

Shape Area Strategies

Split, rearrange, and measure flat shapes.

GRADE 6 • 6.GSR.5.1

6.GSR.5.1 "Explore area as a measurable attribute of triangles, quadrilaterals, and other polygons conceptually by composing or decomposing into rectangles, triangles, and other shapes. Find the area of these geometric figures to solve problems."

NAME _____

DATE _____

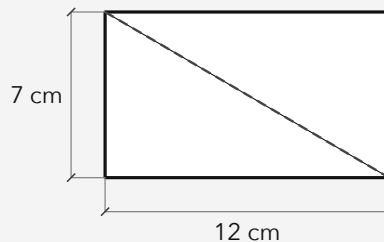
You will need: Pencil; Ruler

BUILD AREA FROM PARTS

Area tells how much flat space is inside a shape. A rectangle or parallelogram has area $\text{base} \times \text{height}$, and a triangle has area $\frac{1}{2} \times \text{base} \times \text{perpendicular height}$. Split an L shape or another polygon into rectangles and triangles, find each area, then add. 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

Two congruent right triangles make the rectangle shown. Find the area of one triangle.

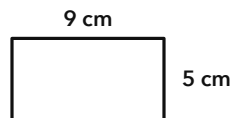


1. The rectangle has area $12 \times 7 = 84$ square centimeters.
2. Its diagonal divides it into two congruent triangles with equal areas.
3. One triangle has area $84 \div 2 = 42$ square centimeters.

Answer: 42 cm²

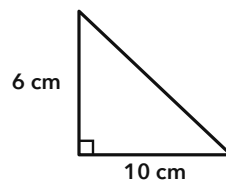
PRACTICE 6 problems

- 1** Find the area of the rectangle shown.



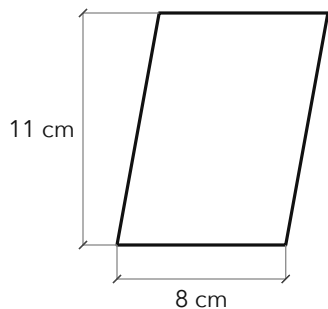
ANSWER _____

- 2** Find the area of the right triangle shown.



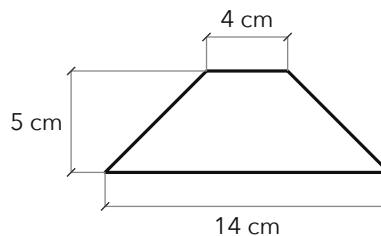
ANSWER _____

- 3** Draw a cut that lets you rearrange this parallelogram into a rectangle. Find its area.



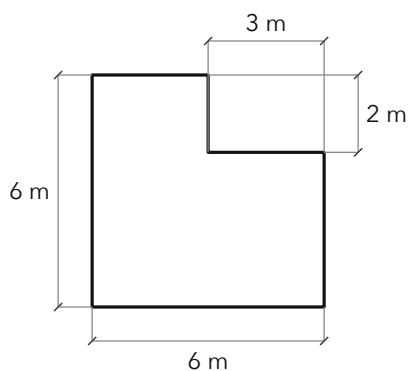
ANSWER _____

- 4** Split the trapezoid into a rectangle and triangles. Find its area.



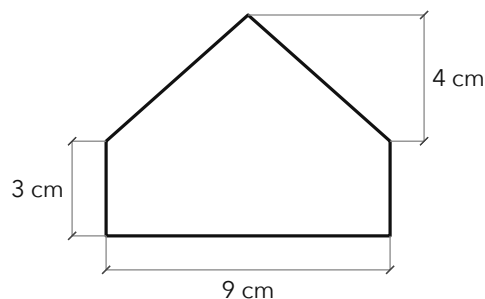
ANSWER _____

- 5** Draw a line to split the L-shaped floor into two rectangles. Find its area.



ANSWER _____

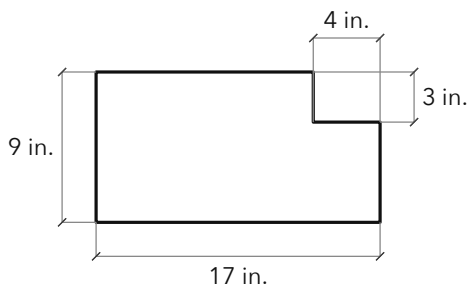
- 6** Draw a line to split the pentagon into a rectangle and triangle. Find its total area.



ANSWER _____

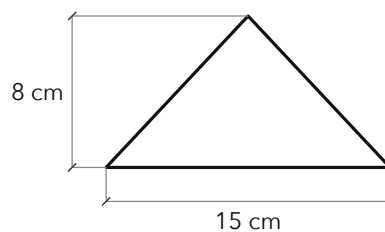
APPLY IT Show your work

- 1** A gaming club cuts a banner in the shape shown. What is the area of the banner?



