LESSON MAKER PRO

Slices and Spins

Connect flat shapes and solid figures.

HIGH SCHOOL · HSG-GMD.B

CCSS.Math.Content.HSG-GMD.B "Visualize relationships between two-dimensional and three-dimensional objects"

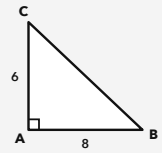
NAME _____ DATE _____

SEE THE 3D RESULT

A flat figure can form a solid when it rotates around a side or line. A flat slice through a solid makes a 2D cross section. Track the rotation axis or the direction of the slice.

WORKED EXAMPLE

Rotate triangle ABC in the figure around AB. Name the solid and give its radius and height.



1. AB is the rotation axis, so the height is 8.
2. AC sweeps a circle with radius 6.
3. A rotating right triangle forms a cone.

Answer: Cone with radius 6 and height 8.

PRACTICE 4 problems

1 A 4-by-7 rectangle rotates around a side of length 7. Name the solid and give its radius and height.

ANSWER _____

2 A semicircle rotates around its diameter. Name the solid formed.

ANSWER _____

3 A cube is sliced by a plane parallel to its base. Name the cross section.

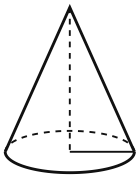
ANSWER _____

4 A triangular prism is sliced by a plane parallel to a triangular base. Name the cross section.

ANSWER _____

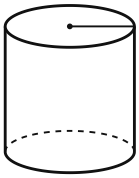
APPLY IT Show your work

1 A makers club designs the cone-shaped award shown. A cut passes through the tip and the center of the base. Name the cross section.



ANSWER _____

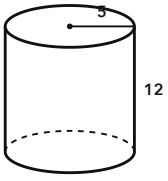
2 A product design team models a reusable water bottle as the cylinder shown. A cut is made parallel to its bases. Name the cut face.



ANSWER _____

CHALLENGE One step up

A plane cuts the shown cylinder parallel to its axis and 2 units from the axis. Find the dimensions of the rectangular cross section.



WORK SPACE AND ANSWER

ANSWER KEY

Slices and Spins

HIGH SCHOOL · HSG-GMD.B

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A 4-by-7 rectangle rotates around a side of length 7. Name the solid and give its radius and height.	**Cylinder with radius 4 and height 7.**
2	A semicircle rotates around its diameter. Name the solid formed.	**Sphere.**
3	A cube is sliced by a plane parallel to its base. Name the cross section.	**Square.**
4	A triangular prism is sliced by a plane parallel to a triangular base. Name the cross section.	**Triangle.**

PART 2 · APPLY IT

1. **Isosceles triangle.** A cut through the axis of a right circular cone makes an isosceles triangle.
2. **Circle.** A slice parallel to a circular base of a cylinder is a circle.

CHALLENGE

Rectangle with dimensions 12 by 2sqrt(21).

Accept equivalent wording for solid and cross-section names. For the challenge, accept 2sqrt(21) by 12; the width is a chord with length $2\sqrt{5^2 - 2^2}$.