1. Find $x$.

\[ GJ = JH \]

\[ 3x = 12 \]

\[ x = 4 \]

2. Find $x$.

\[ BC + CD = BD \]

\[ 17 + 14 = 6x + 7 \]

\[ 31 = 6x + 7 \]

\[ 24 = 6x \]

\[ 4 = x \]

3. Given $D$ is the midpoint of $EF$, find $y$.

\[ ED = DF \]

\[ 7y - 10 = 5y - 2 \]

\[ 2y = 8 \]

\[ y = 4 \]

4. Given $MN$ bisects $JK$ at $C$, find $x$.

\[ JG = GK \]

\[ 3x - 5 = 2x + 12 \]

\[ x = 17 \]

5. Given $B$ is between $A$ and $C$, find $x$.

\[ CB + BA = CA \]

\[ 10x + 3 + 12x - 1 = 16x - 4 \]

\[ 22x + 2 = 16x - 4 \]

\[ 6x = -6 \]

\[ x = -1 \]
Practice with Segments and Equations

6. Find \( k \).
\[
8k + 2 = 20 \\
\frac{8k}{2} = 18 \\
k = \frac{18}{8} = \frac{9}{4} = 2.25
\]

7. Given \( \overline{WV} = \overline{HG} \), \( VW = 36 \), and \( HG = 8x + 4 \), find \( HG \).
\[
\overline{VW} = \overline{HG} \\
36 = \overline{HG}
\]

8. Given \( W \) is between \( X \) and \( Y \), \( WX = 9 \), \( WY = 3k - 5 \), \( XY = 13 \), find \( k \).
\[
9 + 3k - 5 = 13 \\
3k + 4 = 13 \\
3k = 9 \\
k = 3
\]

9. Find \( x \) and \( y \).
\[
2x + b = 4x - 1 \\
10y = 8y + 5 \\
7 = 2x \\
3.5 = x
\]

10. Find \( FG \) if \( V \) is the midpoint of \( FG \).
\[
FV + VG = FG \\
12x + 5 + 12x + 5 = 20x + 12 \\
24x + 10 = 20x + 12 \\
4x = 2 \\
x = 0.5
\]

\( FG = 2.2 \)
Use the number line to find the length of each segment.

- $\overline{AC} = 6$
- $\overline{DF} = 6$
- $\overline{CE} = 5$
- $\overline{BD} = 5$
- $\overline{AF} = 14$
- $\overline{BE} = 8$

If $GJ = 32$, find the value of each of the following.

- $3x + x + 16 = 32$
- $4x = 16$
- $x = 4$
- $GH = 12$
- $HJ = 20$

If $AX = 45$, find the value of each of the following.

- $2y + 1 = 45$
- $y - 1 = 45$
- $AQ = 31$
- $QX = 14$

Sketch and label a picture given the following description.

$\overline{PQ}$ bisects $\overline{ST}$ at $R$

Find the value of the variable and each length if $S$ is between $R$ and $T$.

$RS = 4y - 1$, $ST = 2y - 1$, and $RT = 5y$.

- $4y - 1$
- $2y - 1$
- $RS = 7$
- $4y - 1 + 2y - 1 = 5y$
- $ST = 3$
- $6y - 2 = 5y$
- $RT = 10$
- $y = 2$

Use a ruler to find the following lengths in the indicated units.

- $AB = \frac{1}{4}$ in.
- $CD = 4.4$ cm = 44 mm
Find each length in centimeters and millimeters.

A

B

C

D

\[ AB = \frac{6.2}{\text{cm}} = 62 \text{ mm} \]

\[ CD = \frac{4.85}{\text{cm}} = 48.5 \text{ mm} \]

\[ 8 - 3.15 = 4.85 \]

Find each length in inches.

A

B

C

D

\[ AB = \frac{3\frac{5}{8}}{\text{in.}} \]

\[ CD = \frac{2\frac{11}{16}}{\text{in.}} \]

\[ 4 - 3 \frac{5}{16} \]