

key

1.6 Homework

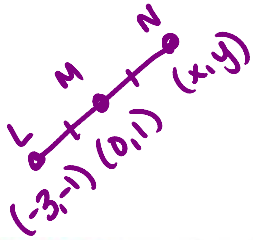
P: 47: 2, 4, 6, 22, 24, 29, 32, 35

Find the coordinates of the midpoint of each segment.

2.  $\overline{AB}$  with endpoints  $A(4, -6)$  and  $B(-4, 2)$

$$\left(\frac{4+(-4)}{2}, \frac{-6+2}{2}\right) = (0, -2)$$

4.  $M$  is the midpoint of  $\overline{LN}$ .  $L$  has coordinates  $(-3, -1)$ , and  $M$  has coordinates  $(0, 1)$ . Find the coordinates of  $N$ .



$$\frac{-3+x}{2} = 0$$

$$\begin{aligned} -3+x &= 0 \\ x &= 3 \end{aligned}$$

$$\frac{-1+y}{2} = 1$$

$$\begin{aligned} -1+y &= 2 \\ y &= 3 \end{aligned}$$

$(3, 3)$

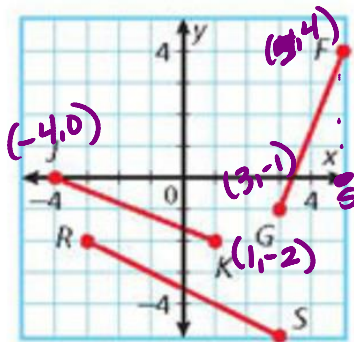
**Multi-Step** Find the length of the given segments and determine if they are congruent.

6.  $\overline{JK}$  and  $\overline{FG}$

$$\begin{aligned} \overline{JK} &= \sqrt{(-4-1)^2 + (0-(-2))^2} \\ &= \sqrt{(-5)^2 + (2)^2} \\ &= \sqrt{25+4} = \sqrt{29} \end{aligned}$$

$$\begin{aligned} \overline{FG} &= \sqrt{(5-3)^2 + (4-(-1))^2} \\ &= \sqrt{(2)^2 + (5)^2} = \sqrt{4+25} = \sqrt{29} \end{aligned}$$

$\overline{JK} \cong \overline{FG}$

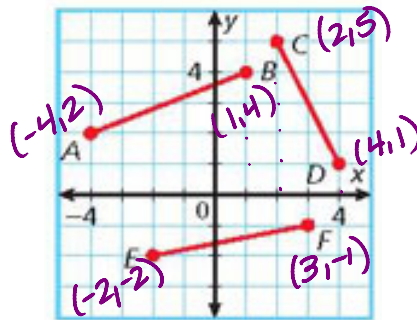


22. **Multi-Step** Use the Distance Formula to order  $\overline{AB}$ ,  $\overline{CD}$ , and  $\overline{EF}$  from shortest to longest.

$$\begin{aligned} \overline{AB} &= \sqrt{(-4-1)^2 + (2-4)^2} \\ &= \sqrt{(-5)^2 + (-2)^2} = \sqrt{29} \end{aligned}$$

$$\begin{aligned} \overline{CD} &= \sqrt{(2-4)^2 + (5-1)^2} \\ &= \sqrt{(-2)^2 + (4)^2} = \sqrt{4+16} = \sqrt{20} \end{aligned}$$

$$\begin{aligned} \overline{EF} &= \sqrt{(-2-3)^2 + (-2+1)^2} \\ &= \sqrt{(-5)^2 + (-1)^2} = \sqrt{20} \end{aligned}$$



$\overline{CD}, \overline{EF}, \overline{AB}$

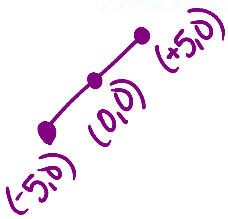
24. X has coordinates  $(a, 3a)$ , and Y has coordinates  $(-5a, 0)$ . Find the coordinates of the midpoint of  $\overline{XY}$ .

$$\frac{a + (-5a)}{2} \quad \frac{3a + 0}{2}$$

$$\frac{-4a}{2} \quad \frac{3a}{2}$$

$$(-2a, 1.5a)$$

29. **Critical Thinking** Give an example of a line segment with midpoint  $(0, 0)$ .



32. **Write About It** Explain why the Distance Formula is not needed to find the distance between two points that lie on a horizontal or a vertical line.

35. Find the distance, to the nearest tenth, between the midpoints of  $\overline{LM}$  and  $\overline{JK}$ .

(F) 1.8

(H) 4.0

(G) 3.6

(J) 5.3

$$\overline{LM} = \left( \frac{1+4}{2}, \frac{3+(-1)}{2} \right) = (2.5, 1)$$

$$\overline{JK} = \left( \frac{1+4}{2}, \frac{-2-3}{2} \right) = (2.5, -2.5)$$

$$\text{Distance} = \sqrt{(2.5 - 2.5)^2 + (1 - (-2.5))^2} = \sqrt{(0)^2 + (3.5)^2}$$

$$= \sqrt{12.25} = 3.5$$

