Name _____ Date _____

## Polygons in the Coordinate Plane - Step-by-Step Lesson

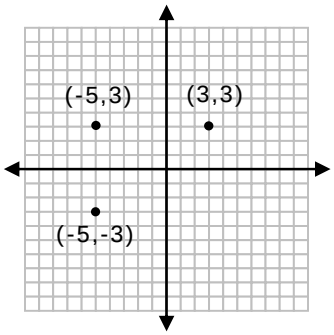
If the points on the coordinate plane below are the three vertices of a rectangle;

What are the coordinates of the fourth vertex?

How do you know?

What are the length and width of the rectangle?

Find the area and perimeter of the rectangle?




**Explanation:**

We know that;

A positive number tells us to move right or up.

A negative number tells us to move left or down.

Step 1) First we will recognize the distance along the x- axis between the points (-5, 3) and (3,3). We know that -5 is l-5l or 5 units to the of 0 and 3 is l3l or 3 units to the right of zero. Then we will get that the two points are a total of 8 units apart along the x-axis.

Step 2) The absolute value of the position of y indicates the total distance that the y components are apart. l-3l + l3l = 6

So the length is 8 and the width is 6.

Name _____ Date _____

Step 3) The fourth vertex would be 8 units away on the x coordinate from point (-5, -3). 8 + -5 = 3. So the point would be at (3, -3).

Step 4) Area of the rectangle = $l \times w$

$= 8 \times 6 = 48 \text{ units}^2$

Step 5) The perimeter of the rectangle = $2(l + w)$

$= 2(8 + 6)$

$= 2 \times 14 = 28 \text{ units}$

Name _____ Date _____

## Polygons in the Coordinate Plane - Guided Lesson

Complete the following problems:

1) On a map, the museum is situated at (-5, 3), the nursing college is located at (3, -5) and the community hall is positioned at (3, 3). Represent the locations as points on a coordinate grid with a unit of 1 mile.

a) What is the distance from the museum to the community hall? What is the distance from the community hall to the nursing college? How do you know?

b) What shape connects the three locations? The city council is planning to place a hospital in this area. How large is the area as planned?

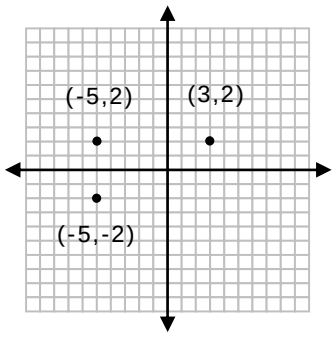
2) If the points on the coordinate plane below are the three vertices of a rectangle;

What are the coordinates of the fourth vertex?

How do you know?

What are the length and width of the rectangle?

Find the area and perimeter of the rectangle?




3) On a map the Central school is situated at (-1, 1). The Legislative Assembly is located at (4, -1) and Central Park is positioned at (4, 1). Represent the locations as points on a coordinate grid with a unit of 1 mile.

a) What is the distance from the Central School to the Central Park? What is the distance from the Central Park to the Legislative Assembly? How do you know?

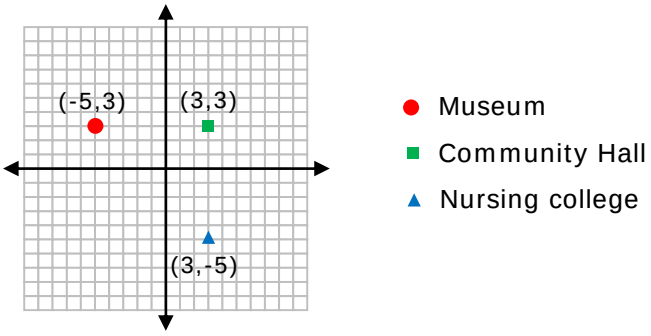
b) What shape connects all locations? The city council is planning to place a community hall in this area. How large is the area for the hall?

Name _____ Date _____

## Polygons in the Coordinate Plane - Guided Lesson Explanation

### Explanation#1

Step 1) Lets make a graph for our convenience.




a) The distance from the Museum to the Community Hall is 8 miles. The coordinate of these buildings have the same y coordinate. The distance between ( |-5| + 3) x coordinate is 8 miles.

b) If you draw an imaginary line between the line points, it would be a triangle. The three locations form a triangle.

Area of triangle = 1/2 x b x h = 1/2 x 8 miles x 8 miles

= 16 miles$^2$

### Explanation#2

We know that;

A positive number tells us to move right or up.

A negative number tells us to move left or down.

If the shape forms a rectangle the x and y coordinates of two other points will align with our point.

Step 1) First we will recognize the distance along the x- axis between the point (-5, 2) and (3,2). We know that -5 is l-5l or 5 units to the of 0 and 2 is l3l or 3 units to the right of zero. Then we will get the two points are total 8 units apart along the x-axis. The absolute value expression is l-5l + l3l.

Name _____ Date _____

Step 2) We can find the y axis by finding the distance between points (-5, 2) and (-5, -2). It would be the distance between 2 and -2. That would equal |2| + |-2|

Step 3) The fourth vertex would be (3, -2).

