

Shape Space Savvy

Find area, perimeter, and circumference in composite figures.

GRADE 8 • 8.MG.5.c

8.MG.5.c "Apply perimeter, circumference, and area formulas to solve contextual problems involving composite plane figures."

NAME _____

DATE _____

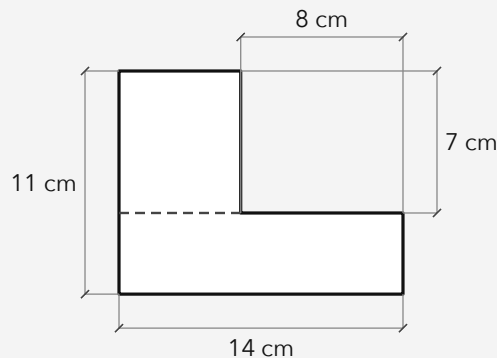
You will need: Pencil; Ruler

BREAK IT APART

For a composite figure, split it into familiar shapes, then add areas or subtract missing areas. For perimeter, trace only the outside edge. For a circle, $C = \pi d$ and $A = \pi r^2$. Draw partition lines on the figures when finding area. Show your area calculation. For perimeter, trace only the outside boundary. Use the bold outline for the shape; thin outside lines mark lengths.

WORKED EXAMPLE

Find the area of the L-shaped figure.

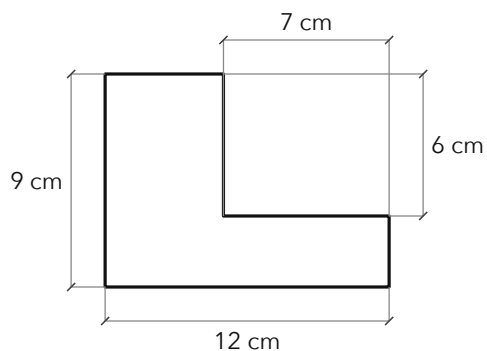


1. Use the 14 cm by 11 cm outer rectangle.
2. Subtract the 8 cm by 7 cm missing rectangle.
3. Area = $14 \times 11 - 8 \times 7 = 154 - 56 = 98 \text{ cm}^2$.

Answer: 98 cm²

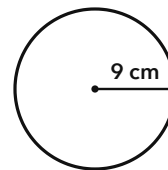
PRACTICE 4 problems

- 1** Find the perimeter of the L-shaped figure.



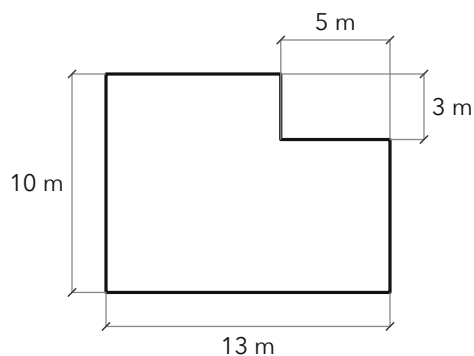
ANSWER _____

- 2** A circle has a radius of 9 cm. Find its area in terms of π .



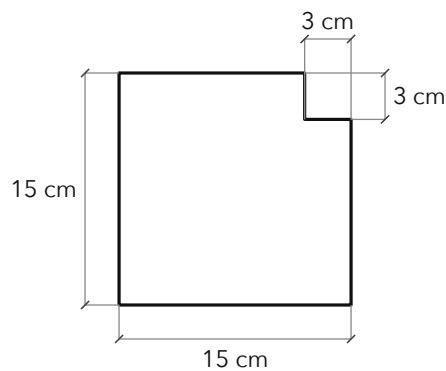
ANSWER _____

- 3** Find the area of the L-shaped figure.



ANSWER _____

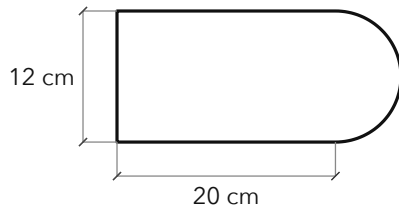
- 4** A 15 cm by 15 cm square sign has a 3 cm by 3 cm square cut from one corner. Find its perimeter.



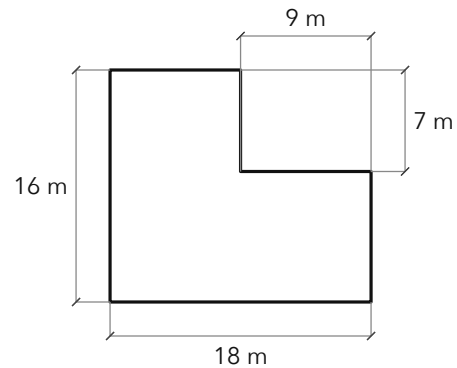
ANSWER _____

APPLY IT Show your work

- 1** An esports club makes a banner from a 20 cm by 12 cm rectangle. A semicircle with diameter 12 cm is attached to one short side. How much banner material is needed? Give the area in terms of π .

