

**Geometry 11/15**

**Warm Up IXL**  
**8th Grade**  
**T.5**

# 1-3 Day 1 Midpoint

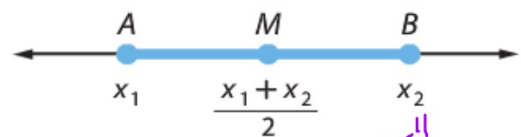
Midpoint

I can find the midpoint of a segment

the point halfway between the endpoints of a segment

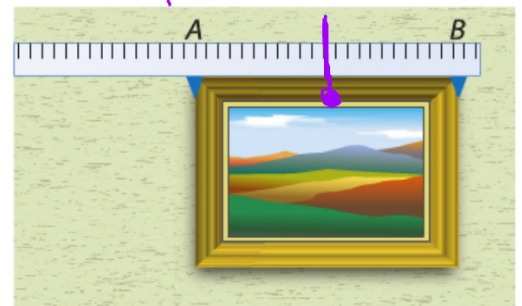
If  $\overline{AB}$  has endpoints at  $x_1$  and  $x_2$  on a number line, then the midpoint  $M$  of  $\overline{AB}$  has coordinate

$$\frac{x_1 + x_2}{2}.$$



Ex. 1

**DECORATING** Jacinta hangs a picture 15 inches from the left side of a wall. How far from the edge of the wall should she mark the location for the nail the picture will hang on if the right edge is 37.5 inches from the wall's left side?



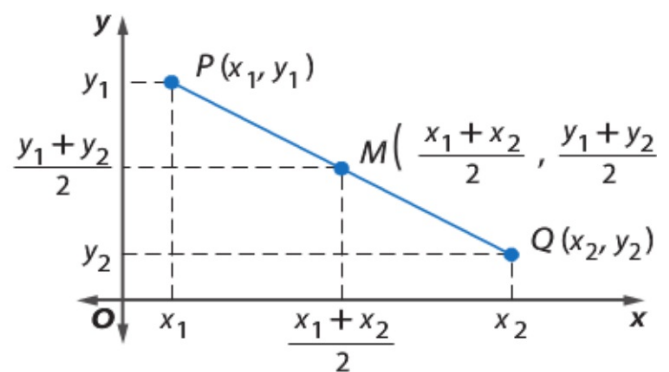
$$\frac{15 + 37.5}{2} = \frac{52.5}{2} = 26.25''$$

I can find the midpoint of a segment

## Midpoint Formula (in Coordinate Plane)

$\overline{PQ}$  has endpoints at  $P(x_1, y_1)$  and  $Q(x_2, y_2)$  in coordinate plane, then the midpoint  $M$  of  $\overline{PQ}$  has coordinates

$$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) \\ = (x, y)$$



Ex. 2

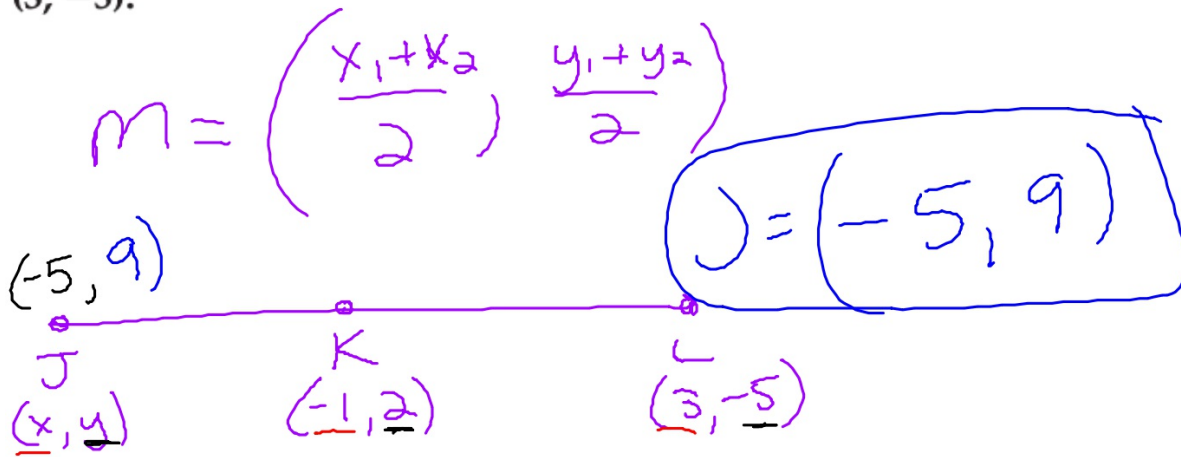
Find the coordinates of  $M$ , the midpoint of  $\overline{ST}$ , for  $S(-6, 3)$  and  $T(1, 0)$ .