So the length is 8 and the width is 4.

Step 4) Area of the rectangle = $l \times b$

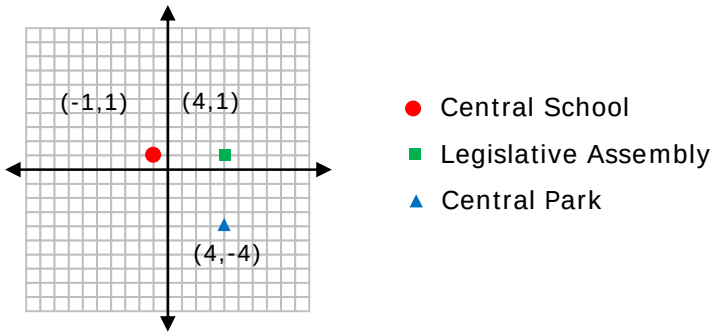
$= 7 \times 4 = 28 \text{ units}^2$

Step 5) The perimeter of the rectangle = $2(l + w) = 2(7 + 4)$

$= 2 \times 11 = 22$ units

**Explanation#3**

I made a graph for our convenience. You should too!




Step 2) The distance from the Central School to the Legislative Assembly is from (-1, 1) to (4, 1). They share the same y coordinate, so the difference in position between the x coordinates with tell us the distance.

|-1| + |4| = 5 5 miles

These buildings have the same y coordinate. The distance between the x coordinates is 5.

Step 3) The three locations form a triangle.

Area of triangle = 1/2 x b x h = 1/2 x 5 x 5

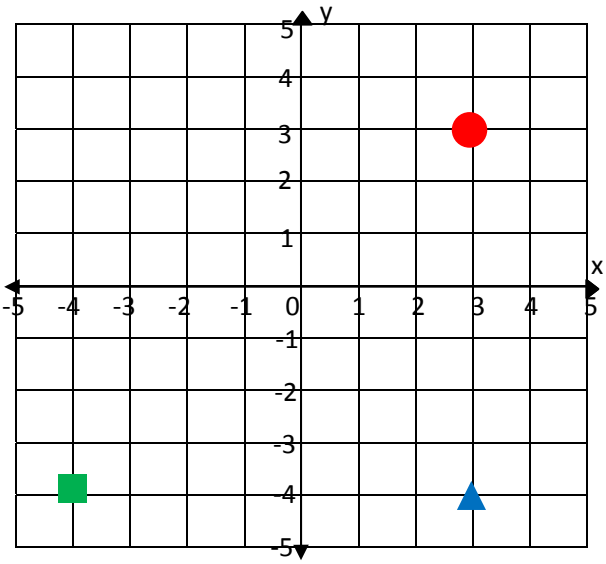
$= 12.5 \text{ miles}^2$

Name _____ Date _____

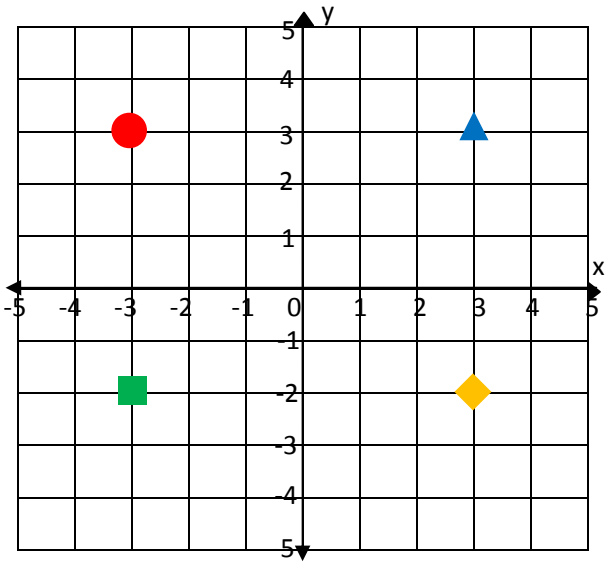
# Polygons in the Coordinate Plane - Independent Practice Worksheet

Complete all the problems.

1) Which shape do these three icons form? Write the area of formed shape if 1 unit = 1 mile.

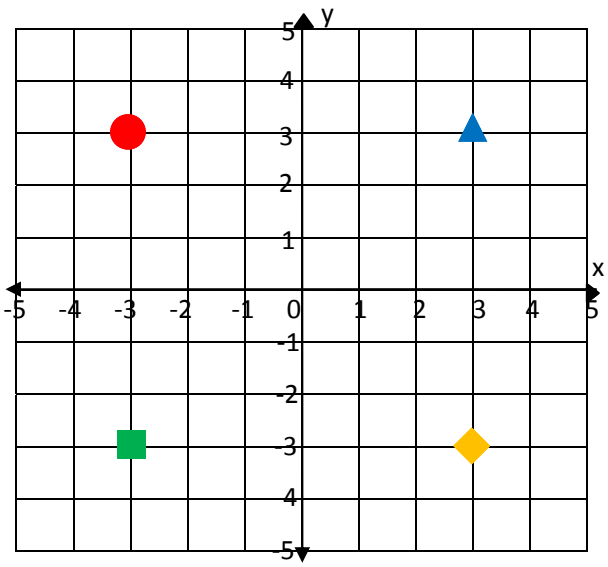



2) Which shape do these four icons form? Write the area of formed shape if 1 unit = 1 mile.

