

Shape Models in Action

Use measurements and properties to model real objects.

HIGH SCHOOL • GEO-G.MG.1

GEO-G.MG.1 "Use geometric shapes, their measures, and their properties to describe objects."

NAME _____

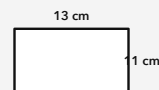
DATE _____

MATCH THE MODEL

Model a flat object with a two-dimensional shape and a solid object with a three-dimensional shape. Then use the shape's measures and properties to find a useful quantity, such as area, perimeter, or volume.

WORKED EXAMPLE

The rectangle in the figure models a photo mat. Find its area.

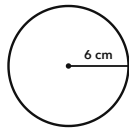


1. Area of a rectangle = length $\times$ width.
2. $A = 13 \times 11$.
3. $A = 143 \text{ cm}^2$.

Answer: 143 cm^2

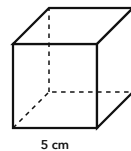
PRACTICE 6 problems

- 1** The circle in the figure models a bicycle wheel. Find its diameter and circumference in terms of π .



ANSWER _____

- 2** The cube in the figure models a small gift box. Find its volume.



ANSWER _____

- 3** A triangular banner has a base of 12 cm and a perpendicular height of 7 cm. What is its area?

ANSWER _____

- 4** A regular hexagonal tabletop has side length 4 ft. What is its perimeter?

ANSWER _____

- 5** A cylindrical water bottle has radius 3 cm and height 10 cm. What is its volume in terms of π ?

ANSWER _____

- 6** A square screen has a perimeter of 32 in. What is its area?

ANSWER _____

APPLY IT Show your work

- 1** A student builds a rectangular-prism organizer for headphones. Its inside length is 9 in, width is 4 in, and height is 6 in. What volume can the organizer hold?

WORK SPACE

ANSWER _____

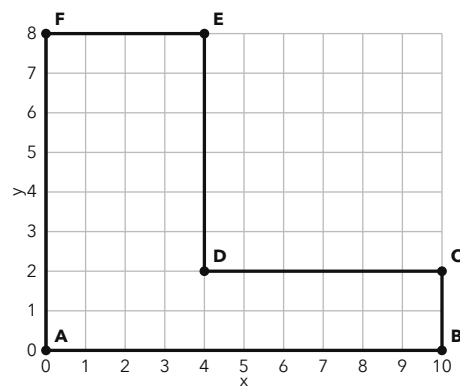
- 2** The art club prints a circular sticker with a diameter of 14 cm. What is the area of one sticker in terms of π ?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The outline in the coordinate grid models an L-shaped display platform. Find its area in square units. Explain how you split the shape into simpler shapes.



WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	The circle in the figure models a bicycle wheel. Find its diameter and circumference in terms of n .	Diameter: 12 cm; circumference: $12n$ cm
2	The cube in the figure models a small gift box. Find its volume.	125 cm^3
3	A triangular banner has a base of 12 cm and a perpendicular height of 7 cm. What is its area?	42 cm^2
4	A regular hexagonal tabletop has side length 4 ft. What is its perimeter?	24 ft
5	A cylindrical water bottle has radius 3 cm and height 10 cm. What is its volume in terms of n ?	$90n \text{ cm}^3$
6	A square screen has a perimeter of 32 in. What is its area?	64 in^2

PART 2 • APPLY IT

- 216 in^3** Model the organizer as a rectangular prism. Multiply $9 \times 4 \times 6$ to find the volume.
- $49n \text{ cm}^2$** The radius is half the diameter, so it is 7 cm. Use $A = nr^2$.

CHALLENGE

44 square units; split the platform into a 10 by 2 rectangle and a 4 by 6 rectangle, then add $20 + 24$.

Accept equivalent area and volume notation, including cm^2 , cm^3 , in^2 , and in^3 . For the challenge, accept any correct decomposition that gives 44 square units.