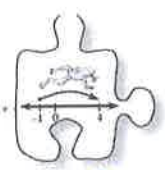
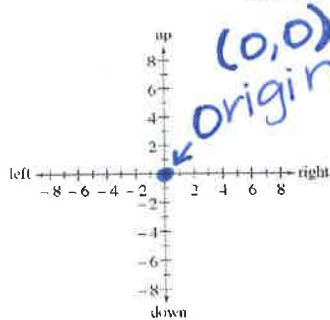


### 3.2.4 What is the length?

Length on a Coordinate Graph



You have worked with movement along a one-dimensional number line, but what if the movement is **two-dimensional**? This kind of movement can be represented on a **coordinate graph** where the center (0,0) is called the **origin**.



3-37. Elliot is adding a two-dimensional

element to his game. He now wants his frogs to hop both left and right, as well as up and down. All frogs start at the origin, (0, 0). Left/right jumps will be the first number. Up/down jumps will be the second number. For example, the **coordinates** (4, -3) mean to start at (0, 0) and go right 4, then down 3.

Use the resource page to answer the questions below.

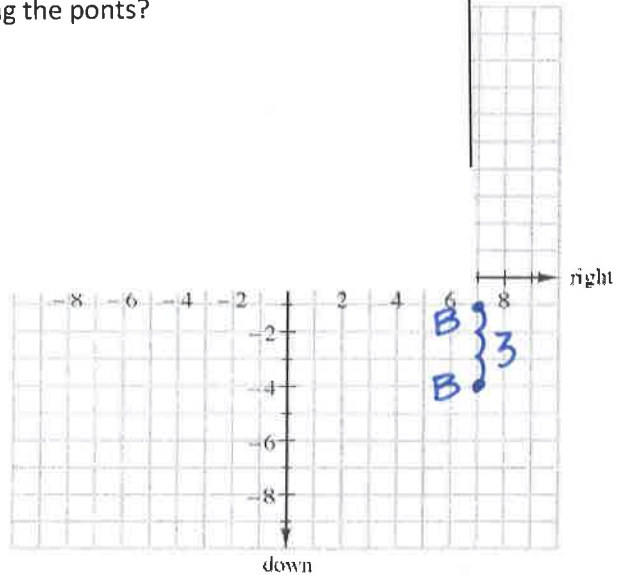
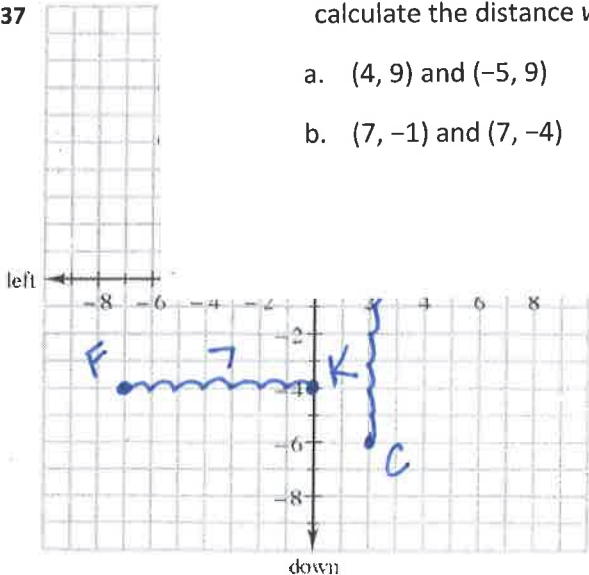
- Frog A hopped 3 units to the right and 4 units up. Frog B hopped 5 units to the left and 4 units up. Name the coordinates where each frog landed. How far apart were they?
- Frog C hopped 2 units to the right and 6 units down. Frog D hopped 2 units to the right and 7 units up. Name the coordinates where each frog landed. How far apart were they?
- Flibbitz lands at (-7, -4) while Kermie lands at (0, -4). How far apart are Flibbitz and Kermie?

