

Math 9 – Unit 7 Coordinate Geometry

Name: Mr. Hagen

Lesson #1: The Coordinate Plane

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In this chapter and the next, we will learn a lot of new vocabulary. You need to become intimate with these words, so let's first define them, then draw/label them!

Coordinate Plane

- is a grid, made up of two number lines which cross at their zeros.

Quadrants

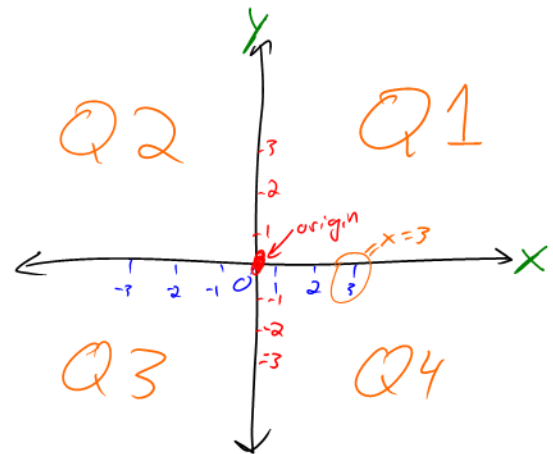
- the corners of the coordinate plane

x-axis

- the horizontal number line

y-axis

- the vertical number line



x-coordinate

- the value on the x-axis
→ "a number"

y-coordinate

- the value/number on the y-axis

Ordered Pair

- is an x and y coordinate together, which represent a location or point on the coordinate plane.

Origin

- the ordered pair
 $(0, 0)$

All points are (x, y)
ex: $(2, -3)$

or plot
Example 1: Graph the following points on the given grid.

A (3, 4)

B (-1, 4)

C (4, -2)

D (-5, -4)

E (2, 5)

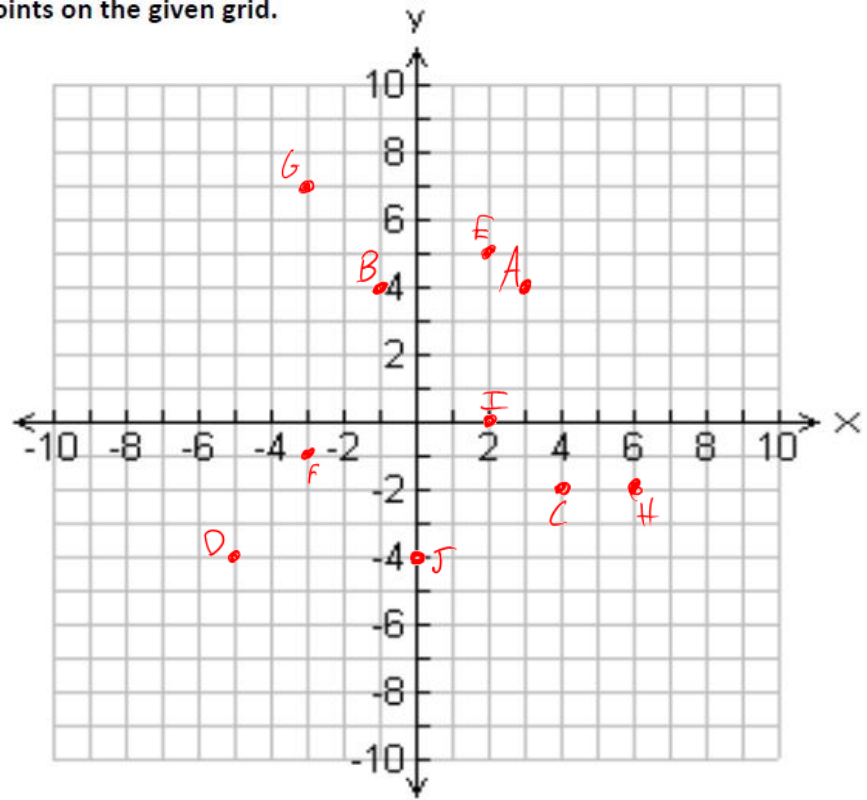
F (-3, -1)

G (-3, 7)

H (6, -2)

I (2, 0)

J (0, -4)



Example 2: Calculate the area of a triangle with vertices at A(-5, -3), B(3, -3), and C(3, 8)

