

Lesson #1: The Coordinate Plane

Learning Goal: We are learning how to use the coordinate grid system.

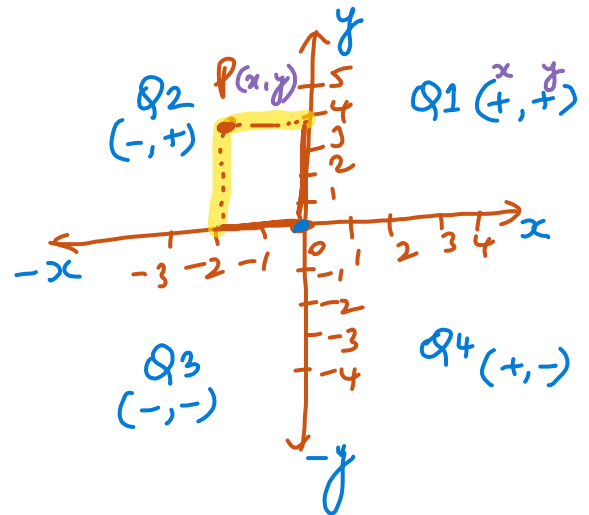
In this chapter and the next, we will learn a lot of new vocabulary. You need to become intimate with these words, so let's first define them, then draw/label them!

Coordinate Plane
CARTESIAN PLANE:

It is a grid made up of two perpendicular Number Lines, thus, helping to find the exact location of any point on the grid.

Quadrants

The 4 sections into which the Coordinate plane is split by the two number lines.



x-axis

Horizontal Number line

y-axis

Vertical Number line

x-coordinate

distance of a point from y-axis

y-coordinate

distance of the point from x-axis

Ordered Pair

Position matters

$P(x, y)$

Origin

$O(0, 0)$

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

x y
A (3, 4)

B (-1, 4)

C (4, -2)

D (-5, -4)

E (2, 5)

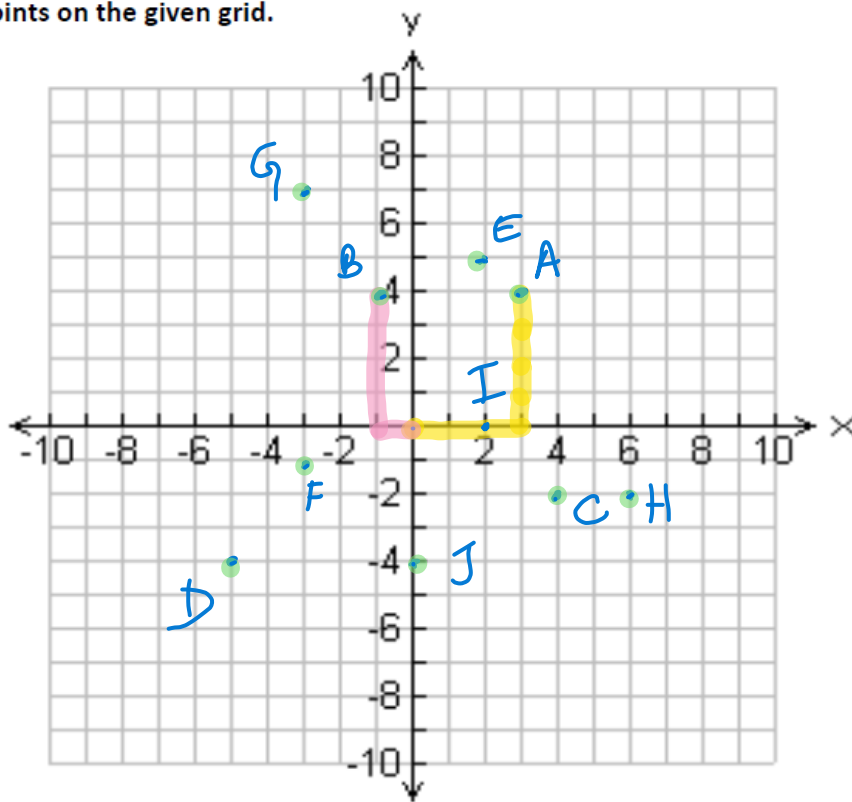
F (-3, -1)

G (-3, 7)

H (6, -2)

I (2, 0)

J (0, -4)