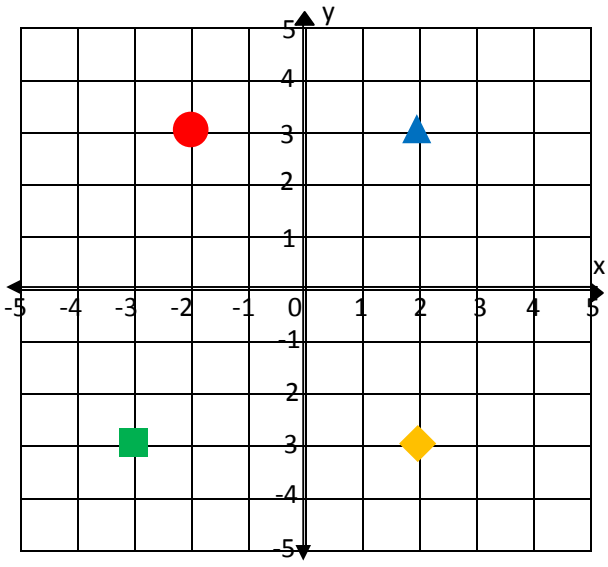


Name _____ Date _____

3) Which shape do these four icons form? Write the area of formed shape if 1 unit = 1 mile.

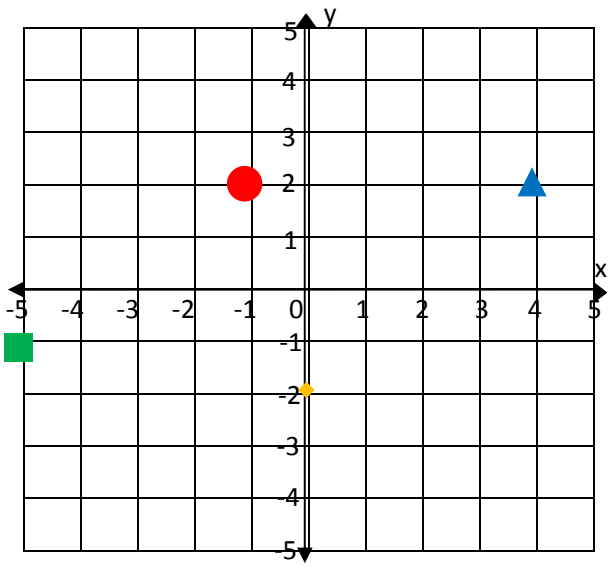



4) Which shape do these four icons form? Write the area of formed shape if 1 unit = 1 mile.



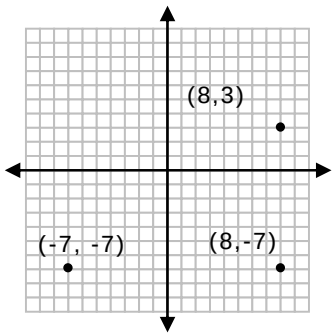
Name _____ Date _____

5) Which shape do these four icons form? Write the area of formed shape if 1 unit = 1 mile.



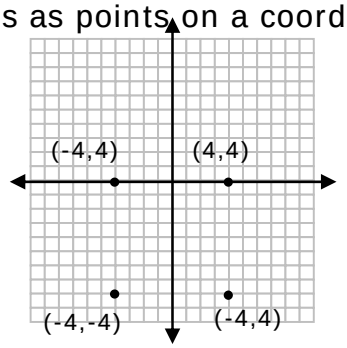

6) If the points on the coordinate plane below are the three vertices of a rectangle;

What are the coordinates of the fourth vertex? Represent the locations as points on a coordinate grid with a unit of 1 mile.



Name _____ Date _____

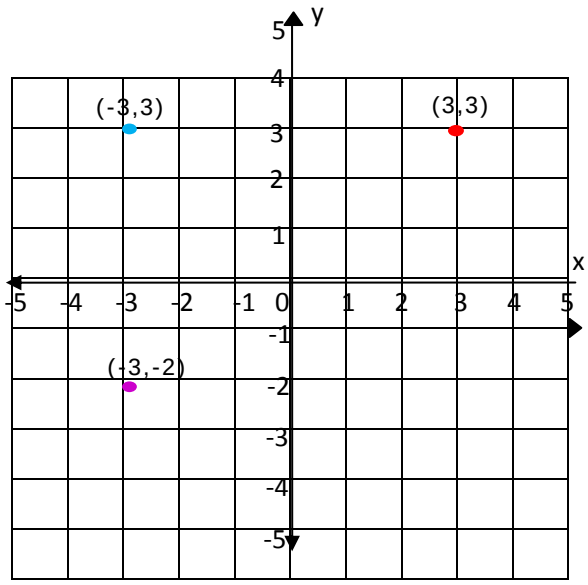
7) What is the area of this square, which is shown in this graph? Represent the locations as points on a coordinate grid with a unit of 1 mile.




