

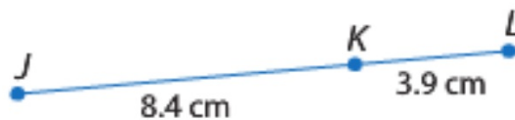
## Bellringer #5

1.) Find AB



3.7 cm

2.) Find JL



$$\begin{array}{r} 8.4 \\ + 3.9 \\ \hline \end{array}$$

12.3 cm

or  $12\frac{3}{10}$ 

3.) **ALGEBRA** Find the value of  $a$  and  $XY$  if  $Y$  is between  $X$  and  $Z$ ,  $XY = 3a$ ,  $XZ = 5a - 4$ , and  $YZ = 14$ .

## Homework Questions?

# 1–3 Distance and Midpoints

Distance - length of a segment between two points

## Key Concept Distance Formula (on Number Line)

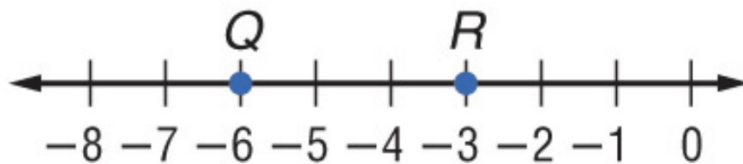
**Words** The distance between two points is the absolute value of the difference between their coordinates.

**Symbols** If  $P$  has coordinate  $x_1$  and  $Q$  has coordinate  $x_2$ ,  $PQ = |x_2 - x_1|$  or  $|x_1 - x_2|$ .



**EXAMPLE 1**

Find Distance on a Number Line

**A. Use the number line to find  $QR$ .**

$$|x_1 - x_2| \quad x_1 \quad x_2$$

$$-6 - -3$$

$$-6 + 3$$

$$|-3|$$

$$\textcircled{3}$$

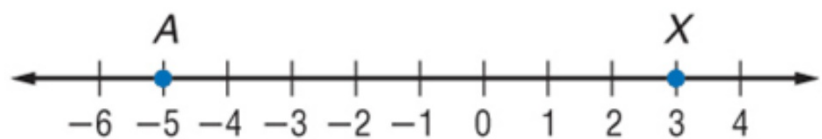
## EXAMPLE 1

B. Use the number line to find  $AX$ .

$$|-5 - 3|$$

$$|-8|$$

$$\textcircled{8}$$



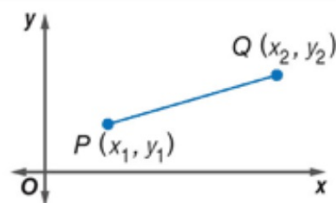
$$3 - -5 = |3 + 5| = |8|$$

# 1–3 Distance and Midpoints

**KeyConcept** Distance Formula (in Coordinate Plane)

If  $P$  has coordinates  $(x_1, y_1)$  and  $Q$  has coordinates  $(x_2, y_2)$ , then

$$PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}.$$



**EXAMPLE 2**Find Distance on a Coordinate Plane  
 $x_1, y_1$        $x_2, y_2$ Find the distance between  $E(-4, 1)$  and  $F(3, -1)$ .Round to the nearest tenth if necessary.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Distance Formula

$$\sqrt{(3 - (-4))^2 + (-1 - 1)^2}$$

$$\sqrt{7^2 + (-2)^2}$$

$$\sqrt{49 + 4}$$

$$\sqrt{53} = 7.280 \approx 7.3$$

## 1-3 Distance and Midpoints

## EXAMPLE 3

D  $x_1, y_1$       F  $x_2, y_2$ Find the distance between  $D(-1, 7)$  and  $F(3, 4)$ .

Round to the nearest tenth if necessary.

$$\begin{aligned} DF &= \sqrt{(3 - (-1))^2 + (4 - 7)^2} \\ &= \sqrt{4^2 + (-3)^2} \\ &= \sqrt{16 + 9} \\ &= \sqrt{25} \\ &= 5 \end{aligned}$$

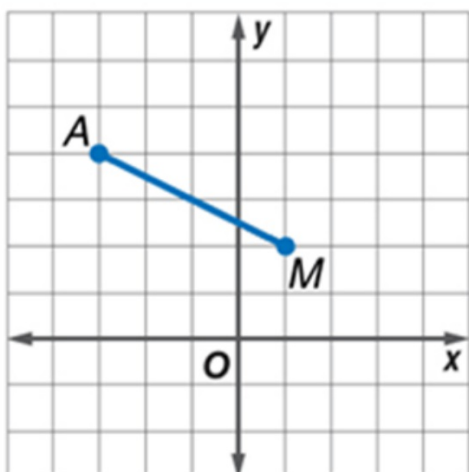


## 1-3 Distance and Midpoints

## EXAMPLE 4

$$A \begin{matrix} x_1, y_1 \\ (-3, 4) \end{matrix} \quad M \begin{matrix} x_2, y_2 \\ (1, 2) \end{matrix}$$

Find  $AM$ . Round to the nearest tenth if necessary.



$$AM = \sqrt{(1 - (-3))^2 + (2 - 4)^2}$$

$$\sqrt{4^2 + (-2)^2}$$

$$\sqrt{16 + 4}$$

$$\sqrt{20}$$

$$4.472$$

$$\textcircled{4.5}$$

**LESSON** **1–3** Distance and Midpoints

Complete Skills Practice 1-3,  
problems # 1-12 all

15 Minutes to Complete!

LESSON

# 1–3 Distance and Midpoints

Times Up!

## Assignment

Practice 1-3, Problems # 1-10, # 20

