LESSON MAKER PRO

Slice Shape Detectives

Identify the flat shapes hidden inside solid figures.

GRADE 7 · 7.GSR.5.7

7.GSR.5.7 "Describe the two-dimensional figures (cross sections) that result from slicing three-dimensional figures, as in the plane sections of right rectangular prisms, right rectangular pyramids, cones, cylinders, and spheres."

NAME _____ DATE _____

HOW SLICES WORK

A cross section is the flat shape made when a plane cuts through a solid. A cut parallel to a base has the same basic shape as that base, although it can be smaller in a pyramid or cone. Use the direction of the cut and the solid's faces or curved surfaces to name the cross section.

WORKED EXAMPLE

A right triangular prism is sliced by a plane parallel to its triangular base. What is the cross section?

1. The slice is parallel to the base.
2. A parallel slice matches the base's shape.
3. The base is a triangle.

Answer: triangle

PRACTICE 6 problems

1 A right rectangular prism is cut by a plane parallel to its base. Name the cross section.

ANSWER _____

2 A right rectangular pyramid is cut by a plane parallel to its rectangular base, not through the apex. Name the cross section.

ANSWER _____

3 A cone is cut by a plane parallel to its circular base. Name the cross section.

ANSWER _____

4 A sphere is cut by a flat plane. Name the cross section.

ANSWER _____

5 A right cylinder is sliced by a plane perpendicular to its bases and passing through the centers of both bases. Name the cross section.

ANSWER _____

6 A right rectangular pyramid is sliced by a plane through its apex and a diagonal of its base. Name the cross section.

ANSWER _____

APPLY IT Show your work

1 At a makers club, Nia is designing a cone-shaped lamp shade. She makes a straight horizontal cut parallel to the circular bottom, 4 cm above the bottom. What shape is the cut surface?

WORK SPACE

ANSWER _____

2 An esports club has a clear, sphere-shaped prize ball. A laser scanner makes a flat slice that does not pass through the center. What shape is the scan face?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A cross section is a triangle. Could it come from a cone, a right rectangular pyramid, or a sphere? Name every solid that could make a triangular cross section and explain how the slice would need to pass through it.

_____

_____

ANSWER KEY

Slice Shape Detectives

GRADE 7 · 7.GSR.5.7

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A right rectangular prism is cut by a plane parallel to its base. Name the cross section.	**rectangle**
2	A right rectangular pyramid is cut by a plane parallel to its rectangular base, not through the apex. Name the cross section.	**rectangle**
3	A cone is cut by a plane parallel to its circular base. Name the cross section.	**circle**
4	A sphere is cut by a flat plane. Name the cross section.	**circle**
5	A right cylinder is sliced by a plane perpendicular to its bases and passing through the centers of both bases. Name the cross section.	**rectangle**
6	A right rectangular pyramid is sliced by a plane through its apex and a diagonal of its base. Name the cross section.	**triangle**

PART 2 · APPLY IT

1. **circle** The cut is parallel to the cone's circular base. Therefore, the cross section is a circle.
2. **circle** Any flat plane that cuts a sphere makes a circular cross section. The slice does not need to pass through the center.

CHALLENGE

It could come from a cone if the slice passes through the apex and across the base. It could come from a right rectangular pyramid if the slice passes through the apex and a line across the base, such as a diagonal. It cannot come from a sphere because every plane cross section of a sphere is a circle.

Accept equivalent wording such as "rectangular cross section" for rectangle and "circular cross section" for circle. For the challenge, accept any accurate explanation that identifies the cone and rectangular pyramid, but not the sphere.