Step 1: Plot the points and connect the points to form a triangle

Step 2: Find the length of the base and height

$$b = 8$$

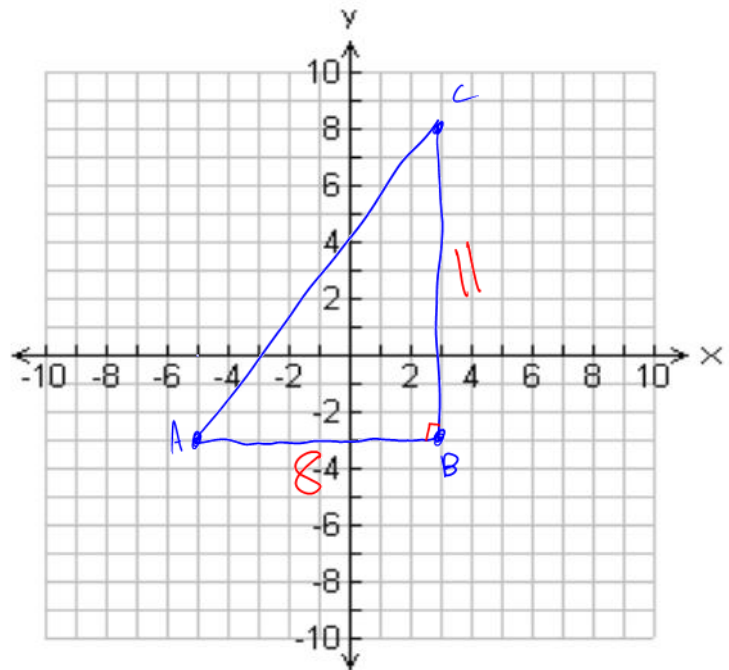
$$h = 11$$

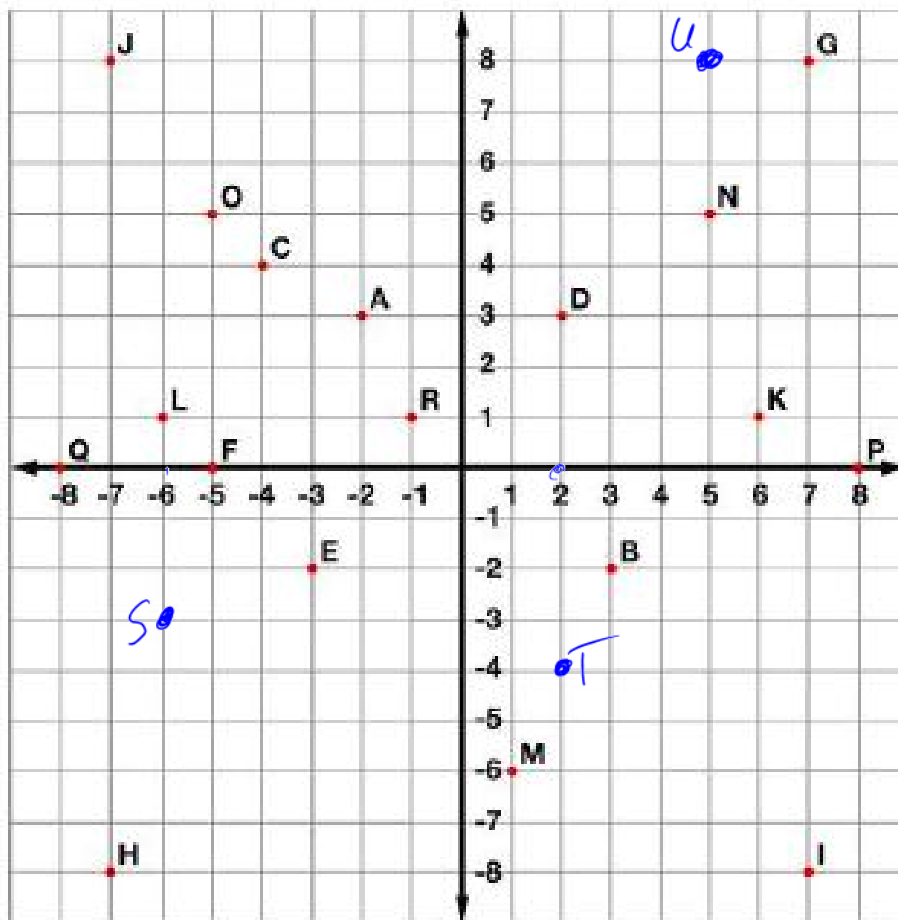
$$A = \frac{bh}{2}$$

$$A = \frac{(8)(11)}{2}$$

$$A = 44 \text{ u}^2$$

Step 3: Calculate the area





Tell what point is located at each ordered pair.

- | | | | | | |
|---------------|----------|--------------|----------|--------------|----------|
| 1. $(3, -2)$ | <u>B</u> | 2. $(2, 3)$ | <u>D</u> | 3. $(-5, 5)$ | <u>O</u> |
| 4. $(-7, -8)$ | <u>H</u> | 5. $(-4, 4)$ | <u>C</u> | 6. $(-5, 0)$ | <u>F</u> |

Write the ordered pair for each given point. $\rightarrow (x, y)$

- | | | | | | |
|-------|------------------------------|-------|-----------------------------|-------|----------------------------|
| 7. E | <u>$(-3, -2)$</u> | 8. M | <u>$(1, -6)$</u> | 9. P | <u>$(8, 0)$</u> |
| 10. G | <u>$(7, 8)$</u> | 11. Q | <u>$(-8, 0)$</u> | 12. N | <u>$(5, 5)$</u> |

Plot the following points on the coordinate grid.

- | | | |
|------------------|-----------------|----------------|
| 13. S $(-6, -3)$ | 14. T $(2, -4)$ | 15. U $(5, 8)$ |
| <u>Q3</u> | <u>Q4</u> | <u>Q1</u> |