

## Unit 6 Focus

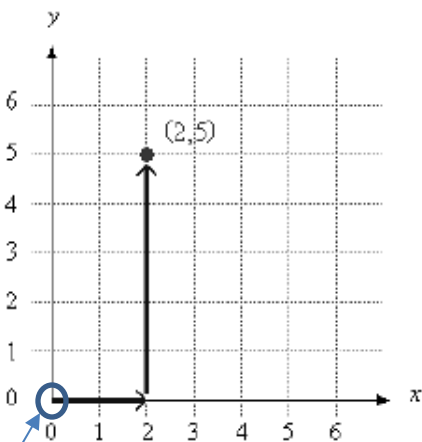
In this unit students are introduced to the coordinate plane, applying their knowledge of the number line to understand the relationship of the two dimensions of a point in the coordinate plane. Students connect their work with numerical patterns to form ordered pairs and graph these ordered pairs in the first quadrant of a coordinate plane. Students use this model to make sense of and explain the relationships within the numerical patterns they generate. This prepares students for future work with functions and proportional relationships in the middle grades.



### UNIT 6 GOALS:

- Recognize that any point in the plane can be described in terms of its location using an ordered pair in which the first number corresponds to the x value and the second number corresponds to the y value.
- Locate the point on a coordinate plane that corresponds to a given ordered pair.
- Interpret the location of a point on a coordinate plane by writing its corresponding ordered pair.

### Plotting a Coordinate Pair



**Directions:** How would you plot the point (2,5) on the coordinate grid?

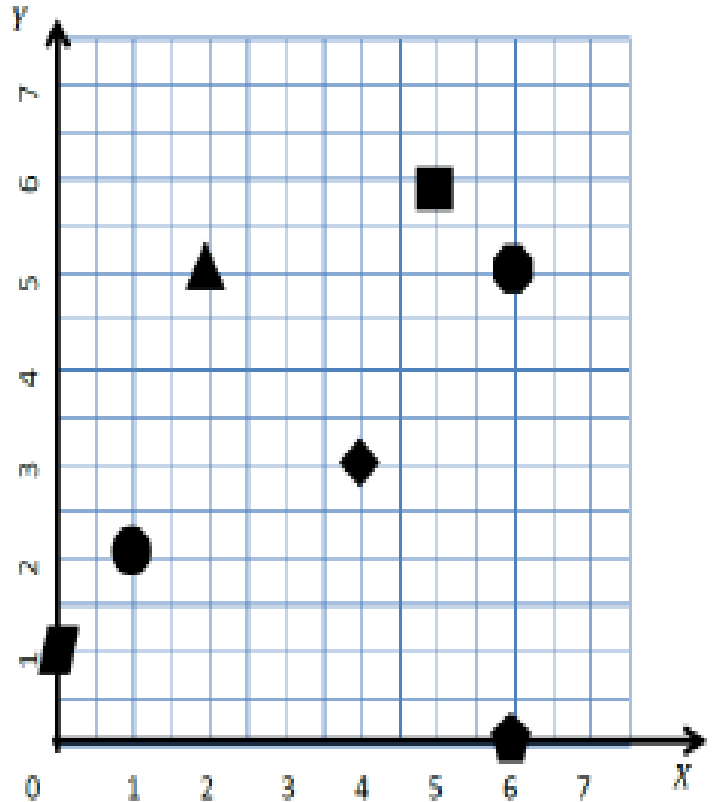
Start at the origin and move 2 units over on the x-axis.

Then move 5 units up on the y-axis.

(2, 5)  
↓ ↓  
(x, y)

Origin is point (0,0).

Use the coordinate plane to answer.



**Directions:** Tell the shape at each location.

**a. What shape is 2 units from the y-axis and explain how you determined your answer? I determined that each space is  $\frac{1}{2}$  unit from y-axis so I had to move 4 spaces to equal 2 units and the triangle is at that location.**

**b. Which shape has an x-coordinate of 0? The parallelogram has an x-coordinate of 0.**

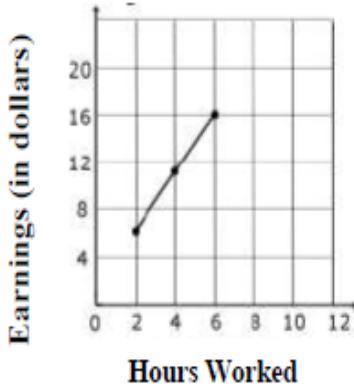
**c. Which shape is 4 units from the y-axis and 3 units from the x-axis? The rhombus has the coordinate pair of (4, 3) since it is 4 units from the y-axis and 3 units from the x-axis.**

## Interpret coordinate values of points

Example:

Use the graph below to determine how much money Jack makes after working exactly 9 hours.

Earnings and Hours Worked



*Using two given rules students will describe the pattern, plot the points on a coordinate plane, create the line graphs, interpret the data and explain the relationships*

**Example:**

Rule 1 – Terri bikes 4 miles a day

Rule 2 – Sam bikes 2 miles a day

How many miles will they have biked after 5 days?

**Describe the pattern:**

Since Terri rides his bike 4 miles each day, and Sam rides 2 miles each day, Terri's mileage is always greater.

Terri's miles are also always twice as much as Sam's miles.

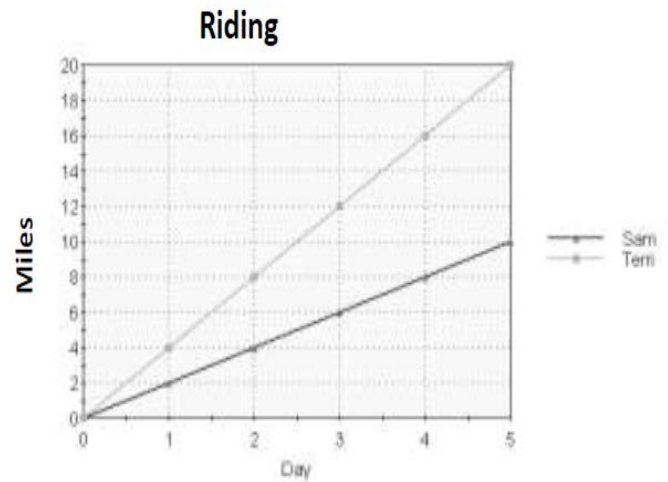
Before they start, both Sam and Terri have no miles.

They both go bike riding each day. Sam rides 2 miles each day. Terri rides 4 miles each day.

How many miles have they ridden after each of the five days? Make a graph of the number of miles.

Days	Sam's Total Number of Miles	Terri's Total Number of Miles
0	0	0
1	2	4
2	4	8
3	6	12
4	8	16
5	10	20

**Plot the points on a coordinate plane & create the line graph:**



**Interpret the data:**

The graph shows that Terri always has more miles than Sam. Terri's mileage increases at a higher rate since she rides 4 miles every day.

Sam only rides 2 miles every day, so his number of miles increases at a smaller rate than Terri.

**Explain the relationships:**

The lines become increasingly further apart.

The two lines will never intersect; there will not be a day in which Terri and Sam have the same total of miles.

Students should realize that there is a relationship between the number of days and the number of miles each person has total. Terri's mileage can be found by multiplying 4 by the number of days ( $4n$ , with  $n$  being the number of days). Sam's mileage can be found by multiplying 2 by the number of days ( $2n$ , with  $n$  being the number of days).