ALBERT

Name _____ Date _____

Perimeter and Area on the Coordinate Plane Worksheet

Geometry · Common Core HSG-GPE.B.7

> Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

Practice

Builds the skill step by step.

1. A rectangle has vertices (0, 0), (5, 0), (5, 3) and (0, 3). What is its perimeter?

2. What is the area of that rectangle (vertices (0, 0), (5, 0), (5, 3), (0, 3))?

3. A triangle has vertices (0, 0), (6, 0) and (0, 8). What is its perimeter?

4. What is the area of that triangle (vertices (0, 0), (6, 0), (0, 8))?

5. A triangle has vertices (1, 1), (7, 1) and (4, 5). What is its area?

6. One side of a square runs from (1, 2) to (4, 6). What is the area of the square?

7. A triangle has vertices (0, 0), (4, 0) and (4, 3). What is its perimeter?

8. A rectangle has vertices $(-2, -1)$, $(4, -1)$, $(4, 3)$ and $(-2, 3)$. What is its area?

9. What is the distance between $(-1, -1)$ and $(5, 7)$?

10. A triangle has vertices $(-3, 0)$, $(5, 0)$ and $(1, 6)$. What is its area?

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On Level

Grade-level practice.

1. A triangle has vertices (0, 0), (6, 0) and (3, 4). What is its perimeter?

2. A rectangle has vertices (1, 1), (4, 4), (2, 6) and (−1, 3). What is its area?

3. What is the perimeter of that rectangle (vertices (1, 1), (4, 4), (2, 6), (−1, 3))? Give the exact value.

4. A triangle has vertices (1, 2), (5, 2) and (3, 8). What is its perimeter, rounded to the nearest tenth?

5. A triangle has vertices (0, 0), (5, 2) and (1, 4). What is its area?

6. Quadrilateral (0, 0), (4, 0), (6, 3), (2, 3) is a parallelogram. Split it into two triangles with a diagonal. What is its area?

7. A triangle has vertices (2, 1), (8, 1) and (x, 5). For which values of x is its area 12?

   A. only x = 5

   B. only x = 2 or x = 8

   C. no value of x

   D. any value of x

8. A right triangle has vertices (1, 1), (1, 7) and (9, 1). What is its perimeter?

9. A square has a diagonal from (0, 0) to (6, 6). What is its area?

10. A rectangle has vertices (0, 0), (6, 0), (6, y) and (0, y) with y > 0. Its area is 42. What is y?

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Challenge

Multi-step and word problems that stretch it.

1. A triangle has vertices $(-2, -1)$, $(4, 2)$ and $(1, 5)$. What is its area?

2. A triangle has vertices $(0, 0)$, $(3, 4)$ and $(8, 4)$. What is its perimeter, rounded to the nearest tenth?

3. A pentagon has vertices $(0, 0)$, $(4, 0)$, $(6, 3)$, $(2, 6)$ and $(-2, 3)$. What is its area?

4. A triangle has vertices $(0, 0)$, $(k, 0)$ and $(0, 6)$ with $k > 0$. Its area is 27. What is k?

5. A quadrilateral has vertices $(1, 2)$, $(5, 5)$, $(2, 9)$ and $(-2, 6)$. Each side is 5 long. What is its perimeter?

6. A triangle has vertices $A(0, 0)$, $B(8, 0)$ and $C(2, 6)$. How long is the altitude from B to side AC, rounded to the nearest tenth?

7. Which expression gives the distance between (x_1, y_1) and (x_2, y_2)?

   A. $(x_2 - x_1)^2 + (y_2 - y_1)^2$

   B. $(x_2 - x_1) + (y_2 - y_1)$

   C. $\sqrt{((x_2 - x_1)^2 + (y_2 - y_1)^2)}$

   D. $\sqrt{((x_2 + x_1)^2 + (y_2 + y_1)^2)}$

8. A garden is the rectangle (0, 0), (30, 0), (30, 20), (0, 20), in feet. Fencing costs 3 dollars per foot. How much does it cost to fence the garden?

9. A triangle has vertices (0, 0), (5, 5) and (5, −5). What is its area?

10. Explain how to find the area of the triangle with vertices (1, 1), (7, 3) and (3, 7) by enclosing it in a rectangle.