

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

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

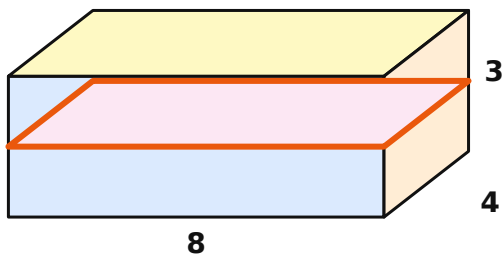
Name: _____ Class: _____ Date: ____/____/____

Answer all 10 multiple-choice questions on the two-dimensional shapes made when planes slice right rectangular prisms and right rectangular pyramids, including slices parallel and perpendicular to a base. Pick the single best answer, then read the explanation to see why it is right and which common mistake each wrong choice shows. A score of 8 or more means you are ready for the test.

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

Questions

Question 1

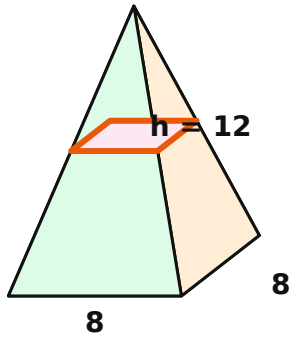


base. The cross-section is:

A plane cuts a rectangular prism parallel to its

- A. A triangle
- B. A smaller rectangle than the base
- C. A circle
- D. A rectangle congruent to the base

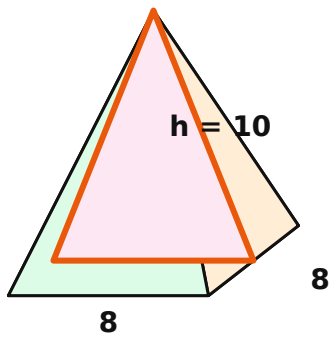
Question 2



A plane cuts a square pyramid parallel to the base, halfway up. The cross-section's side compared with the base side is:

- A. The same length
- B. Half as long
- C. Twice as long
- D. One fourth as long

Question 3



A vertical plane through the apex of a square pyramid gives which shape?

- A. Triangle
- B. Square
- C. Circle
- D. Hexagon

Question 4

A prism is 12 by 5 by 3. A cut parallel to the 12-by-3 face has what area?

- A. 36
- B. 60
- C. 15
- D. 180

Question 5

A plane slices off one corner of a cube. The cross-section is a:

- A. Square
- B. Hexagon
- C. Circle
- D. Triangle

Question 6

A square pyramid has base side 10 and height 20. A cut parallel to the base is made 5 above the base. The side length of the cross-section is:

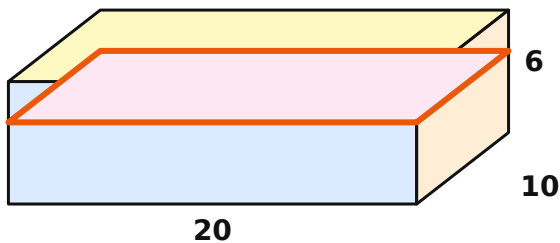
- A. 5
- B. 7.5
- C. 2.5
- D. 15

Question 7

Which cross-section can a plane make through a cube?

- A. A circle
- B. A rectangle that is not a square
- C. A pentagon with a curved side
- D. A figure with 9 sides

Question 8



surface is how large when filled to 4 ft?

A pool is a prism 20 ft by 10 ft by 6 ft. The water

- A. 80 square feet
- B. 800 square feet
- C. 200 square feet
- D. 120 square feet

Question 9

The cross-section of a square pyramid cut parallel to the base has an area of 16, and the base area is 64. How far up the height is the cut?

- A. One fourth of the way
- B. Three fourths of the way
- C. Halfway
- D. At the apex

Question 10

Mei says every cross-section of a prism is a rectangle. Which cut proves her wrong?

- A. A plane cutting off a corner (a triangle)
- B. A plane parallel to the base
- C. A plane parallel to the front face
- D. A plane parallel to the side face

Answers

1. **D** – In a prism, a slice parallel to the base is the same size as the base.
2. **B** – Halfway up, the side is $\frac{1}{2}$ the base side. The area is $\frac{1}{4}$ the base area.
3. **A** – The plane meets two base points and the apex, forming a triangle.
4. **A** – The cross-section is a 12-by-3 rectangle: $12 \times 3 = 36$.
5. **D** – The plane meets three faces, so it has three sides.
6. **B** – $(20-5) \div 20 \times 10 = 7.5$.
7. **B** – A tilted plane across two opposite edges makes a non-square rectangle.
8. **C** – The surface is parallel to the base: $20 \times 10 = 200$.
9. **C** – The side ratio is $\frac{4}{8} = \frac{1}{2}$, so the cut is halfway up.
10. **A** – A corner cut gives a triangle, so not every slice is a rectangle.

Remember

- A cross-section is the flat shape where a plane meets a solid.
- Prism slice parallel to a face: a rectangle congruent to that face.
- Pyramid slice parallel to the base: a smaller rectangle similar to the base.
- Pyramid slice through the apex and perpendicular to the base: a triangle.
- A slanted plane can give a triangle, trapezoid, or other polygon.