

Geometry - Cross Sections and Solids of Revolution - Worksheet

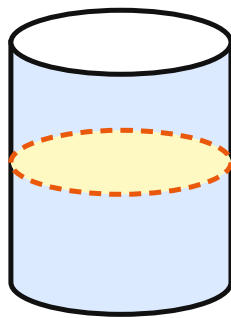
Common Core G-GMD.B.4 · maths-pdf.fr/en/

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

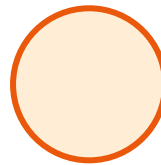
These 20 problems practice cross sections of cylinders, cubes, cones and spheres and solids of revolution (Common Core G-GMD.B.4). The first problems are quick one-step checks of the definitions and formulas from the lesson. The middle problems ask for diagrams, equations and careful reasoning in the style of a high school Geometry class. The last six problems are applications with bread, pottery and rotating shapes.

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

Exercise 1 - Cylinder, parallel cut



cross section

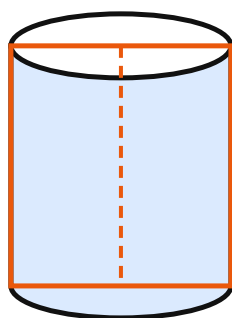


circle

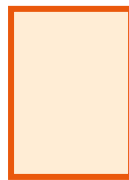
A plane parallel to the base cuts a cylinder in a circle.

A plane parallel to the bases cuts a cylinder. Name the cross section.

Exercise 2 - Cylinder through the axis



cross section

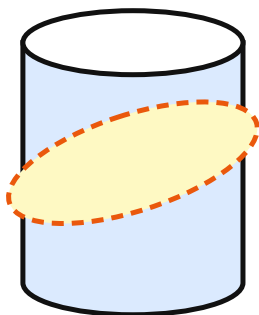


rectangle

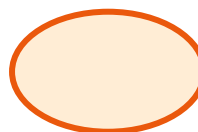
A plane through the axis cuts a cylinder in a rectangle.

A cylinder has radius 5 and height 12. A plane through its axis, perpendicular to the bases, cuts it. Name the cross section and find its area.

Exercise 3 - Slanted cut



cross section

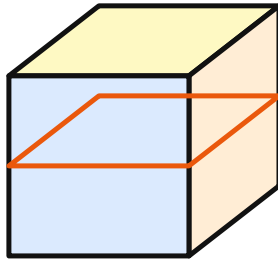


ellipse

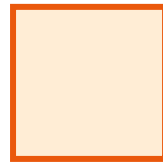
A slanted plane cuts a cylinder in an ellipse.

A plane that is not parallel or perpendicular to the base of a cylinder cuts all the way around the side of the cylinder at a slant. Name the cross section.

Exercise 4 - Cube, parallel cut



cross section

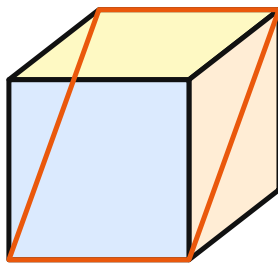


square

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

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

Exercise 5 - Cube, diagonal cut



cross section

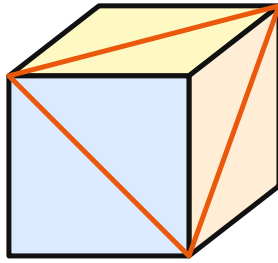


rectangle

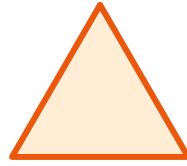
A plane through opposite edges cuts a cube in a rectangle.

A plane passes through two opposite edges of a cube with edge 6. Name the cross section and find its area.

Exercise 6 - Cube, corner cut



cross section

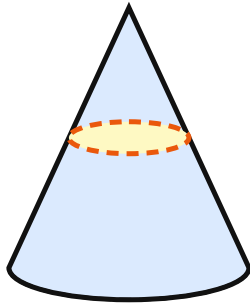


equilateral triangle

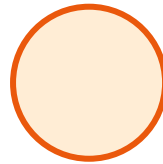
A plane through three vertices cuts off a corner and gives a triangle.

