

Shape Area Builder

Split, find, and combine areas.

GRADE 8 • 8.MG.5.a

8.MG.5.a "Subdivide a plane figure into triangles, rectangles, squares, trapezoids, parallelograms, circles, and semicircles. Determine the area of subdivisions and combine to determine the area of the composite plane figure."

NAME _____

DATE _____

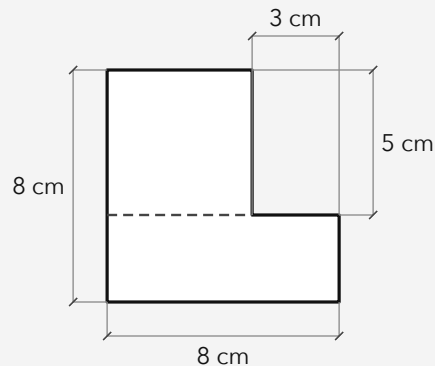
You will need: Pencil; Ruler

BUILD THE TOTAL AREA

Split a composite figure into familiar shapes. Find each area, then add them. If a piece is missing, find a larger area and subtract the missing part. 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.

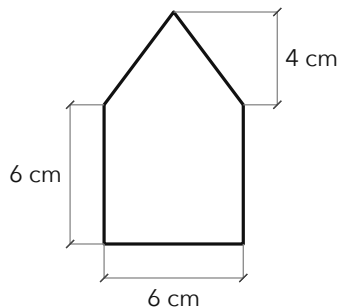


1. Treat it as an 8 cm by 8 cm square.
2. The missing corner is a 3 cm by 5 cm rectangle.
3. $8 \times 8 - 3 \times 5 = 64 - 15 = 49$.

Answer: 49 cm²

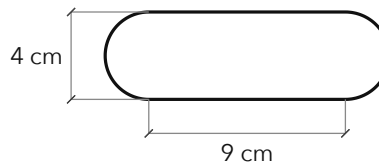
PRACTICE 5 problems

- 1** Split the figure into a square and triangle. Find each area and the total.



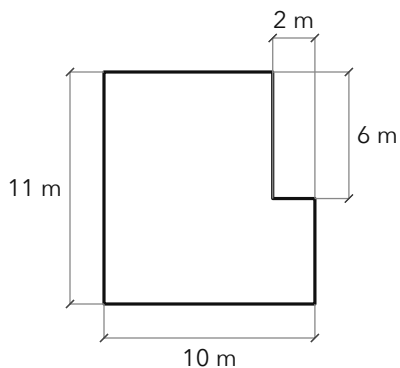
ANSWER _____

- 2** Split the figure into a rectangle and two semicircles. Combine the semicircles into a circle. Find each part's area and the total in terms of π .



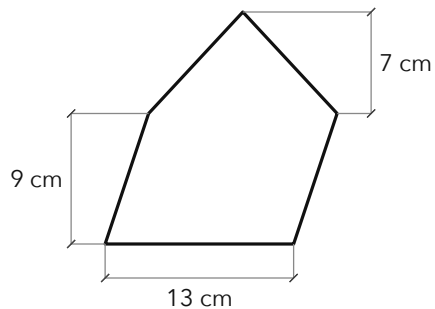
ANSWER _____

- 3** Split the L shape into rectangles. Find each area and the total.



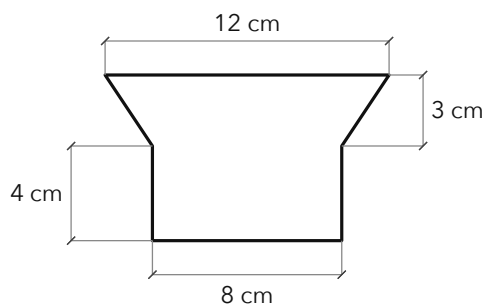
ANSWER _____

- 4** Split the figure into a parallelogram and triangle. Find each area and the total.



ANSWER _____

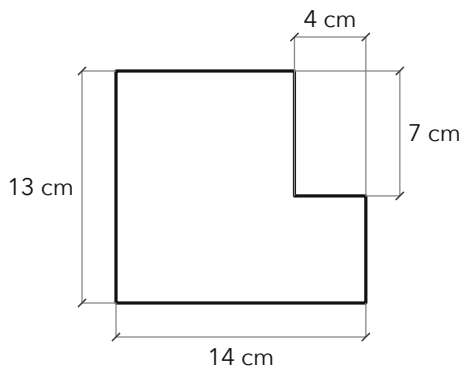
- 5** Split the figure into a rectangle and trapezoid. Find each area and the total.



ANSWER _____

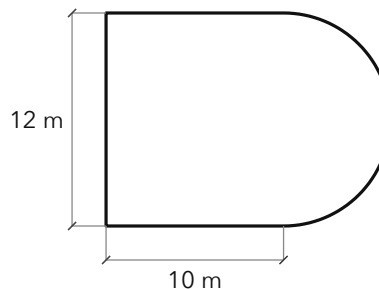
APPLY IT Show your work

- 1** The figure shows an L-shaped mural. Find its area.



CALCULATION AND ANSWER

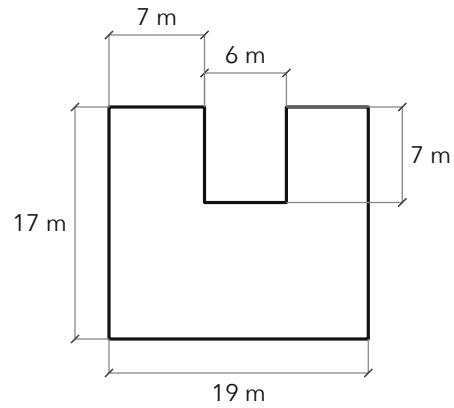
- 2** A game club makes a floor zone from a 12 m by 10 m rectangle and a semicircle with diameter 12 m attached to one 12 m side. Find the total area.



