Example B is between A and C, with $AB = x$, $BC = x + 6$, and
$AC = 24$. Find:
        a. the value of x **b.** BC

Solution   **a.** $AB + BC = AC$ **b.** $BC = x + 6$
           $x + (x + 6) = 24$ $= 9 + 6$
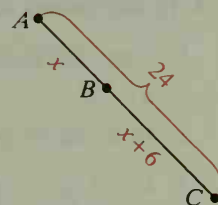 $2x + 6 = 24$ $= 15$
                     $2x = 18$
                      $x = 9$

In geometry two objects that have the same size and shape are called **congruent**. For many geometric figures we can give a more precise definition of what it means to be congruent. For example, we will define congruent segments in this section, congruent angles in the next section, congruent triangles in Chapter 4, and congruent circles and arcs in Chapter 9.
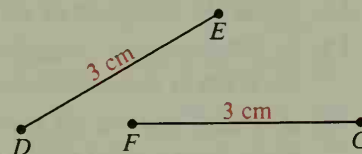
Congruent segments are segments that have equal lengths. To indicate that $\overline{DE}$ and $\overline{FG}$ have equal lengths, you write

$$DE = FG.$$

To indicate that $\overline{DE}$ and $\overline{FG}$ are congruent, you write

$$\overline{DE} \cong \overline{FG}$$

(read "$\overline{DE}$ is congruent to $\overline{FG}$"). The definition tells us that the two statements are equivalent. We will use them interchangeably.
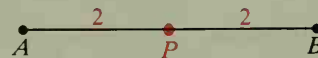

The **midpoint of a segment** is the point that divides the segment into two congruent segments. In the diagram

$$AP = PB,$$
$$\overline{AP} \cong \overline{PB},$$

and P is the midpoint of $\overline{AB}$.

A **bisector of a segment** is a line, segment, ray, or plane that intersects the segment at its midpoint. Line l is a bisector of $\overline{AB}$. $\overrightarrow{PQ}$ and plane X also bisect $\overline{AB}$.