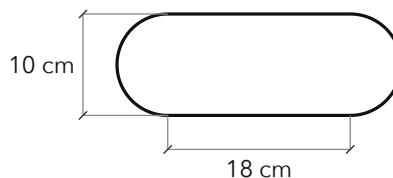
**CALCULATION AND ANSWER**

- 2** A gaming club wants an L-shaped floor decal. It starts as an 18 m by 16 m rectangle, with a 9 m by 7 m corner removed. What is the area of the decal?

**CALCULATION AND ANSWER**

CHALLENGE One step up

A running track logo is made from an 18 cm by 10 cm rectangle with a semicircle attached to each 10 cm side. Find the total area and outside perimeter in terms of π .

**WORK SPACE AND ANSWER**

PRACTICE 2

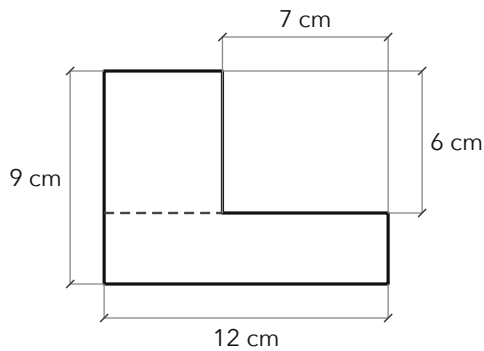
A circle has a radius of 9 cm. Find its area in terms of π .

$81\pi \text{ cm}^2$

PRACTICE 1

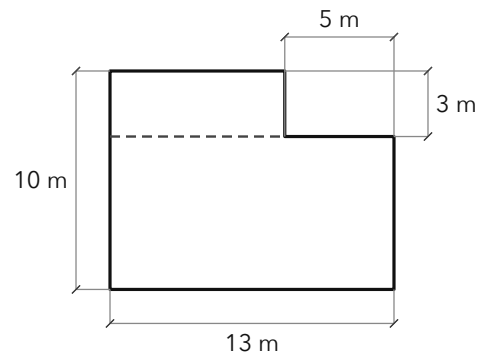
Find the perimeter of the L-shaped figure.

42 cm

**PRACTICE 3**

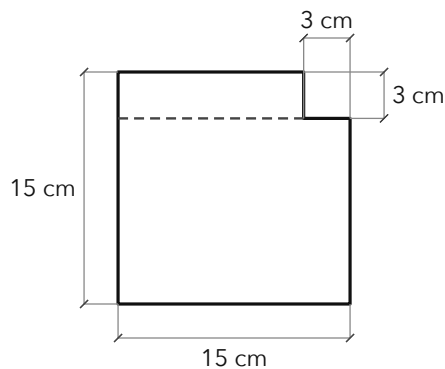
Find the area of the L-shaped figure.

115 m^2

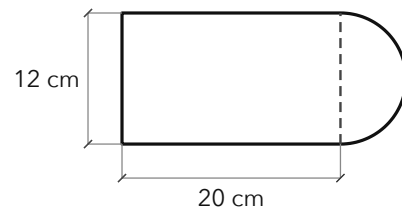
**PRACTICE 4**

A 15 cm by 15 cm square sign has a 3 cm by 3 cm square cut from one corner. Find its perimeter.

60 cm

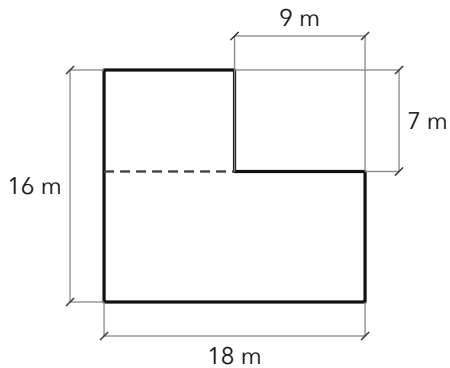
**APPLY IT 1**

$240 + 18\pi \text{ cm}^2$ Add the rectangle area, 20×12 , and the semicircle area, $\frac{1}{2} \times \pi \times 6^2$.



APPLY IT 2

225 m² Subtract the removed corner area from the full rectangle area: $18 \times 16 - 9 \times 7$.



CHALLENGE

Area: $180 + 25\pi$ cm²; perimeter: $36 + 10\pi$ cm

Accept equivalent exact forms with terms in either order. For the challenge, the two semicircles form one circle with radius 5 cm. Dashed lines in the teacher diagrams show one valid partition. Accept other valid non-overlapping partitions with correct calculations. Outside measurement lines show horizontal or vertical distances; they are not extra sides of the shape.