8) On a map, John's school is located at (4, -5), the Mc Donald's is located at (4, 3) and his home is situated at (3,-1). Represent the locations as points on a coordinate grid with a unit of 1 km.

a) What is the distance from the John's school to the Mc Donald's?
b) What shape connects the three locations from? Find the area of figure.

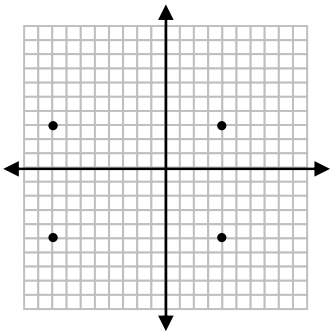
9) Jade hides his brother's toy car by dividing it three parts. He hid the tires at (-3, -2), steering wheel at (-3, 3), and seats at (3, 3). He asked his brother to find the car parts by providing clues. Represent the locations as points on a coordinate grid with a unit of 1 m.
a) What is the distance from the steering wheel to the seats?
b) What shape do these locations form? Find the area of figure?



Name _____ Date _____

10) If the points on the coordinate plane below make a true rectangle;

Find the perimeter of the rectangle? Represent the locations as points on a coordinate grid with a unit of 1 mile.

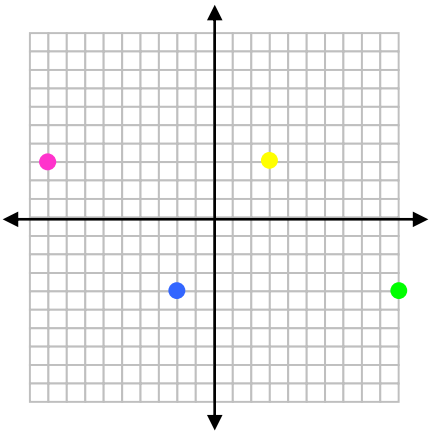


Name _____ Date _____

## Polygons in the Coordinate Plane - Matching Worksheet

Match the problems to their answers. Write the letter of the answer that matches the problem.

Represent the locations as points on a coordinate grid with a unit of 1 mile.



_____ 1. What shape might you make if you connect the points on the grid?

a. 343 miles

_____ 2. How many miles are there between the blue and green points?

b. Parallelogram

_____ 3. Find the area of the shape formed?

c. 38 miles

_____ 4. Find the perimeter of the shape formed?

d. 12 miles

_____ 5. Suppose we modify the shape and make it a cube. What will be the volume of the cube if all sides = 7 miles.

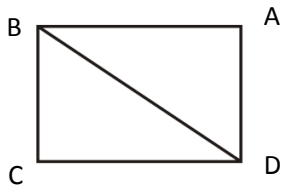
e. 84 mile$^2$

Name: _____ Date _____

Topic : Area of Polygons and Circles- Worksheet 1

Find the area of the given figures

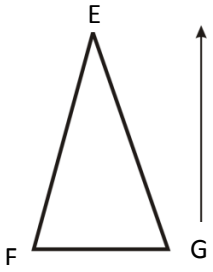
**1.**




CD= 3

BD= 6

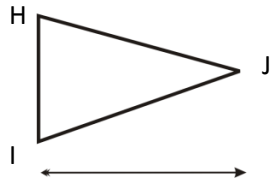
**2.**




FG = 9,

Arrow length 8.

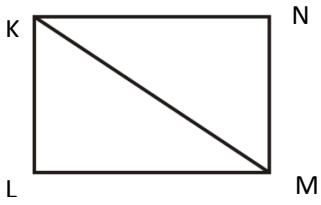
**3.**




HI=9,

Arrow length 12.

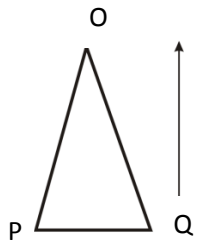
**4.**




KN= 14

KM= 15

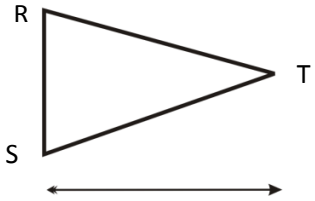
**5.**




PQ= 12,

Arrow length 4.

**6.**




RS=8,

Arrow length 18.

**7.** There is a garden in the form of a trapezoid whose sum of parallel sides are 20 and the height is 10. Find out the area of the garden?

**8.** There is a square with sides measuring 25. We have to make small squares with sides of 5. How many small squares can be formed from the bigger square?

