LESSON MAKER PRO

Polygon Paths

Find distance around and space inside coordinate polygons.

GRADE 6 · 6.GM.A.25.c

6.GM.A.25.c "Calculate perimeter and area of a polygon graphed in the coordinate plane (limiting to polygons in which consecutive vertices have the same x-coordinate or the same y-coordinate)."

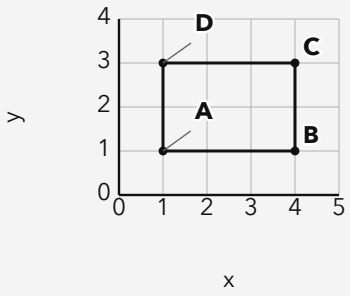
NAME _____ DATE _____

COUNT THE UNITS

For a horizontal side, subtract the x-coordinates of its ends. For a vertical side, subtract the y-coordinates. Add all side lengths for perimeter, and split a polygon into rectangles to find its area.

WORKED EXAMPLE

Find the perimeter and area of the polygon shown.



1. Horizontal sides: 4 − 1 = 3 units each.
2. Vertical sides: 3 − 1 = 2 units each.
3. Perimeter: 3 + 2 + 3 + 2 = 10 units.
4. Area: 3 × 2 = 6 square units.

Answer: Perimeter: 10 units. Area: 6 square units.

PRACTICE 4 problems

1 Find the perimeter of A(1, 1), B(5, 1), C(5, 6), D(1, 6). Connect the vertices in order.

ANSWER _____

2 Find the area of A(2, 2), B(8, 2), C(8, 6), D(2, 6). Connect the vertices in order.

ANSWER _____

3 Find the perimeter and area of A(0, 0), B(7, 0), C(7, 5), D(0, 5). Connect the vertices in order.

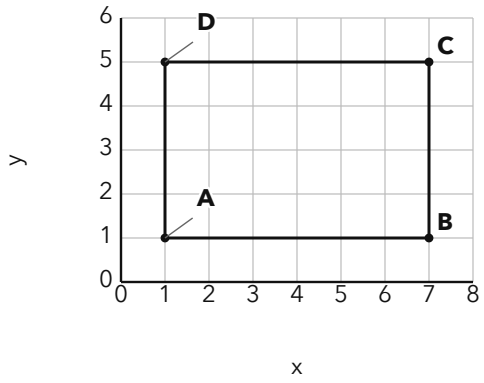
ANSWER _____

4 Find the perimeter and area of A(1, 1), B(7, 1), C(7, 3), D(4, 3), E(4, 5), F(1, 5). Connect the vertices in order.

ANSWER _____

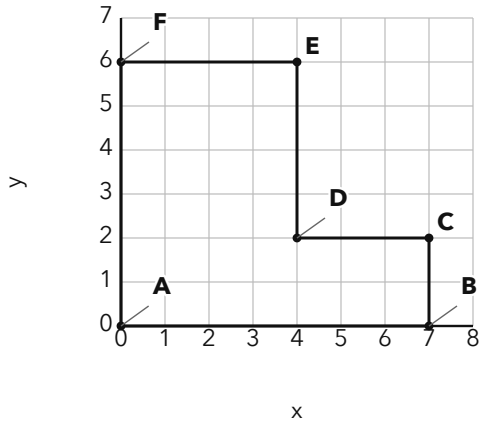
APPLY IT Show your work

1 A gaming club marks a floor space using the polygon shown. Each grid unit is 1 meter. How much floor space is inside it, and how long is its boundary?



ANSWER _____

2 A skate park plans the riding area shown. Each grid unit is 1 meter. Find the area and the length of fencing needed to go around it.



ANSWER _____

CHALLENGE One step up

Connect A(0, 0), B(8, 0), C(8, 2), D(6, 2), E(6, 5), F(0, 5) in order. Find the perimeter and area. Explain how you found the area.

WORK SPACE AND ANSWER

ANSWER KEY

Polygon Paths

GRADE 6 · 6.GM.A.25.c

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the perimeter of A(1, 1), B(5, 1), C(5, 6), D(1, 6). Connect the vertices in order.	**18 units**
2	Find the area of A(2, 2), B(8, 2), C(8, 6), D(2, 6). Connect the vertices in order.	**24 square units**
3	Find the perimeter and area of A(0, 0), B(7, 0), C(7, 5), D(0, 5). Connect the vertices in order.	**Perimeter: 24 units. Area: 35 square units.**
4	Find the perimeter and area of A(1, 1), B(7, 1), C(7, 3), D(4, 3), E(4, 5), F(1, 5). Connect the vertices in order.	**Perimeter: 20 units. Area: 18 square units.**

PART 2 · APPLY IT

1. **24 square meters of floor space; 20 meters of boundary** The sides are 6 meters and 4 meters. Area is 6 × 4 = 24 square meters, and perimeter is 6 + 4 + 6 + 4 = 20 meters.
2. **Area: 30 square meters. Fencing: 26 meters.** Subtract the missing 3-by-4 rectangle from the 7-by-6 rectangle: 42 − 12 = 30 square meters. Add the six side lengths: 7 + 2 + 3 + 4 + 4 + 6 = 26 meters.

CHALLENGE

Perimeter: 26 units. Area: 34 square units. A rectangle from (0, 0) to (8, 5) has area 40 square units; subtract the missing 2-by-3 rectangle, which has area 6 square units.

Accept correct area calculations that split the L-shaped polygons into two rectangles instead of subtracting a missing rectangle. Perimeter answers use units; area answers use square units.