

Break Apart Areas

Find polygon area by splitting shapes into simpler parts.

GRADE 7 • MA.7.GR.1.2

MA.7.GR.1.2 "Solve mathematical or real-world problems involving the area of polygons or composite figures by decomposing them into triangles or quadrilaterals."

NAME _____

DATE _____

You will need: Pencil; Ruler

SPLIT, FIND, COMBINE

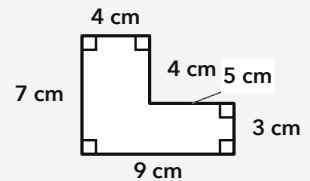
Break a composite figure into rectangles, parallelograms, or triangles. Find the area of each part, then add the areas. If a piece is cut out, subtract its area from the whole.

WORKED EXAMPLE

Find the area of the L-shaped figure.

1. Split the figure into a 9 cm by 3 cm rectangle and a 4 cm by 4 cm rectangle.
2. Find each area: $9 \times 3 = 27 \text{ cm}^2$ and $4 \times 4 = 16 \text{ cm}^2$.
3. Add the parts: $27 + 16 = 43 \text{ cm}^2$.

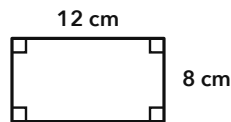
Answer: 43 cm^2



PRACTICE 6 problems

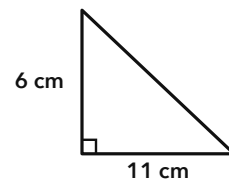
Show your calculation or reasoning. Include units when needed.

- 1** Find the area of the rectangle.



ANSWER _____

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



ANSWER _____

- 3** A trapezoid has bases of 16 cm and 10 cm. Its height is 6 cm. Find its area.

ANSWER _____

- 4** A parallelogram has a base of 13 cm and a perpendicular height of 8 cm. Find its area.

ANSWER _____

- 5** An L-shaped floor is made from a 15 cm by 12 cm rectangle with a 2 cm by 6 cm rectangle cut from one corner. Find the area of the floor.

ANSWER _____

- 6** A display mat is made from two nonoverlapping rectangles. One rectangle is 18 cm by 13 cm. The other is 2 cm by 13 cm and is attached along a 13 cm side. Find the total area.

ANSWER _____

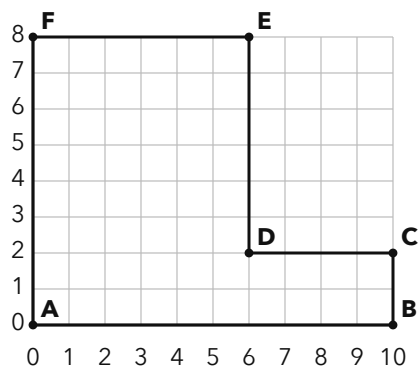
APPLY IT Show your work

- 1** A gaming tournament stage has a rectangular floor that is 20 m by 14 m. A triangular platform is attached to one 14 m side. The triangle has a base of 14 m and a height of 12 m. What is the total floor area?

- 2** Students are painting an L-shaped mural. It starts as a 22 ft by 17 ft rectangle, but an 8 ft by 6 ft corner is left unpainted for a window. What area will be painted?

CHALLENGE One step up

The grid shows an L-shaped polygon. Find its area. Explain how you decomposed the polygon into rectangles.

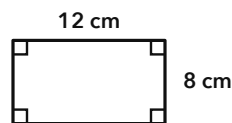
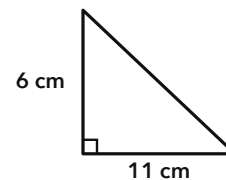


PRACTICE 3**78 cm²****PRACTICE 4****104 cm²****PRACTICE 5****168 cm²****PRACTICE 6****260 cm²****APPLY IT 1**

364 m² Find the rectangle area, $20 \times 14 = 280$ m². Find the triangle area, $14 \times 12 \div 2 = 84$ m², then add.

APPLY IT 2

326 ft² Find the full rectangle area, $22 \times 17 = 374$ ft². Subtract the window area, $8 \times 6 = 48$ ft².

PRACTICE 1**96 cm²****PRACTICE 2****33 cm²****CHALLENGE**

56 square units. Split the polygon into a 10 by 2 rectangle and a 6 by 6 rectangle. Their areas are 20 and 36 square units, so the total is 56 square units.

Accept equivalent decomposition methods and correct square-unit labels. For the challenge, accept any clear explanation that gives a total area of 56 square units.

