

Measure It All

Use angles, circles, and solids to solve real measurements.

GRADE 7 • 7.GSR.5

7.GSR.5 "Solve practical problems involving angle measurement, circles, area of circles, surface area of prisms and cylinders, and volume of cylinders and prisms composed of cubes and right prisms."

NAME _____

DATE _____

THE BIG IDEA

Angles around one point have a total measure of 360 degrees. For circles, use $C = \pi d$ and $A = \pi r^2$. For solids, right-prism volume is base area times height and surface area is all outside faces; cylinder formulas are $V = \pi r^2 h$ and $SA = 2\pi r^2 + 2\pi rh$.

WORKED EXAMPLE

Find the surface area of a rectangular prism with length 5 units, width 3 units, and height 8 units.

1. $SA = 2(lw + lh + wh)$
2. $SA = 2(5 \times 3 + 5 \times 8 + 3 \times 8)$
3. $SA = 2(15 + 40 + 24) = 158$

Answer: 158 square units

PRACTICE 6 problems

- 1** Angles around a point measure 110 degrees, 130 degrees, and x degrees. Find x .

ANSWER _____

- 2** A circle has a radius of 7 cm. Find its circumference and area in terms of π .

ANSWER _____

- 3** Find the surface area of a cylinder with radius 6 cm and height 11 cm. Leave your answer in terms of π .

ANSWER _____

- 4** Find the surface area of a rectangular prism with length 6 cm, width 7 cm, and height 10 cm.

ANSWER _____

- 5** Find the volume of a cylinder with radius 10 cm and height 7 cm. Leave your answer in terms of π .

ANSWER _____

- 6** A right rectangular prism made of unit cubes is 6 units long, 7 units wide, and 10 units high. What is its volume?

ANSWER _____

APPLY IT Show your work

- 1** The art club is making a circular floor decal for a school event. The decal has a diameter of 22 inches. What area will it cover? Leave your answer in terms of pi.

WORK SPACE

ANSWER _____

- 2** A cylindrical popcorn tub at movie night has a radius of 7 cm and a height of 12 cm. What is the volume of the tub? Leave your answer in terms of pi.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A rectangular prism has a volume of 840 cm^3 . Its length is 10 cm and its width is 7 cm. Find the prism's height, then find its surface area.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Angles around a point measure 110 degrees, 130 degrees, and x degrees. Find x .	120 degrees
2	A circle has a radius of 7 cm. Find its circumference and area in terms of π .	Circumference: 14π cm; area: 49π cm²
3	Find the surface area of a cylinder with radius 6 cm and height 11 cm. Leave your answer in terms of π .	204π cm²
4	Find the surface area of a rectangular prism with length 6 cm, width 7 cm, and height 10 cm.	344 cm²
5	Find the volume of a cylinder with radius 10 cm and height 7 cm. Leave your answer in terms of π .	700π cm³
6	A right rectangular prism made of unit cubes is 6 units long, 7 units wide, and 10 units high. What is its volume?	420 cubic units

PART 2 • APPLY IT

- 121π in²** The radius is 11 inches. Use $A = \pi r^2 = \pi(11)^2 = 121\pi$ square inches.
- 588π cm³** Use $V = \pi r^2 h$. $V = \pi(7)^2(12) = 588\pi$ cubic centimeters.

CHALLENGE

Height: 12 cm; surface area: 548 cm²

Accept answers written with π or the symbol n . For surface area and volume, require correct square or cubic units.