**9.** The area of the circle is 154 sq units. Find the diameter of the circle.

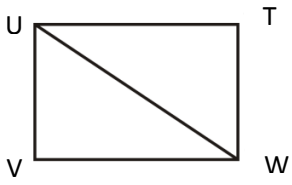
**10.** The area of the bigger square is 289 sq units. Find the size of one side of the bigger square.

Name: _____ Date _____

Topic : Area of Polygons and Circles- Worksheet 2

Find the area of the given figures

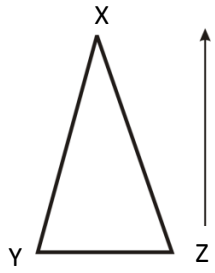
**1.**




VW= 6

UW= 10

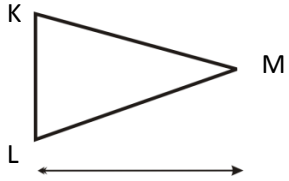
**2.**




YZ = 5,

Arrow length 4.

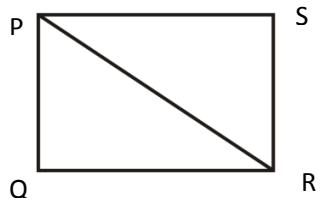
**3.**




KL=12,

Arrow length 16.

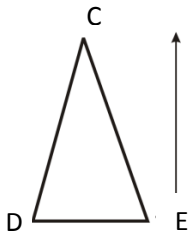
**4.**




PS= 8

PR= 10

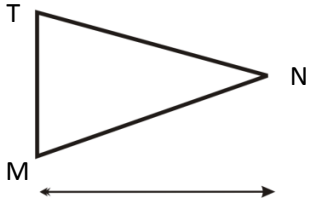
**5.**




DE= 8,

Arrow length 5.

**6.**




TM=12,

Arrow length 18.

**7.** There is a garden in the form of a trapezoid whose sum of parallel sides are 30 and the height is 15. Find out the area of the garden?

**8.** There is a square with a side size of 30 and we have to make smaller squares with sides the size of 5. How many small squares can be formed from the bigger square?

**9.** The area of the circle is 132 sq units. Find the diameter of the circle.

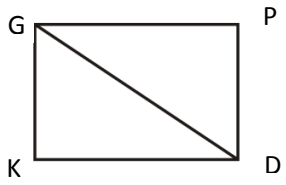
**10.** The area of the bigger square is 324 sq units. Find out the side size of the square side.

Name: _____ Date _____

Topic : Area of Polygons and Circles- Worksheet 3

Find the area of the given figures

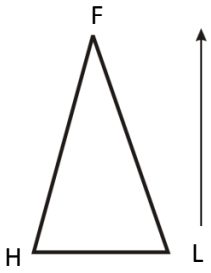
**1.**




KD= 4

GD= 8

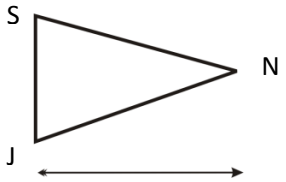
**2.**




HL = 6,

Arrow length 5.

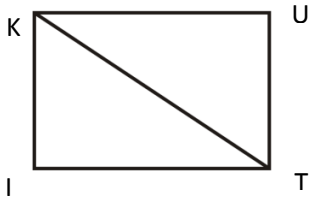
**3.**




SJ=15,

Arrow length 20.

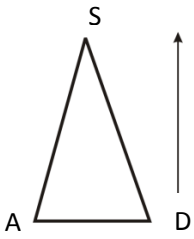
**4.**




KU= 9

KT= 12

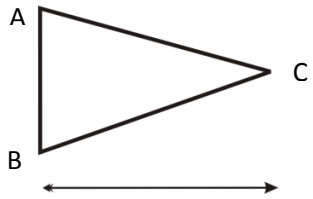
**5.**




AD= 18,

Arrow length 6.

**6.**




AB=9,

Arrow length 17.

**7.** There is a garden in the form of a trapezoid whose sum of parallel sides are 50 and the height is 25. Find out the area of the garden?

**8.** There is a square with sides of the length 16. We have to make smaller squares with sides the length of 4. How many smaller squares can be formed from the bigger square?

**9.** The area of the circle is 198 sq units. Find the diameter of the circle.

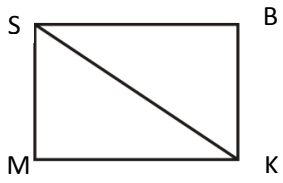
**10.** The area of the bigger square is 361 sq units. Find out the length of each side.

Name: _____ Date _____

Topic : Area of Polygons and Circles- Worksheet 4

Find the area of the given figures

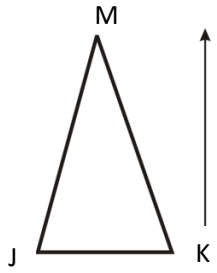
**1.**




MK= 5

SK= 9

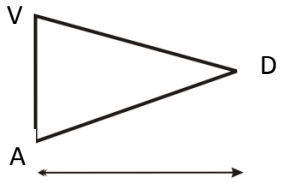
**2.**




JK = 9,

Arrow length 7.