CALCULATION AND ANSWER

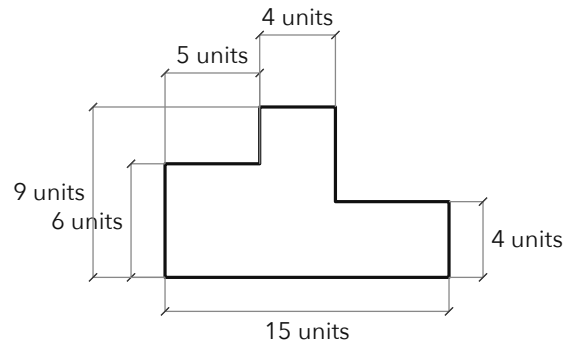
- 2** A student makes the triangular patch shown. How much fabric does it cover? Show a calculation.



CALCULATION AND ANSWER

CHALLENGE One step up

Find the area of the polygon shown. Explain how you split the shape into rectangles.



WORK SPACE AND ANSWER

PRACTICE 1

Find the area of the rectangle shown.

45 cm²

PRACTICE 2

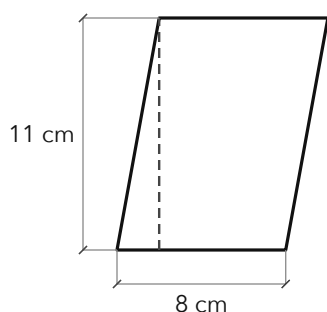
Find the area of the right triangle shown.

30 cm²

PRACTICE 3

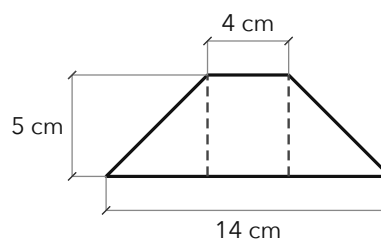
Draw a cut that lets you rearrange this parallelogram into a rectangle. Find its area.

88 cm². Cut off the left triangle and move it to the right to make an 8 cm by 11 cm rectangle.

**PRACTICE 4**

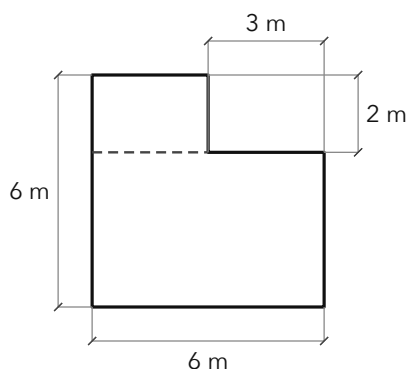
Split the trapezoid into a rectangle and triangles. Find its area.

45 cm²: rectangle $4 \times 5 = 20$; the two triangles together have area $(14 - 4) \times 5 \div 2 = 25$. Add $20 + 25$.

**PRACTICE 5**

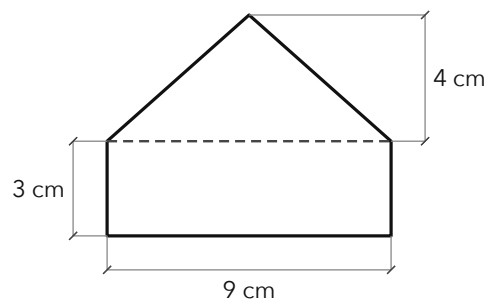
Draw a line to split the L-shaped floor into two rectangles. Find its area.

30 m²: $6 \times 4 + 3 \times 2$.

**PRACTICE 6**

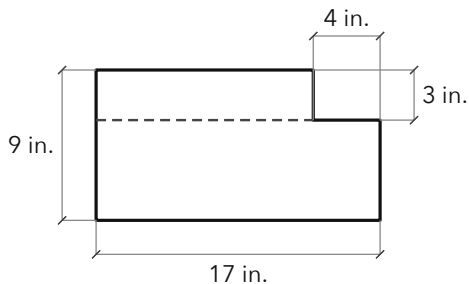
Draw a line to split the pentagon into a rectangle and triangle. Find its total area.

45 cm²: $9 \times 3 + 1/2 \times 9 \times 4$.



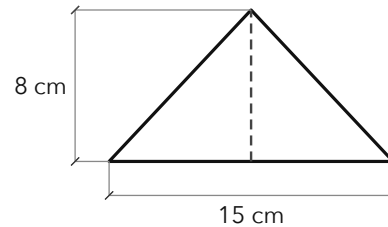
APPLY IT 1

141 in.² View the banner as a 17 in. by 9 in. rectangle with a 4 in. by 3 in. corner removed. Subtract 12 from 153 to get 141 in.².



APPLY IT 2

60 cm² Use the triangle area formula: $\frac{1}{2} \times 15 \times 8 = 60$.



CHALLENGE

90 square units. One way is to split it into rectangles with areas 15×4 , 9×2 , and 4×3 , then add $60 + 18 + 12$.

Accept equivalent unit notation, such as cm² or square centimeters. For the challenge, accept any correct rectangle decomposition that totals 90 square units. 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.