A plane through three vertices cuts the cube with edge 6. Name the cross section and find its area.

Exercise 7 - Cone, parallel cut



cross section

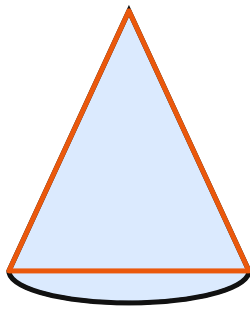


circle

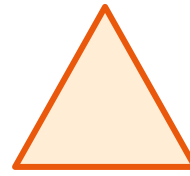
A plane parallel to the base cuts a cone in a circle.

A cone has radius 4 and height 10. A plane parallel to the base cuts it halfway up. Find the radius and area of the circle cross section.

Exercise 8 - Cone, through the apex



cross section

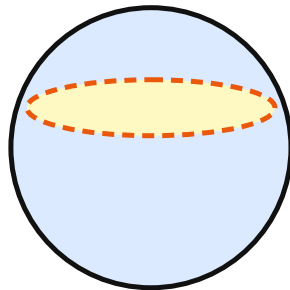


triangle

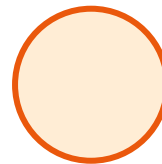
A plane through the apex and axis cuts a cone in a triangle.

For the cone with radius 4 and height 10, a plane through the apex and the axis cuts it. Name the cross section and find its area.

Exercise 9 - Sphere cross section



cross section



circle

Every plane cut of a sphere is a circle.

A sphere has radius 13. A plane 5 units from the center cuts it. Find the radius and area of the cross section.

Exercise 10 - Great circle

A plane through the center of a sphere of radius 13 cuts it. Find the circumference of the cross section.

Exercise 11 - Rectangular prism

A rectangular prism is 4 by 6 by 10. A plane parallel to the 4 by 6 face cuts it. Name the cross section and find its area.

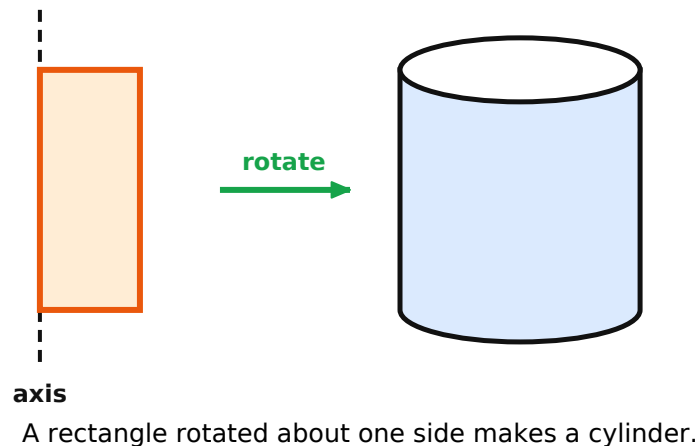
Exercise 12 - Square pyramid

A square pyramid has a base side of 8. A plane parallel to the base cuts it halfway up. Name the cross section and find its area.

Exercise 13 - Cube cross sections

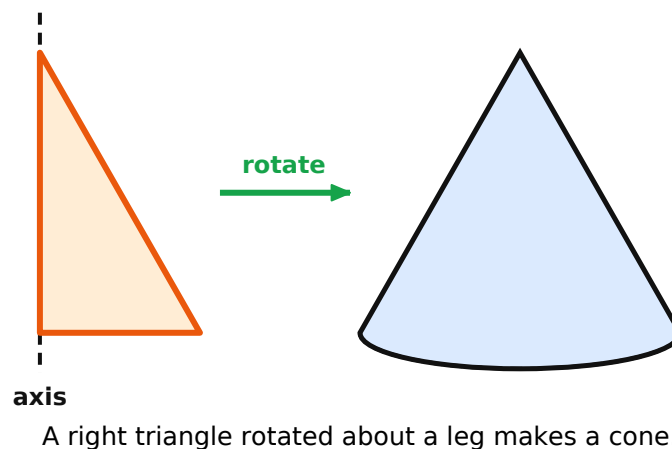
Name three different shapes that can be a cross section of a cube.

