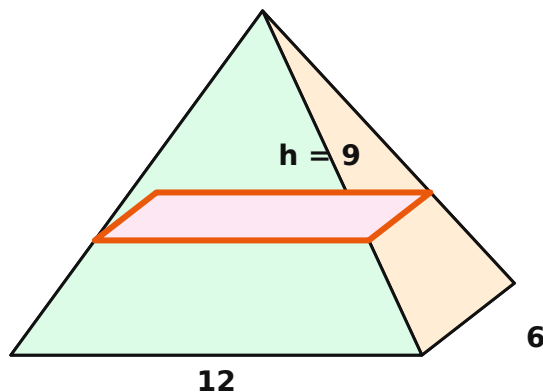
Exercise 6 - Through the apex



A pyramid cut through the apex.

The same pyramid (square base 8 in, height 12 in) is cut by a vertical plane through the apex and parallel to a base edge. Name the shape and find its area.

Exercise 7 - One third of the way up



A rectangular pyramid cut 3 ft above the base.

A rectangular pyramid has a base 12 ft by 6 ft and a height of 9 ft. A plane parallel to the base cuts it 3 ft above the base. Find the dimensions and area of the cross-section.

Exercise 8 - Corner cut

A plane passes through three vertices of a cube that are all adjacent to the same corner, cutting that corner off. Name the shape of the cross-section.

Exercise 9 - Name the shape

A plane cuts a rectangular prism, perpendicular to the base, through two opposite parallel edges. Describe the cross-section.

Exercise 10 - Perimeter of a slice

A prism is 12 in by 8 in by 5 in. A plane parallel to the base cuts it. Find the perimeter of the cross-section.

Exercise 11 - Cheese slices

A block of cheese is 10 in by 6 in by 4 in. Aisha cuts it into 4 equal slices, each parallel to the 10-by-6 face. Find the cross-section of one cut, the thickness of a slice, and the volume of one slice.

Exercise 12 - Cake cut

A cake is 12 in long, 9 in wide, and 3 in tall. A vertical cut parallel to the long side runs along the cake. Find the area of the cut face.

Exercise 13 - Pyramid roof

A pyramid roof has a square base of 24 ft and a height of 9 ft. A horizontal beam is 3 ft above the base. Find the side length and area of the square cross-section at the beam.

Exercise 14 - Bread loaf

A loaf of banana bread is a prism 15 in long with a 3-in by 5-in end. It is sliced into pieces $\frac{3}{4}$ in thick, parallel to the end. Find the shape and area of one slice, and the number of slices.

Exercise 15 - Area ratio

A square pyramid is cut halfway up, parallel to the base. How does the area of the cross-section compare with the area of the base?

Exercise 16 - Aquarium water

An aquarium is a prism 24 in long, 12 in wide, and 16 in tall. The water is 10 in deep. Find the area of the water's surface and the volume of the water.

Exercise 17 - Wood block

A block is 9 in by 6 in by 4 in. A plane parallel to the 6-by-4 face cuts it. Find the area of the cross-section, and the volume of the piece that is 3 in thick.

Exercise 18 - Ice sculpture

A square pyramid ice sculpture has a base of 10 in and a height of 15 in. Planes parallel to the base cut it 5 in and 10 in above the base. Find the side length of each cross-section.

Exercise 19 - Compare solids

Both a square prism and a square pyramid have a 6-in by 6-in base and a height of 6 in. A plane parallel to the base cuts each at a height of 3 in. Find the area of each cross-section.

Exercise 20 - Layered box

A box is a prism 30 in long, 12 in wide, and 24 in tall. It is sliced into 3 equal layers by planes parallel to the 30-by-24 front face. Find the area of each cut, the thickness of a layer, and the volume of one layer.