Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

UNIT 8 LESSON 8

|  |  |
| --- | --- |
| AIM: | SWBAT solve area problems on coordinate grids |

**THINK ABOUT IT!**

Gerard created a map of his back yard using the coordinate grid below. Each unit represents 1 foot. He is planning on putting a rectangular garden in with the corners of the garden located at (-5, 3), (-5, -6), (5, -6), and (5, 3). How big will his garden be, in square feet?



Key Point

|  |
| --- |
| Area can be found on the ­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by identifying dimensions and applying a formula. |

**Interaction with New Material**

*Ex. 1)* The coordinate grid shown represents a map of a park. A portion of the park is going to be upgraded with new playground equipment and flowers. The portion of the park that is to receive upgrades has the following coordinates – Point A (-4, 4); Point B (0, 4); Point C (3, -2); and Point D (-4, -2).



Part A: Each unit of the grid represents 1 yard. How many square yards of the park will receive upgrades?

Part B: The triangular area between points A, B, and C will be decorated with red, white, and blue flowers. of triangle ABC will have red flowers. How much area, in square yards, will have red flowers?

**PARTNER PRACTICE**

* **CFS for top quality work**
  + Problem is annotated
  + Figure is drawn accurately and labeled
  + Formula is written
  + All calculations are shown, neatly organized, and labeled
  + Answer statement is provided

|  |
| --- |
| *Bachelor Level* |

1. Draw and label shape ABCD on the graph using the points A (-5,5), B(-5,-3), C(4,-3) and D(4,5).



What is the area of rectangle ABCD?

Area: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the perimeter of rectangle ABCD?

Perimeter: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| *Master Level* |

1. On the coordinate plane, the line segments AB and BC are graphed. Plot and label point D to form parallelogram ABCD.



A

B

C

Alonso wants to paint parallelogram ABCD with two colors. He wants to paint of the parallelogram in red and the rest in blue. How many square units will he paint in each color?

Red: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Blue: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**INDEPENDENT PRACTICE**

* **CFS for top quality work**
  + Problem is annotated
  + Figure is drawn accurately and labeled
  + Formula is written
  + All calculations are shown, neatly organized, and labeled
  + Answer statement is provided

|  |
| --- |
| *Bachelor Level* |

1. Plot the points D(-4, 5), E(-4, -6) and F(3, -6) on the coordinate grid below. Connect the points to form a geometric figure.



What figure did you draw?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How do you know?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the area of the figure?

Area: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Plot the points H(-6, 0), J(0, 0) and K(-3, -6) on the coordinate grid below. Connect the points to form a geometric figure.

Turn to the next page ->



What figure did you draw?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the area of the figure?

Area: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| *Master Level* |

1. Plot the points H(-3, -5), L(4, -5) and M(4, 2) on the coordinate grid below. Plot a fourth point to represent vertex N of a trapezoid.



What is the area of the trapezoid you formed?

Area: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. On the coordinate plane, the line segment AB is graphed. Plot and label point C to form an obtuse triangle with a height of 6 units.



A

B

What is the area of triangle ABC?

Area: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Janet is creating a new pool in her back yard. She drew a sketch of the base of the pool on the coordinate grid below placing the vertices at (-4, 7), (8, 7), (5, -2), and

(-7, -2).

40% of the pool will have a depth of 12 feet and the rest of the pool will have a depth of 6 feet. How much of the square footage of the base of the pool will be at a depth of 12 feet and how much will be at a depth of 6 feet?

|  |
| --- |
| *PhD Level* |

1. Given the line segment AB, create a trapezoid that has an area of 48 square units.



A

B

* **CFS for top quality work**
  + Problem is annotated
  + Figure is drawn accurately and labeled
  + Formula is written
  + All calculations are shown, neatly organized, and labeled
  + Answer statement is provided

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**EXIT TICKET**

|  |  |  |  |
| --- | --- | --- | --- |
| Self-assessment | I mastered the learning objective today. | I am almost there. | Need more practice and feedback. |
| Teacher feedback | You mastered the learning objective today. | You are almost there. | You need more practice and feedback. |

1. Plot the following points and connect them in order to draw figure ABCD on the coordinate grid. Label each vertex.

A (-5, 5), B (-5, -3), C (4, -3), D (0, 5).

Find the area of ABCD.



**Turn to the next page ->**

1. The points A (-2, 4) and B (0, -2) are two vertices of an obtuse triangle and are labeled below. Which set of coordinates for point C represents the third vertex for an obtuse triangle with an area of 12 square units?

**A**

**B**

* 1. (2, -2)
  2. (-4, -2)
  3. (4, -2)
  4. (-2, 4)

* **CFS for top quality work**
  + Problem is annotated
  + Figure is drawn accurately and labeled
  + Formula is written
  + All calculations are shown, neatly organized, and labeled
  + Answer statement is provided