Exercise 14 - Rotate a rectangle



A rectangle 3 units wide and 8 units tall is rotated about its 8-unit side. Name the solid and find its volume.

Exercise 15 - Rotate a triangle about the long leg

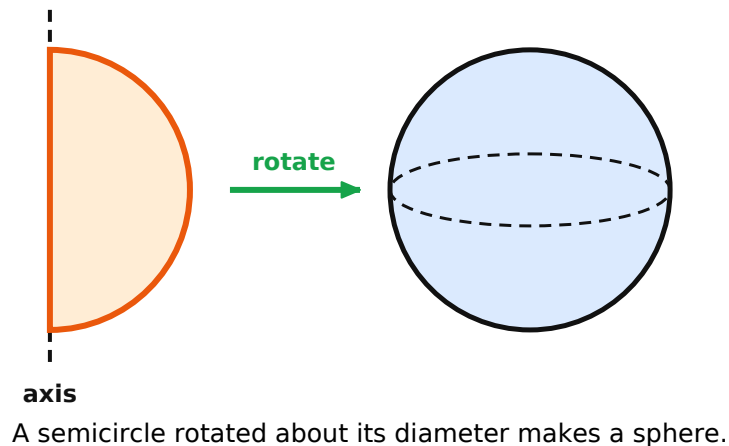


A right triangle with legs 6 and 8 is rotated about the leg of length 8. Name the solid and find its volume.

Exercise 16 - Rotate a triangle about the short leg

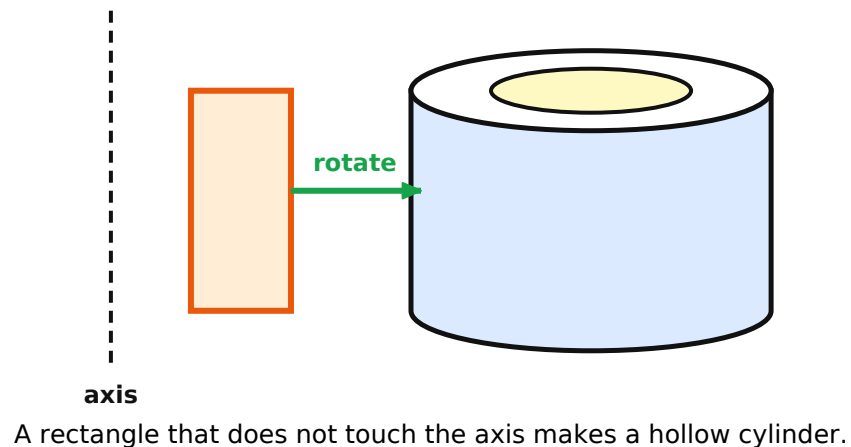
The same right triangle (legs 6 and 8) is rotated about the leg of length 6. Find the volume of the new solid.

Exercise 17 - Rotate a semicircle



A semicircle of radius 5 is rotated about its diameter. Name the solid and find its volume.

Exercise 18 - Hollow cylinder



A rectangle is 2 units wide and 5 units tall. Its left side is 3 units from the axis of rotation. Describe the solid and find its volume.

Exercise 19 - Slicing a loaf

A round loaf of bread is a cylinder with diameter 10 cm and length 30 cm. Mei cuts a slice

perpendicular to its length. Name the shape of the slice face and find its area to the nearest tenth.

Exercise 20 - Pottery cone

A potter models a cone by rotating a right triangle with legs 9 and 12 about the leg of length 12. Find the volume of the cone to the nearest tenth.