## Unit 7 Lesson 14: Distances on a Coordinate Plane

### 1 Coordinate Patterns (Warm up)

#### Student Task Statement

Plot points in your assigned quadrant and label them with their coordinates.



### 2 Signs of Numbers in Coordinates

#### Student Task Statement

1. Write the coordinates of each point.
* 
*
* $A=$
* $B=$
* $C=$
* $D=$
* $E=$
1. Answer these questions for each pair of points.
	* How are the coordinates the same? How are they different?
	* How far away are they from the y-axis? To the left or to the right of it?
	* How far away are they from the x-axis? Above or below it?
	1. $A$ and $B$
	2. $B$ and $D$
	3. $A$ and $D$
* Pause here for a class discussion.
1. Point $F$ has the same coordinates as point $C$, except its $y$-coordinate has the opposite sign.
	1. Plot point $F$ on the coordinate plane and label it with its coordinates.
	2. How far away are $F$ and $C$ from the $x$-axis?
	3. What is the distance between $F$ and $C$?
2. Point $G$ has the same coordinates as point $E$, except its $x$-coordinate has the opposite sign.
	1. Plot point $G$ on the coordinate plane and label it with its coordinates.
	2. How far away are $G$ and $E$ from the $y$-axis?
	3. What is the distance between $G$ and $E$?
3. Point $H$ has the same coordinates as point $B$, except its *both* coordinates have the opposite sign. In which quadrant is point $H$?

### 3 Finding Distances on a Coordinate Plane

#### Student Task Statement

1. Label each point with its coordinates.
* 
1. Find the distance between each of the following pairs of points.
	1. Point $B$ and $C$
	2. Point $D$ and $B$
	3. Point $D$ and $E$
2. Which of the points are 5 units from $\left(-1.5,-3\right)$?
3. Which of the points are 2 units from $\left(0.5,-4.5\right)$?
4. Plot a point that is both 2.5 units from $A$ and 9 units from $E$. Label that point $M$ and write down its coordinates.



© CC BY Open Up Resources. Adaptations CC BY IM.