CALCULATION AND ANSWER

CHALLENGE One step up

Draw lines to split the patio into rectangles. Find the area of each part and combine them. Then write a subtraction expression that checks the same total.

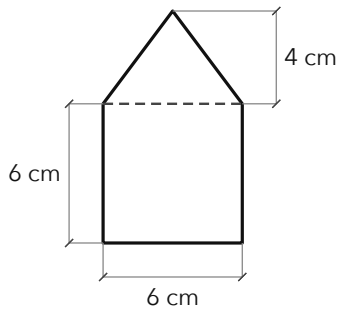


WORK SPACE AND ANSWER

PRACTICE 1

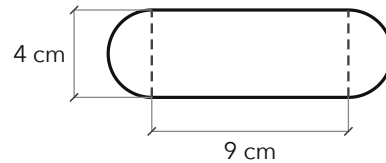
Split the figure into a square and triangle. Find each area and the total.

Square: $6 \times 6 = 36$; **triangle:** $6 \times 4 \div 2 = 12$.
Total: 48 cm^2 .

**PRACTICE 2**

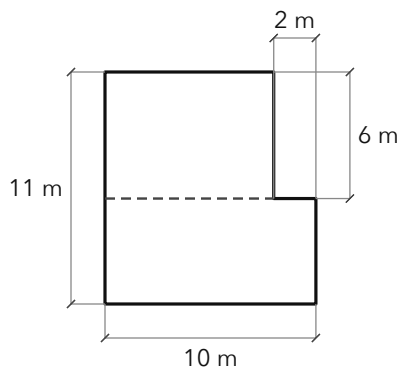
Split the figure into a rectangle and two semicircles. Combine the semicircles into a circle. Find each part's area and the total in terms of n .

Rectangle: $9 \times 4 = 36$. **Each semicircle:** $\frac{n \times 2^2}{2} = 2n$. **Together they make a circle of area** $4n$. **Total:** $36 + 4n \text{ cm}^2$.

**PRACTICE 3**

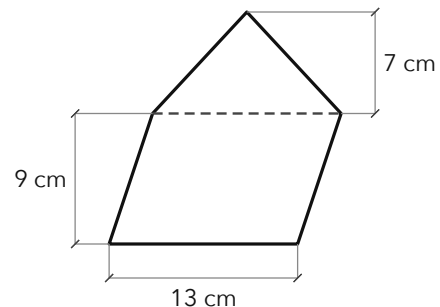
Split the L shape into rectangles. Find each area and the total.

Two rectangles: $10 \times 5 = 50$ and $8 \times 6 = 48$.
Total: 98 m^2 .

**PRACTICE 4**

Split the figure into a parallelogram and triangle. Find each area and the total.

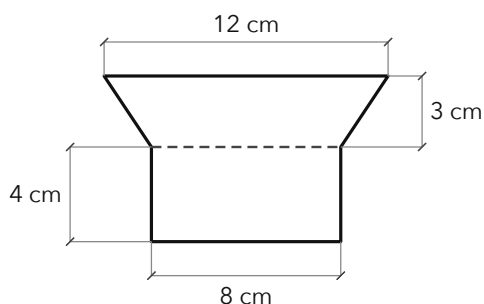
Parallelogram: $13 \times 9 = 117$; **triangle:** $13 \times 7 \div 2 = 45.5$. **Total:** 162.5 cm^2 .



PRACTICE 5

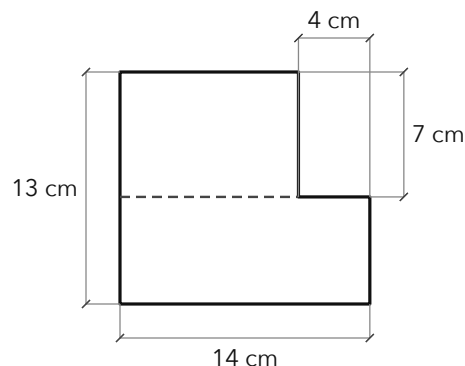
Split the figure into a rectangle and trapezoid.
Find each area and the total.

Rectangle: $8 \times 4 = 32$; **trapezoid:** $(8 + 12) \times 3 \div 2 = 30$. **Total:** 62 cm^2 .



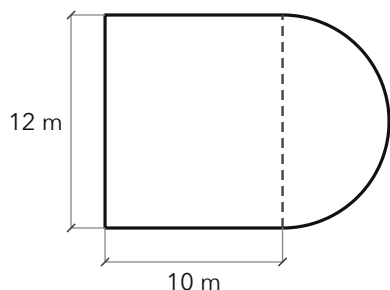
APPLY IT 1

154 cm^2 Use the 14 cm by 13 cm outer rectangle. Subtract the 4 cm by 7 cm missing rectangle.



APPLY IT 2

$120 + 18\pi \text{ m}^2$ The rectangle has area 120 m^2 . The semicircle has radius 6 m, so its area is $18\pi \text{ m}^2$.



CHALLENGE

$7 \times 17 + 6 \times 10 + 6 \times 17 = 119 + 60 + 102 = 281 \text{ m}^2$. **Check:** $19 \times 17 - 6 \times 7 = 281 \text{ m}^2$.

Accept equivalent exact forms, including 162.5 cm^2 for $325/2 \text{ cm}^2$. Keep answers with π in exact form. 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.