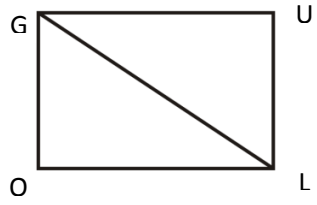
**3.**




SJ=14,

Arrow length 18.

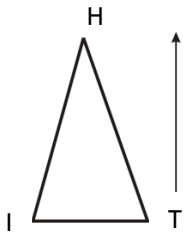
**4.**




GU= 8

GL= 11

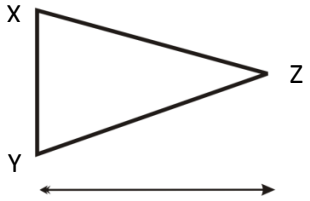
**5.**




IT= 16,

Arrow length 5.

**6.**




XY=7,

Arrow length 16.

**7.** There is a garden in the form of a trapezoid whose sum of parallel sides are 46 and the height is 23. Find out the area of the garden?

**8.** There is a square with a side length of 18. We have to make small squares with sides that have a length of 3. How many smaller squares can be formed from the bigger square?

**9.** The area of a circle is 286 sq units. Find the diameter of the circle.

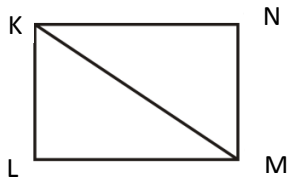
**10.** The area of the bigger square is 225 sq units. Find the side length for the bigger square.

Name: _____ Date _____

Topic : Area of Polygons and Circles- Worksheet 5

Find the area of the given figures

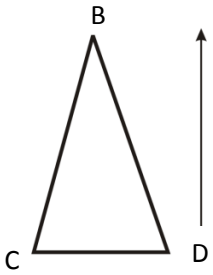
**1.**




LM= 7

KM= 11

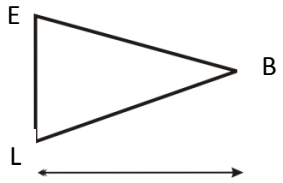
**2.**




CD = 7,

Arrow length 5.

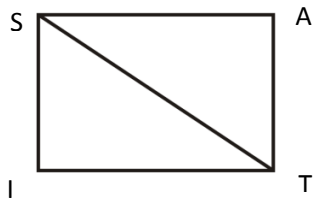
**3.**




EL=13,

Arrow length 19.

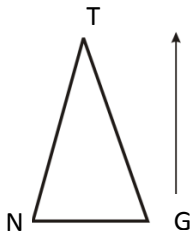
**4.**




SA= 12

ST= 16

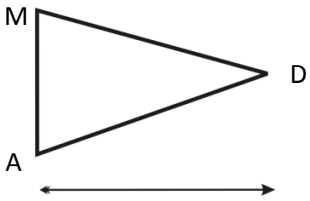
**5.**




NG= 14,

Arrow length 6.

**6.**




MD=13,

Arrow length 21.

**7.** There is a garden in the form of a trapezoid whose sum of parallel sides are 36 and the height is 18. Find out the area of the garden?

**8.** There is a square that is 225 sq units. We have to make small squares with side lengths of 4. How many squares can be formed from the bigger square?

**9.** The area of a circle is 132 sq units. Find the diameter of the circle.

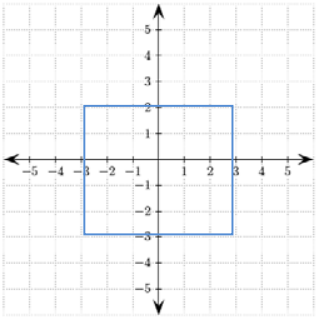
**10.** The area of the bigger square is 441 sq units. Find out the side length of the bigger square.

Name: _____ Date _____

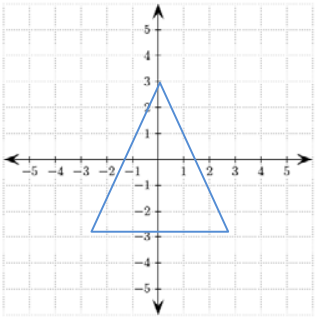
Topic : Area on a Coordinate Grid - Worksheet 1

Find the area of given figures.