3-126

3-38. For each part below, use the resource page to plot the points and find the distance between the two points. Can you find a way to calculate the distance *without* plotting the points?

- (4, 9) and (-5, 9)
- (7, -1) and (7, -4)

3-37



u.  
u.

the distance between 4 and -5 is 9.  
 $|4 - (-5)| = 9$   
the distance between 4 and -4 is 3.  
 $|4 - (-4)| = 3$

Resource Page

3-12



3-1

a.  
b.



Key Idea:  $(x, y)$

The first number goes left or right

The second number goes up or down.

x ←————→

↑ y  
↓

3-123

a) A (3, 4) B(-5, 4) The distance is \_\_\_ u.

b) C(2, -6) D(2, 7) The distance is \_\_\_ u.

c) They are \_\_\_ units apart.

3-126

a) The distance is \_\_\_ units.  $(4, 9)$   
 $(-5, 9)$

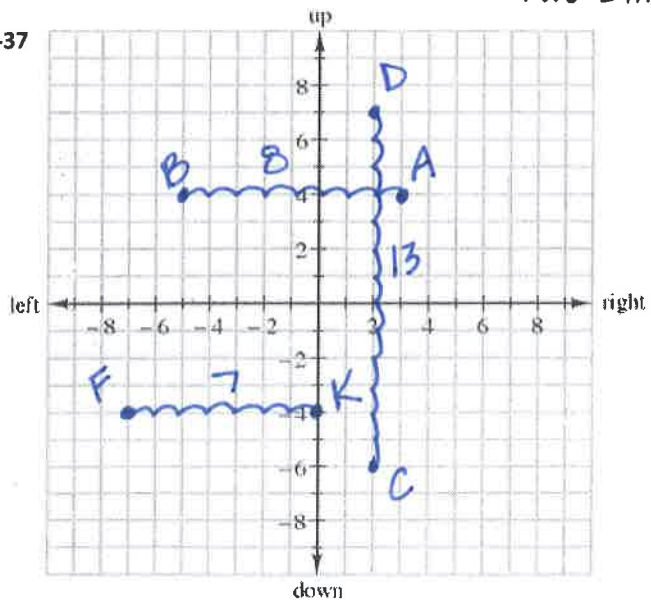
The distance between 4 and -5 is 9.  
 $|4| + |-5| = 9$

b) The distance is \_\_\_ units.  $(7, -1)$   
 $(7, -4)$

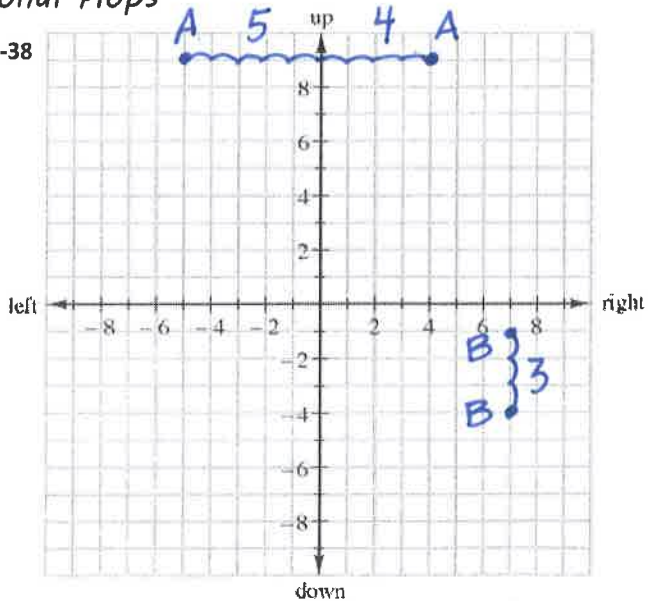
The distance between -1 and -4 is 3.  
 $|-4| - |-1| = 3$

Two Dimensional Hops

3-37



3-38



Resource Page