Cross Sections Worksheet

Grade 7 · Common Core 7.G.A.3

> Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

Practice

Builds the skill step by step.

1. A right rectangular prism is sliced parallel to its base. What shape is the cross section?
   A. A triangle
   B. A circle
   C. A rectangle the same size as the base
   D. A trapezoid

2. A right rectangular pyramid is sliced parallel to its base. What shape is the cross section?
   A. A rectangle smaller than the base
   B. A rectangle the same size as the base
   C. A triangle
   D. A pentagon

3. A rectangular prism is 8 cm long, 5 cm wide and 3 cm tall. It is sliced parallel to its base. What is the area of the cross section?

   _____

   _____

4. A right rectangular pyramid is sliced through its top vertex, perpendicular to the base. What shape is the cross section?
   A. A rectangle
   B. A triangle
   C. A square
   D. A trapezoid

5. A prism is 10 in long, 4 in wide and 6 in tall. It is sliced parallel to the 4 in by 6 in face. What is the area of the cross section?

6. A cube is sliced parallel to one face. What shape is the cross section?

   A. A rectangle that is not a square

   B. A square

   C. A triangle

   D. A hexagon

7. A rectangular prism is 12 ft long, 7 ft wide and 9 ft tall. It is sliced parallel to the 12 ft by 9 ft face. What are the dimensions of the cross section?

8. Which shape can NOT be a cross section of a rectangular prism?

   A. A rectangle

   B. A circle

   C. A triangle

   D. A pentagon

9. A plane cuts off one corner of a cube. What shape is the cross section?

   A. A triangle

   B. A square

   C. A rectangle

   D. A hexagon

10. A rectangular pyramid has a base 6 m by 4 m. A slice parallel to the base, halfway up, is a rectangle 3 m by 2 m. What is its area?

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On Level

Grade-level practice.

1. A prism is 9 cm long, 6 cm wide and 4 cm tall. It is sliced parallel to its base. What is the perimeter of the cross section?

2. A rectangular pyramid has a 10 in by 8 in base. It is sliced parallel to the base near the top. Which could be the dimensions of the cross section?

   A. 10 in by 8 in

   B. 2 in by 2 in

   C. 5 in by 2 in

   D. 2.5 in by 2 in

3. A box is 3 cm wide, 4 cm deep and 10 cm tall. It is sliced straight down along a diagonal of its 3 cm by 4 cm base. That diagonal is 5 cm long. What is the area of the cross section?

4. A rectangular prism is sliced through one top edge and the opposite bottom edge. What shape is the cross section?

   A. A triangle

   B. A trapezoid

   C. A rectangle

   D. A circle

5. A square pyramid has a base 12 ft on each side. A slice parallel to the base, halfway up, is a square with sides half as long as the base. What is its area?

6. A rectangular pyramid is sliced perpendicular to its base and parallel to one base edge, but not through the top vertex. What shape is the cross section?

   A. A rectangle

   B. A square

   C. A triangle

   D. A trapezoid

7. A box is 15 cm long, 8 cm wide and 6 cm tall. What is the largest area a cross section parallel to one of its faces can have?

8. Which slice of a cube gives a regular hexagon?

   A. A slice parallel to a face

   B. A slice through the midpoints of six edges

   C. A slice that cuts off one corner

   D. A slice through two opposite edges

9. A box 20 in long, 12 in wide and 10 in tall is cut parallel to its base, 4 inches from the bottom. What is the area of the cross section?

10. A rectangular pyramid has a base 8 cm by 6 cm. A slice parallel to the base is a rectangle 4 cm long. How wide is it?

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Challenge

Multi-step and word problems that stretch it.

1. A rectangular pyramid has a 10 m by 6 m base. A slice parallel to the base is 2.5 m long. What is the area of the cross section?

2. A box is 6 cm by 6 cm at the base and 10 cm tall. Which slice gives a square cross section?

   A. A slice parallel to a side face

   B. A slice parallel to the base

   C. A slice straight down through two opposite vertical edges

   D. A slice that cuts off one corner

3. A box is 6 in wide, 8 in deep and 5 in tall. It is sliced straight down along a diagonal of its base. The diagonal is 10 in long. What is the perimeter of the cross section?

4. A square pyramid is sliced parallel to its base at two different heights. Which statement is true?

   A. The slice closer to the base is larger.

   B. The slice closer to the top is larger.

   C. Both slices are the same size.

   D. Both slices are triangles.

5. A square pyramid has a base 12 cm on each side. A slice parallel to the base is a square with sides $\frac{1}{3}$ as long as the base. What is its area?

6. A box is 10 cm long, 4 cm wide and 3 cm tall. How much greater is the area of a slice parallel to the base than a slice parallel to the 10 cm by 3 cm face?

7. Which solid has a triangle as its cross section when sliced perpendicular to the base through the top?

   A. A rectangular prism

   B. A cube

   C. A cylinder

   D. A rectangular pyramid

8. A slice parallel to the base of a pyramid is a 3 in by 2 in rectangle. Each side of the base is 4 times as long. What is the area of the base?

9. A loaf of bread is a rectangular prism 30 cm long, 12 cm wide and 10 cm tall. It is cut into 20 equal slices parallel to its 12 cm by 10 cm end. What is the area of each slice's face, and how thick is each slice?

10. A cube is sliced through the midpoints of the three edges that meet at one corner. What shape is the cross section?

    A. An equilateral triangle

    B. A right triangle

    C. A square

    D. A hexagon