

Geometry - Cross Sections and Solids of Revolution - Quiz

Common Core G-GMD.B.4 · maths-pdf.fr/en/

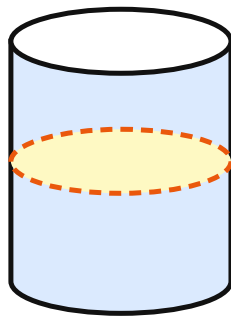
Name: _____ Class: _____ Date: ____/____/____

Test your understanding of cross sections and solids of revolution with this 10-question multiple-choice quiz. Each question has one correct answer, and the explanation after it names the typical mistake behind the wrong choices. Take it after the lesson or before the test.

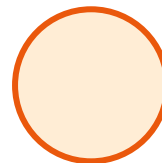
Geometry · Common Core State Standards: **G-GMD.B.4**

Questions

Question 1



cross section



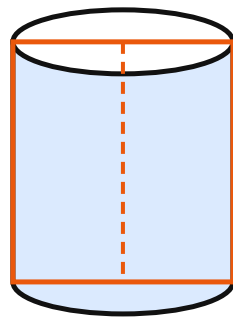
circle

A plane parallel to the base cuts a cylinder in a circle.

A plane parallel to the bases cuts a cylinder. What is the cross section?

- A. A rectangle
- B. An ellipse
- C. A triangle
- D. A circle

Question 2



cross section



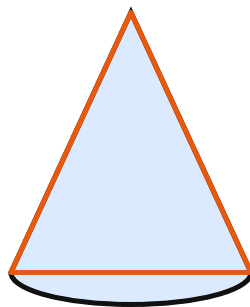
rectangle

A plane through the axis cuts a cylinder in a rectangle.

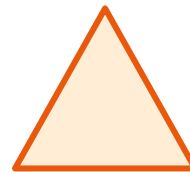
A plane through the axis of a cylinder, perpendicular to the bases, gives which cross section?

- A. A rectangle
- B. A circle
- C. A triangle
- D. A trapezoid

Question 3



cross section



triangle

A plane through the apex and axis cuts a cone in a triangle.

A plane through the apex and axis of a cone gives which cross section?

- A. A triangle
- B. A circle
- C. A rectangle
- D. A square

Question 4

Every plane cross section of a sphere is

- A. An ellipse

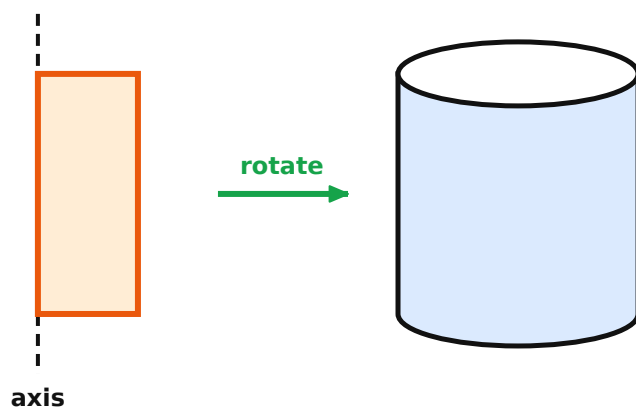
- B. A circle
- C. A square
- D. A circle only through the center

Question 5

A right triangle is rotated about one of its legs. What solid forms?

- A. A cylinder
- B. A cone
- C. A sphere
- D. A pyramid

Question 6



A rectangle rotated about one side makes a cylinder.

A rectangle is rotated about one of its sides. What solid forms?

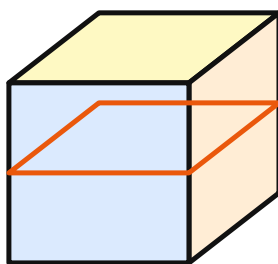
- A. A cone
- B. A prism
- C. A cylinder
- D. A sphere

Question 7

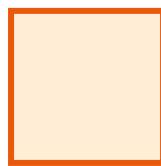
A sphere has radius 5 and a plane 3 units from the center cuts it. What is the radius of the circle cross section?

- A. 4
- B. 2
- C. 8
- D. 5

Question 8



cross section



square

A plane parallel to a face cuts a cube in a square.

A plane parallel to a face cuts a cube with edge 7. What is the area of the cross section?

- A. 14
- B. 28
- C. 343
- D. 49

Question 9

A right triangle with legs 3 and 4 is rotated about the leg of length 4. What is the volume of the solid?

- A. 16 pi
- B. 48 pi
- C. 12 pi
- D. 36 pi

Question 10

A semicircle with radius 3 is rotated about its diameter. What is the volume?

- A. 12 pi
- B. 36 pi
- C. 27 pi
- D. 108 pi

Answers

1. **D** - A cut parallel to the bases is a circle congruent to the bases.
2. **A** - The cut is as wide as the diameter and as tall as the cylinder: a rectangle.
3. **A** - The cut runs from the apex to opposite points of the base circle: a triangle.
4. **B** - A plane cut of a sphere is always a circle, large through the center and small near the edge.
5. **B** - The leg on the axis is the height and the other leg sweeps out the base circle: a cone.
6. **C** - The rectangle sweeps out a round solid with circular bases: a cylinder.
7. **A** - $r = \text{square root of } 25 - 9 = 4$.
8. **D** - The cross section is a 7 by 7 square, with area 49.
9. **C** - Cone with radius 3 and height 4: $(1/3) \pi (9)(4) = 12 \pi$.
10. **B** - It makes a sphere of radius 3: $(4/3) \pi (27) = 36 \pi$.

Remember

- Cylinder: parallel cut is a circle; cut through the axis is a rectangle.
- Cube: cut parallel to a face is a square.
- Cone: parallel cut is a circle; cut through the apex is a triangle.
- Sphere: every plane cross section is a circle.
- Rotating a rectangle about a side gives a cylinder; a right triangle about a leg gives a cone.