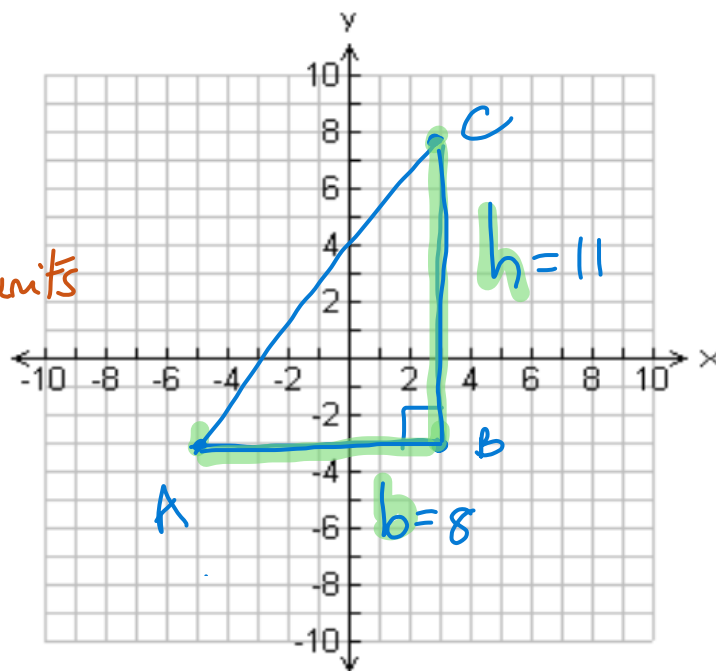
Example 2: Calculate the area of a triangle with vertices at A(-5, -3), B(3, -3), and C(3, 8)

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

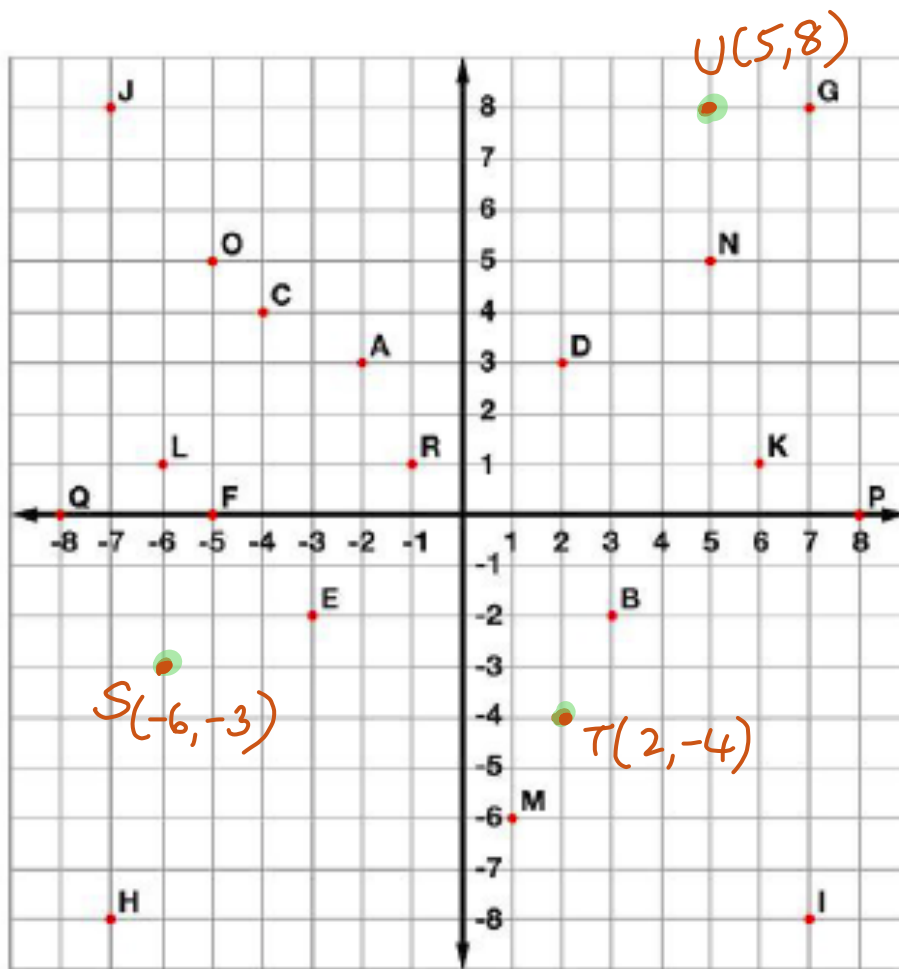
Step 2: Find the length of the base and height

$$\text{Area} = \frac{bh}{2}$$

$$\therefore A = \frac{(8)(11)}{2} = \frac{88}{2} = 44 \text{ sq. units}$$



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.

- | | | | | | |
|-------|------------------------------|-------|-----------------------------|-------|----------------------------|
| 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 $(5, 8)$ |
|------------------|-----------------|----------------|

Success Criteria:

- I can define the important key terms that are used in the coordinate grid system
- I can tell the difference between the "x" and "y" coordinates in an ordered pair
- I can find an ordered pair on a coordinate grid