Lesson 1.3 Worksheet

Name: Key

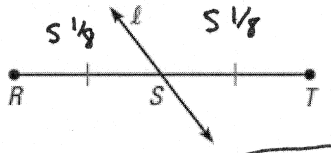
Write an explanation to answer the question.

1.) Explain what it means to *bisect* a segment. Why is in 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.

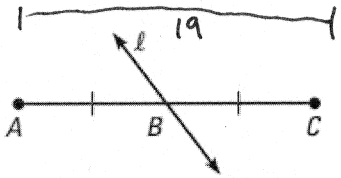
In exercises 2-7, find the indicated length

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



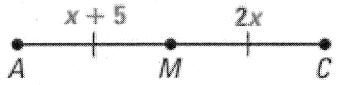
RT = 10 1/4 in.

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



BC = 9.5 cm

4.) Find AM.

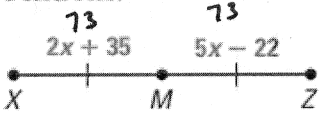


$x+5 = 2x$

$5 = x$

AM = 10

5.) Find XZ.



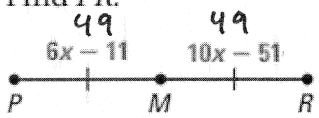
$2x + 35 = 5x - 22$

$57 = 3x$

$x = 19$

XZ = 146

6.) Find PR.



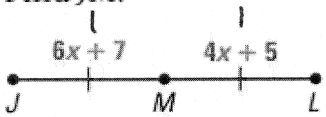
$6x - 11 = 10x - 51$

$40 = 4x$

$x = 10$

PR = 49

7.) Find JM.



$6x + 7 = 4x + 5$

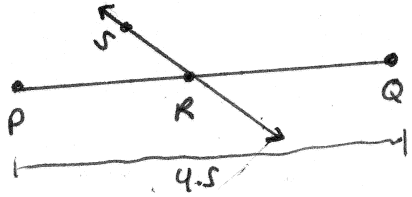
$2x = -2$

$x = -1$

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

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

$x_1 = -3$ $\quad$ $y_1 = 10$

$S(-3, 10)$

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

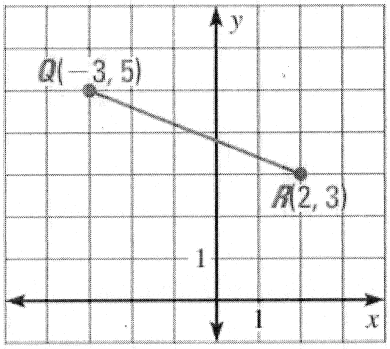
$\frac{-4 + x_1}{2} = 3$ $\quad$ $\frac{-6 + y_1}{2} = -4$

$x_1 = 10$ $\quad$ $y_1 = -2$

$S(10, -2)$

Find the length of the segment using the distance formula.

13.)



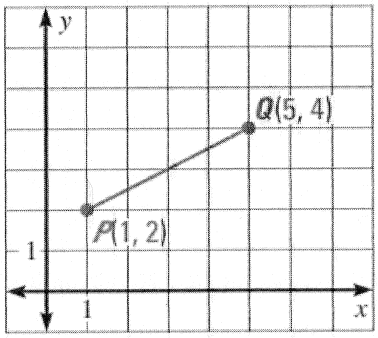
$d = \sqrt{(2 - -3)^2 + (3 - 5)^2}$

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

$= \sqrt{25 + 4}$

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

14.)



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

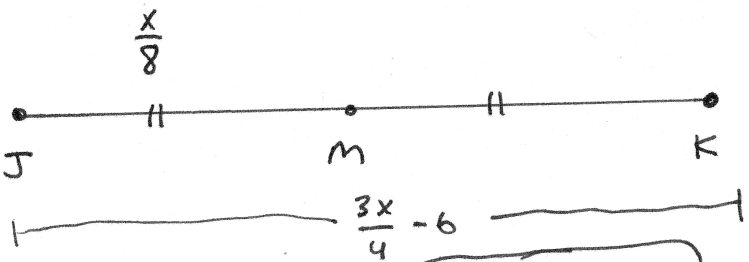
$= \sqrt{4^2 + 2^2}$

$= \sqrt{16 + 4}$

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

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*.



$MK = 1.5$

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

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

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

$-2x = -24$

$x = 12$