1-2 Linear Measure
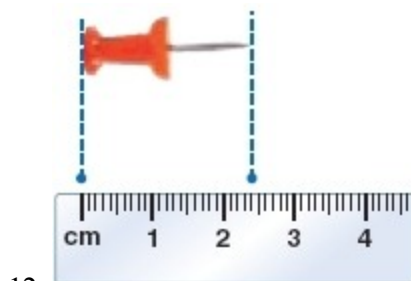
Find the length of each line segment.

10.

SOLUTION:

The ruler is marked in inches. The distance between two consecutive numbers is divided into 16 equal parts. The starting point E of the line segment is at the zero mark of the ruler and the other endpoint F is at 7 points after 1. So, the length of the line segment is $1\frac{7}{16}$ in.

11.

SOLUTION:

The ruler is marked in millimeters. The starting point X of the line segment is at the zero mark of the ruler and the other endpoint Y is at 8 points after 3. So, the length of the line segment is 3.8 mm.

12.

SOLUTION:

The ruler is marked in centimeters. One end of the pushpin starts at the zero mark of the ruler and the pin ends at 4 points after 2. So, the length of the pushpin is 2.4 cm or 24 mm.
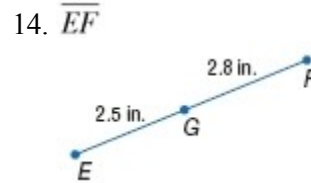
13. Refer to Page 19.

SOLUTION:

The ruler is marked in inches. The distance between two consecutive numbers is divided into 16 equal parts. One end of the coin starts at the zero mark of the ruler and the other end ends at 15 points after 0.

So, the width of the coin is $\frac{15}{16}$ in.

**Find the measurement of each segment.
Assume that each figure is not drawn to scale.**

14. $\overline{EF}$

SOLUTION:

$EF = EG + GF$ Betweenness of points
$EF = 2.5 + 2.8$ Substitution
$EF = 5.3$ Simplify.
So, $EF = 5.3$ in.

15. $\overline{JL}$

SOLUTION:

$JL = JK + KL$ Betweenness of points
$JL = 0.75 + 0.35$ Substitution
$JL = 1.1$ Addition.
So, $JL = 1.1$ cm.

16. $\overline{PR}$
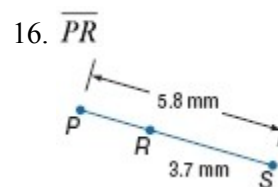
SOLUTION:

$PS = PR + RS$ Betweenness of points
$PS - RS = PR + RS - RS$ $-RS$ from each side.
$PS - RS = PR$ Simplify.
$5.8 - 3.7 = PR$ Substitution
$2.1 = PR$ Simplify.
So, $PR = 2.1$ mm.

17. $\overline{SV}$
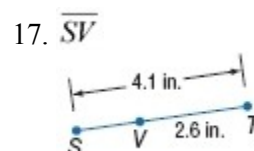
SOLUTION:

$ST = SV + VT$ Betweenness of points
$ST - VT = SV + VT - VT$ $-VT$ from each side.
$ST - VT = SV$ Simplify.
$4.1 - 2.6 = SV$ Substitution
$1.5 = SV$ Subtraction.
So, $SV = 1.5$ in.

Find the value of the variable and *YZ* if *Y* is between *X* and *Z*.

22. $XY = 6b$, $YZ = 8b$, $XZ = 175$

SOLUTION:

Here *Y* is between *X* and *Z*.

$$X \quad \underset{6b}{\bullet} \quad Y \quad \underset{8b}{\bullet} \quad Z$$
$$\underset{175}{\longmapsto}$$
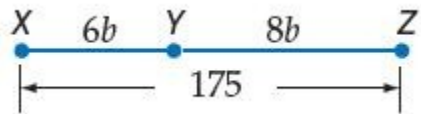
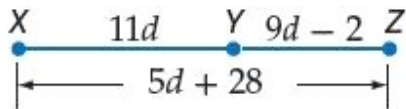|	
$XZ = XY + YZ$	Betweenness of points
$175 = 6b + 8b$	Substitution
$175 = 14b$	Simplify.
$\frac{175}{14} = \frac{14b}{14}$	Divide ech side by 14.
$12.5 = b$	Simplify.

So, $YZ = 8b = 8(12.5) = 100$.

24. $XY = 11d$, $YZ = 9d - 2$, $XZ = 5d + 28$

SOLUTION:

Y is between *X* and *Z*.

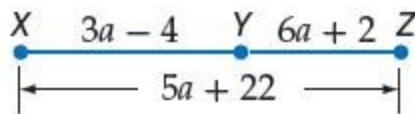|	
$XZ = XY + YZ$	Betweenness of points
$5d + 28 = 11d + 9d - 2$	Substitution
$5d + 28 = 20d - 2$	Simplify.
$5d - 5d + 28 = 20d - 5d - 2$	$-5d$ from each side by 14.
$28 = 15d - 2$	Simplify.
$28 + 2 = 15d - 2 + 2$	$+2$ to each side.
$30 = 15d$	Simplify.
$\frac{30}{15} = \frac{15d}{15}$	$\div$ each side by 15.
$2 = d$	Simplify.

So, $YZ = 9d = 9(2) - 2 = 16$.

26. $XY = 3a - 4$, $YZ = 6a + 2$, $XZ = 5a + 22$

SOLUTION:

Here *Y* is between *X* and *Z*.

$XZ = XY + YZ$	Betweenness of points
$5a + 22 = 3a - 4 + 6a + 2$	Substitution
$5a + 22 = 9a - 2$	Simplify.
$5a + 2 + 22 = 9a - 2 + 2$	$+2$ to each side.
$5a + 24 = 9a$	Simplify.
$5a - 5a + 24 = 9a - 5a$	$-5a$ from each side.
$24 = 4a$	Simplify.
$\frac{24}{4} = \frac{4a}{4}$	$\div$ each side by 4.
$6 = a$	Simplify.

So, $YZ = 6a = 6(6) + 2 = 38$.