

Lesson 1.3 Worksheet

Name: Key

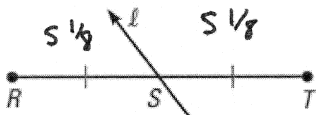
Write an explanation to answer the question.

1.) Explain what it means to *bisect* a segment. Why is it impossible to bisect a line?

To bisect a segment means to divide a segment into two congruent segments. A line cannot be bisected because it is continuous, and cannot be divided equally.

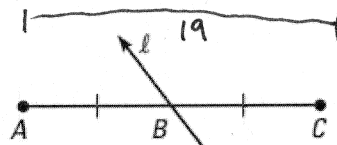
In exercises 2-7, find the indicated length

2.) Find RT if $RS = 5\frac{1}{8}$ in.



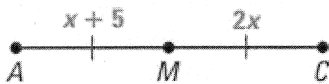
$RT = 10\frac{1}{4}$ in.

3.) Find BC if $AC = 19$ cm.



$BC = 9.5$ cm

4.) Find AM .

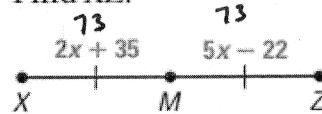


$x + 5 = 2x$

$5 = x$

$AM = 10$

5.) Find XZ .



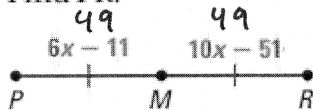
$2x + 35 = 5x - 22$

$57 = 3x$

$x = 19$

$XZ = 146$

6.) Find PR .



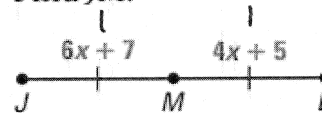
$6x - 11 = 10x - 51$

$40 = 4x$

$x = 10$

$PR = 98$

7.) Find JM .



$6x + 7 = 4x + 5$

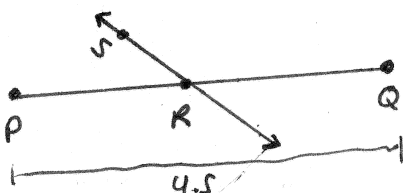
$2x = -2$

$x = -1$

$JM = 1$

In 8, draw and label a diagram, then find the indicated length.

8.) Line RS bisects segment PQ at point R . Find RQ if $PQ = 4.5$ inches.



$RQ = 2.25$ in.

Find the coordinates of the midpoint of the segment with the given endpoints.

9.) $C(3, 5)$ and $D(7, 5)$

$$(X_m, y_m) = \left(\frac{3+7}{2}, \frac{5+5}{2} \right)$$

$$(X_m, y_m) = (5, 5)$$

10.) $P(-8, -7)$ and $Q(11, 5)$

$$(X_m, y_m) = \left(\frac{-8+11}{2}, \frac{-7+5}{2} \right)$$

$$(X_m, y_m) = (1.5, -1)$$

In exercises 11-12, use the given endpoint R and the midpoint M of \overline{RS} to find the coordinates of the other endpoint S .

11.) $R(3, 0)$, $M(0, 5)$ $S(x_1, y_1)$

$$\frac{3+x_1}{2} = 0 \quad \left\{ \quad \frac{0+y_1}{2} = 5 \right.$$

$x_1 = -3$ $y_1 = 10$

$$S(-3, 10)$$

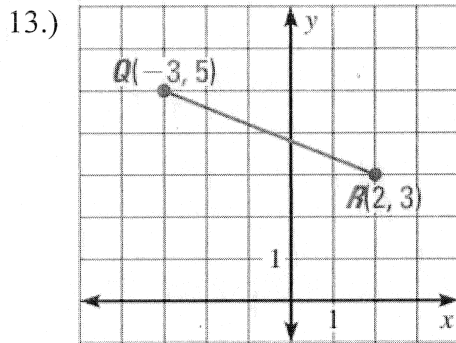
12.) $R(-4, -6)$, $M(3, -4)$ $S(x_1, y_1)$

$$\frac{-4+x_1}{2} = 3 \quad \left\{ \quad \frac{-6+y_1}{2} = -4 \right.$$

$x_1 = 10$ $y_1 = -2$

$$S(10, -2)$$

Find the length of the segment using the distance formula.



$$d = \sqrt{(2 - (-3))^2 + (3 - 5)^2}$$

$$= \sqrt{5^2 + (-2)^2}$$

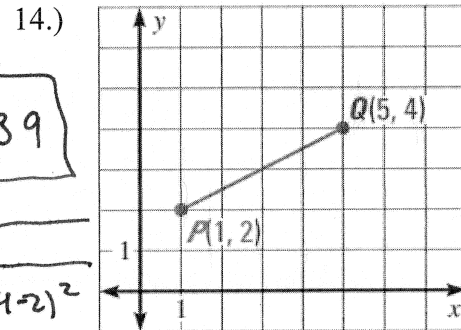
$$d = \sqrt{25 + 4}$$

$$QR = \sqrt{29} \approx 5.39$$

$$d = \sqrt{(5-1)^2 + (4-2)^2}$$

$$= \sqrt{4^2 + 2^2}$$

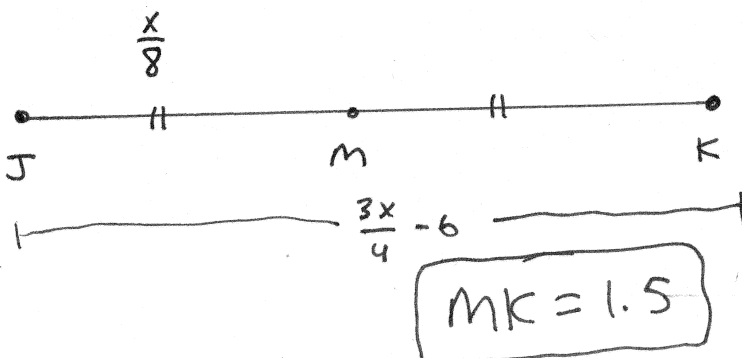
$$= \sqrt{16 + 4}$$



$$PQ = \sqrt{20} \approx 4.47$$

In 15, draw and label a diagram before finding the indicated segment.

15.) Point M is the midpoint of \overline{JK} , $JM = \frac{x}{8}$, and $JK = \frac{3x}{4} - 6$. Find MK .



$$MK = 1.5$$

$$2 \left(\frac{x}{8} \right) = \frac{3x}{4} - 6$$

$$\frac{x}{4} = \frac{3x}{4} - 6$$

$$\frac{-2x}{4} = -6$$

$$-2x = -24$$

$$x = 12$$