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

UNIT 8 LESSON 8

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| --- | --- |
| 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

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| --- |
| 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. $\frac{1}{3}$ 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: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| *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 $\frac{2}{5}$ 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?

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

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

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

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: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| *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?

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| --- |
| *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**

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| --- | --- | --- | --- |
| 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