Lesson Maker Pro

Rotate a Region

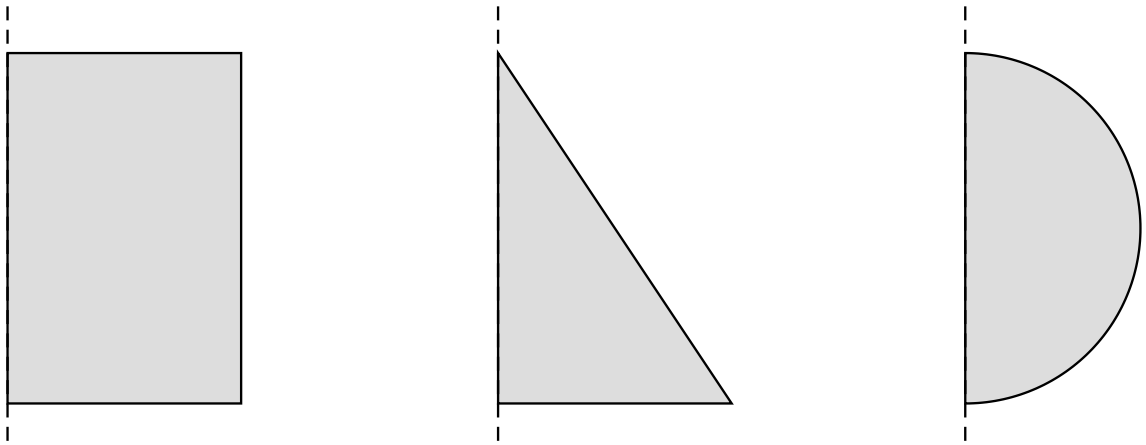
Predict solids generated by a full turn about a marked axis.

MA.912.GR.4.2 Identify three-dimensional objects generated by rotations of two-dimensional figures.

NAME _____ **DATE** _____

From plane to solid

Each shaded region rotates through 360°about its dashed axis. The entire filled region rotates, not just its boundary. On attached paper, sketch each resulting solid; name it in the table.



A B C

Region	Resulting solid	What a point sweeps out
A	_____	_____
B	_____	_____
C	_____	_____

Choose one region. Explain how the distance from its points to the axis determines the radius of the solid.

Changing the axis changes the solid

A filled rectangle is 3 cm wide and 5 cm tall. Draw it and mark a rotation axis along its 5 cm side. Then draw a second copy with the axis along its 3 cm side. Name the radius and height of each resulting cylinder.

Now move the vertical axis 2 cm to the left of the same 3-by 5 rectangle. Sketch the region, axis and resulting solid. Explain why there is a hole, and give the inner radius, outer radius and height.

Teacher Key

A:right circular cylinder;B:right circular cone;C:sphere, because the semicircle turns about its diameter. A point away from the axis traces a circle; a point on it stays fixed.

Along 5 cm side:cylinder radius 3 cm,height 5 cm. Along 3 cm side:radius 5 cm,height 3 cm. External parallel axis:annular/hollow cylinder,inner radius 2 cm,outer radius 5 cm,height 5 cm. No region point lies less than 2 cm from the axis, so the central hole remains. Require solid sketches and explanations, not merely identifying the flat starting shape.