

key

1.6 Homework

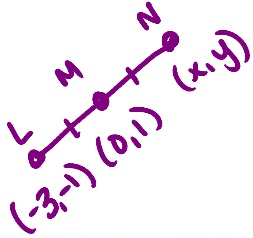
P: 47: 2, 4, 6, 22, 24, 29, 32, 35

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 .



$$\begin{aligned} \frac{-3+x}{2} &= 0 \\ -3+x &= 0 \\ x &= 3 \end{aligned}$$

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

$(3, 3)$

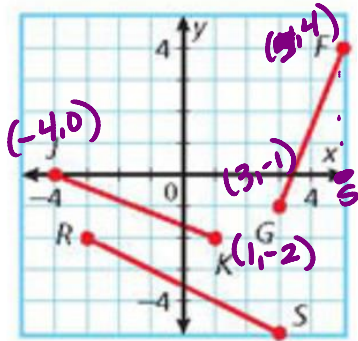
Multi-Step Find the length of the given segments and determine if they are congruent.

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

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

$$\begin{aligned} \overline{FG} &= \sqrt{(5-3)^2 + (4-1)^2} \\ &= \sqrt{(2)^2 + (3)^2} = \sqrt{4+9} = \sqrt{13} \end{aligned}$$

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

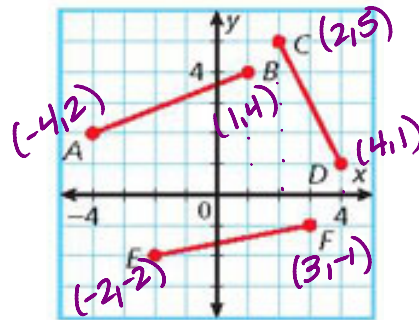


22. **Multi-Step** Use the Distance Formula to order \overline{AB} , \overline{CD} , and \overline{EF} from shortest to longest.

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

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

$$\begin{aligned} \overline{EF} &= \sqrt{(-2-3)^2 + (-2+1)^2} \\ &= \sqrt{(-5)^2 + (-1)^2} = \sqrt{26} \end{aligned}$$

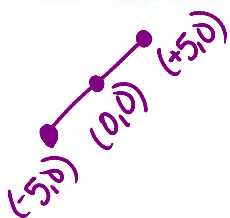


$\overline{CD}, \overline{EF}, \overline{AB}$

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

$$\begin{aligned} \frac{a+(-5a)}{2} & \quad \frac{3a+0}{2} \\ \frac{-4a}{2} & \quad \frac{3a}{2} \\ (-2a, 1.5a) \end{aligned}$$

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

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

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

$$\text{Distance} = \sqrt{(2.5-2.5)^2 + (1-(-2.5))^2} = \sqrt{(0)^2 + (3.5)^2} = \sqrt{12.25} = 3.5$$