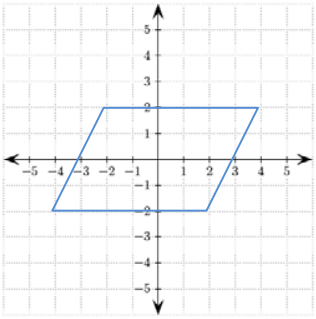
**1.**



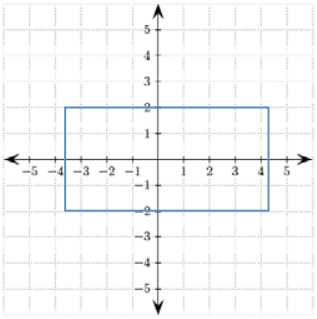
**2.**



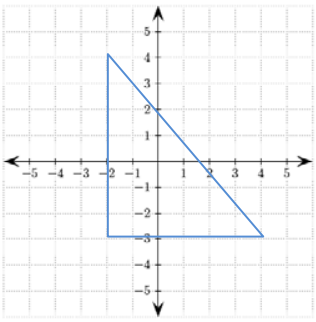
**3.**



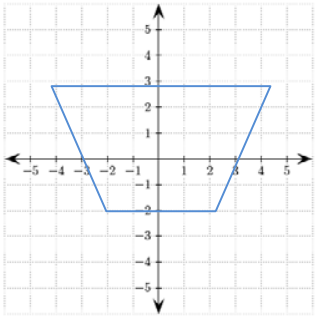
**4.**



**5.**



**6.**

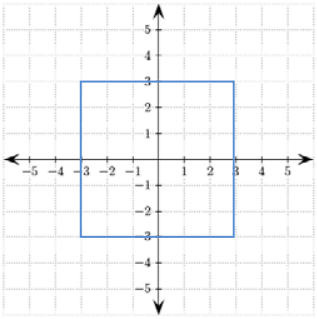


Name: _____ Date _____

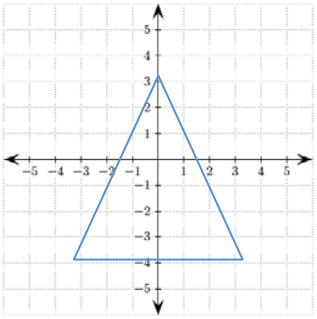
Topic : Area on a Coordinate Grid - Worksheet 2

Find the area of given figures.

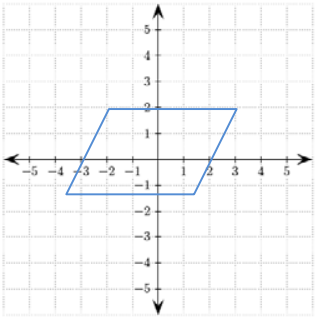
**1.**



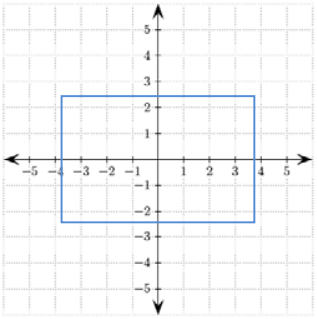
**2.**



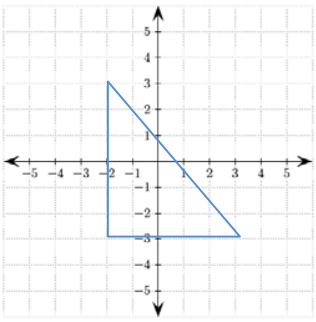
**3.**



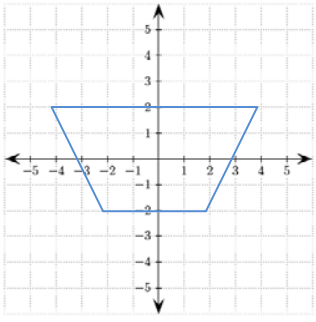
**4.**



**5.**



**6.**

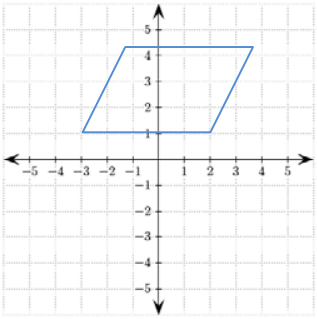


Name: _____ Date _____

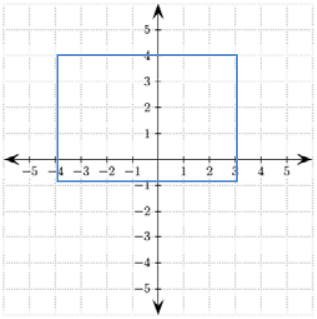
Topic : Area on a Coordinate Grid - Worksheet 3

Find the area of given figures.

