LESSON MAKER PRO

# Polygon Grid Quest

*Use coordinates to find area and perimeter.*

**GRADE 6 · 6.GM.A**

**6.GM.A** "Graph polygons in the coordinate plane to solve real-world and mathematical problems."

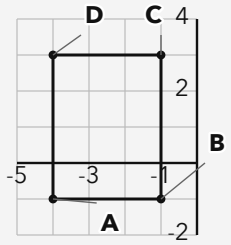
NAME _____ DATE _____

## READ THE GRID

Subtract x-coordinates to find a horizontal side length, or y-coordinates to find a vertical side length. Multiply a rectangle's side lengths for area, or add all its sides for perimeter. A right triangle has half the area of a rectangle with the same base and height, and you can split an L-shaped polygon into rectangles.

## WORKED EXAMPLE

Find the area of the rectangle shown.

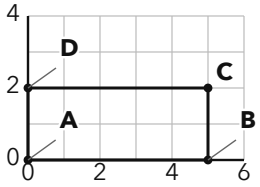



1. From x = -4 to x = -1, the width is 3 units.
2. From y = -1 to y = 3, the height is 4 units.
3. Area = 3 × 4 = 12 square units.

**Answer: 12 square units**

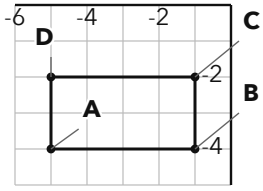
## PRACTICE 6 problems

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



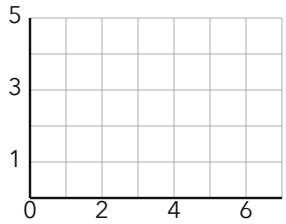

ANSWER _____

**2** Find the perimeter of the rectangle shown.



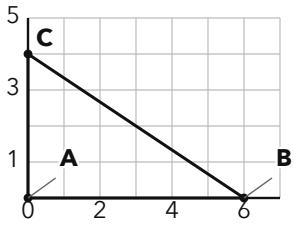

ANSWER _____

**3** Plot A(1, 1), B(6, 1), C(6, 4), and D(1, 4). Connect them in order to make a polygon. What is its area?



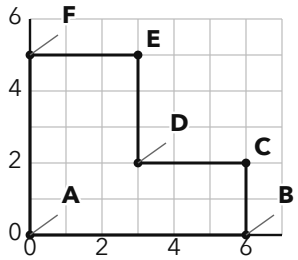

**ANSWER** _____

**4** Find the area of the triangle shown.



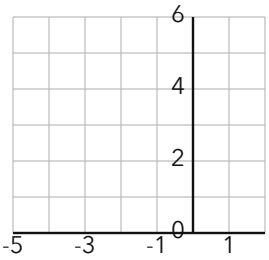

**ANSWER** _____

**5** Split the L-shaped polygon shown into rectangles. Find its total area.




**ANSWER** _____

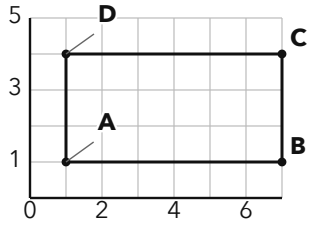
**6** Plot A(-4, 1), B(0, 1), C(0, 5), and D(-4, 5). Connect them in order. Find the polygon's area and perimeter.




**ANSWER** _____

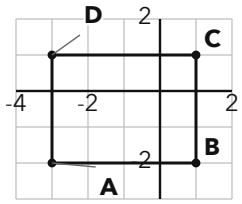
## APPLY IT Show your work

**1** A game designer plots a rectangular bonus zone on this grid. Each grid unit represents 1 game unit. What is the area of the bonus zone?




**ANSWER** _____

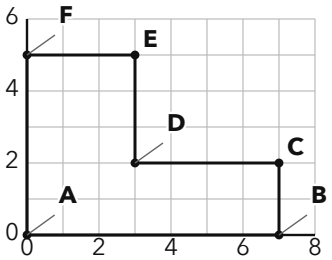
**2** A school fair map shows a rectangular play area. Each grid unit represents 3 meters. How many meters of rope are needed to go once around the play area?




**ANSWER** _____

## CHALLENGE One step up

Find the area and perimeter of the L-shaped polygon shown. Explain how you found the area.




WORK SPACE AND ANSWER

**ANSWER KEY**

# Polygon Grid Quest

**GRADE 6 · 6.GM.A**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | Find the area of the rectangle shown. | **10 square units** |
| 2 | Find the perimeter of the rectangle shown. | **12 units** |
| 3 | Plot A(1, 1), B(6, 1), C(6, 4), and D(1, 4). Connect them in order to make a polygon. What is its area? | **15 square units** |
| 4 | Find the area of the triangle shown. | **12 square units** |
| 5 | Split the L-shaped polygon shown into rectangles. Find its total area. | **21 square units** |
| 6 | Plot A(-4, 1), B(0, 1), C(0, 5), and D(-4, 5). Connect them in order. Find the polygon's area and perimeter. | **Area: 16 square units; perimeter: 16 units** |

## PART 2 · APPLY IT

1. **18 square game units** The side lengths are 6 and 3 game units. Multiply 6 × 3 to get 18 square game units.
2. **42 meters** The side lengths on the grid are 4 and 3 units, so the perimeter is 2 × (4 + 3) = 14 grid units. Multiply 14 by 3 meters per grid unit to get 42 meters.

## CHALLENGE

**Area: 23 square units; perimeter: 24 units. For the area, split the shape into a 7 × 2 rectangle and a 3 × 3 rectangle, then add 14 + 9.**

For L-shaped polygons, accept any correct split into nonoverlapping rectangles or subtraction from an enclosing rectangle. Area answers need square units; perimeter answers need units.