$$M = \left(\frac{-6+1}{2}, \frac{3+0}{2}\right) \\ = \left(\frac{-5}{2}, \frac{3}{2}\right) = (-2.5, 1.5)$$

I can find the midpoint of a segment

Ex. 3

Find the coordinates of  $J$  if  $K(-1, 2)$  is the midpoint of  $\overline{JL}$  and  $L$  has coordinates  $(3, -5)$ .



$$\cancel{2} \frac{x + 3}{2} = -1 \cdot 2$$

$$\begin{array}{r} x + 3 = -2 \\ -3 \quad -3 \\ \hline x = -5 \end{array}$$

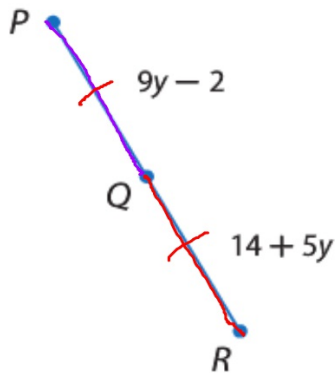
$$\cancel{2} \frac{y - 5}{2} = 2 \cdot 2$$

$$\begin{array}{r} y - 5 = 4 \\ +5 \quad +5 \\ \hline y = 9 \end{array}$$

I can find the midpoint of a segment

Ex. 4

**ALGEBRA** Find the measure of  $\overline{PQ}$  if  $Q$  is the midpoint of  $\overline{PR}$ .



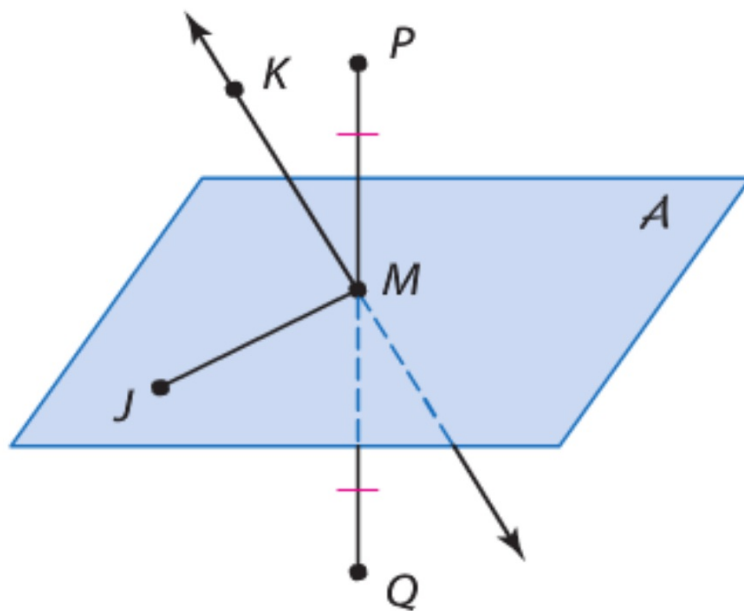
$$\begin{array}{r} 9y - 2 = 14 + 5y \\ -5y \quad -5y \\ \hline 4y - 2 = 14 \\ +2 \quad +2 \\ \hline 4y = 16 \\ \underline{4} \quad \underline{4} \\ y = 4 \end{array}$$

$$\begin{array}{l} 9(4) - 2 \\ 36 - 2 \\ \hline \overline{PQ} = 34 \end{array}$$

I can find the midpoint of a segment

## Segment Bisector

any segment, line, or plane that intersects a segment at its midpoint



I can find the midpoint of a segment

ICA Pg 32

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Hmwk IXL Geo B.4, B.7