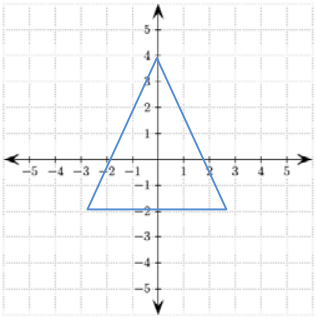
**1.**



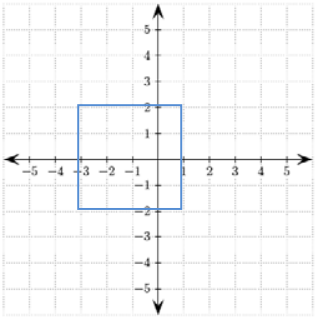
**2.**



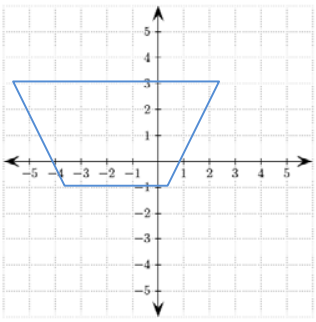
**3.**



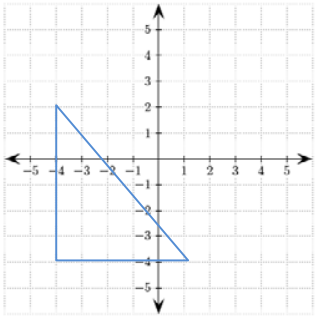
**4.**



**5.**



**6.**

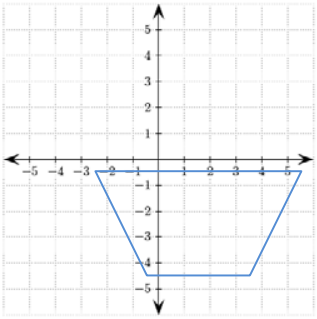


Name: _____ Date _____

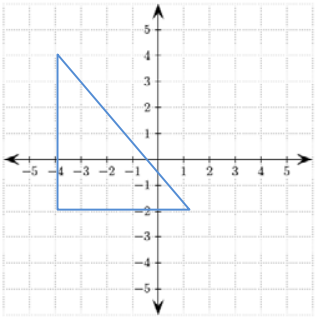
Topic : Area on a Coordinate Grid - Worksheet 4

Find the area of given figures.

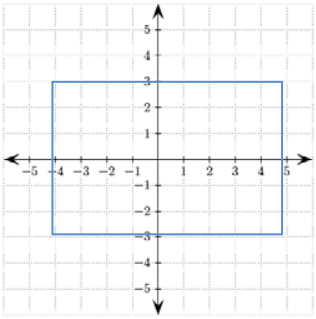
**1.**



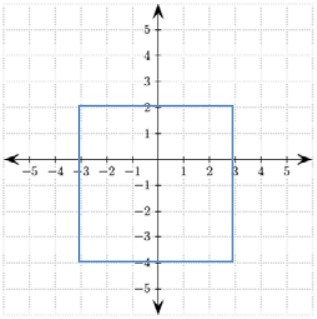
**2.**



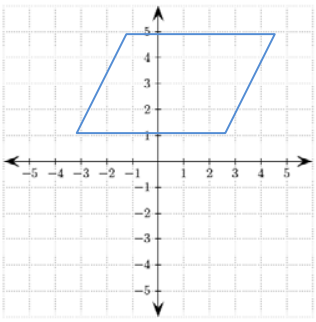
**3.**



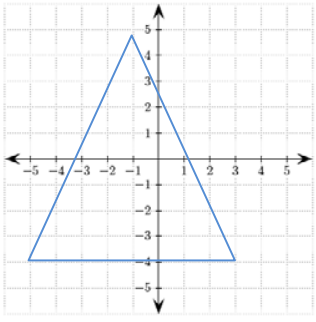
**4.**



**5.**



**6.**

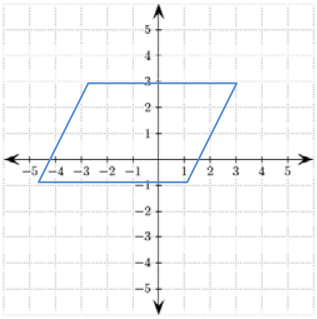


Name: _____ Date _____

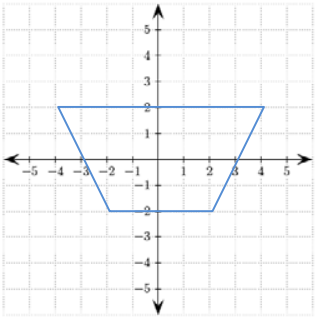
Topic : Area on a Coordinate Grid - Worksheet 5

Find the area of given figures.

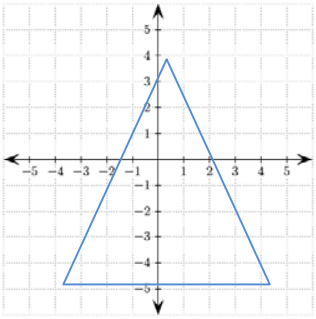
**1.**



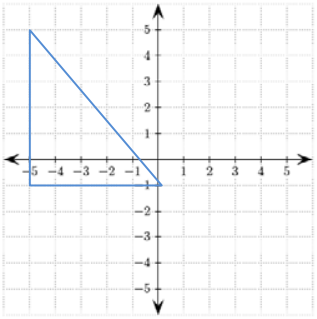
**2.**



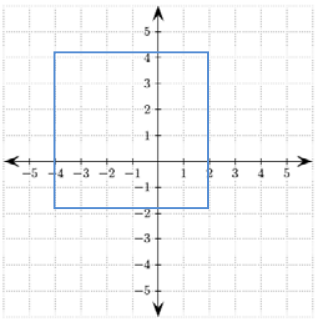
**3.**



**4.**



**5.**



**6.**