

## What You Will Learn

- ▶ Use the Ruler Postulate.
- ▶ Copy segments and compare segments for congruence.
- ▶ Use the Segment Addition Postulate.

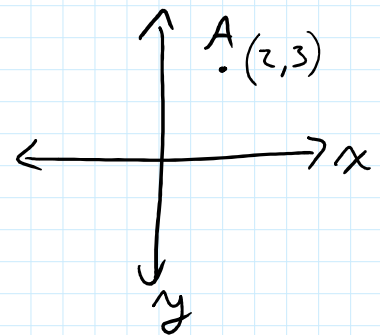
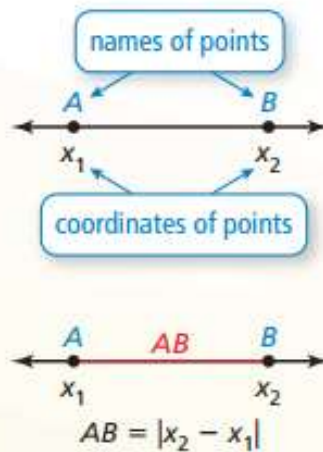
Postulate = Axiom → Assumed truths

### Postulate

#### Postulate 1.1 Ruler Postulate

The points on a line can be matched one to one with the real numbers. The real number that corresponds to a point is the **coordinate** of the point.

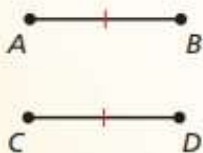
The **distance** between points  $A$  and  $B$ , written as  $AB$ , is the absolute value of the difference of the coordinates of  $A$  and  $B$ .



Theorems → Provable truths

### Congruent Segments

Line segments that have the same length are called **congruent segments**. You can say "the length of  $\overline{AB}$  is equal to the length of  $\overline{CD}$ ," or you can say " $\overline{AB}$  is congruent to  $\overline{CD}$ ." The symbol  $\cong$  means "is congruent to."



Lengths are equal.

$$AB = CD$$



"is equal to"

Segments are congruent.

$$\overline{AB} \cong \overline{CD}$$



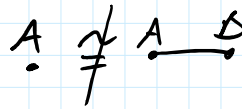
"is congruent to"

$\cong$  → same shape & same size

$A \neq \overline{AB}$

$\cong \rightarrow$  same slope & same size

$= \rightarrow$  values/numbers



$$\triangle ABC \cong \triangle DEF$$

Measure the length of  $\overline{AB}$  to the nearest tenth of a centimeter.

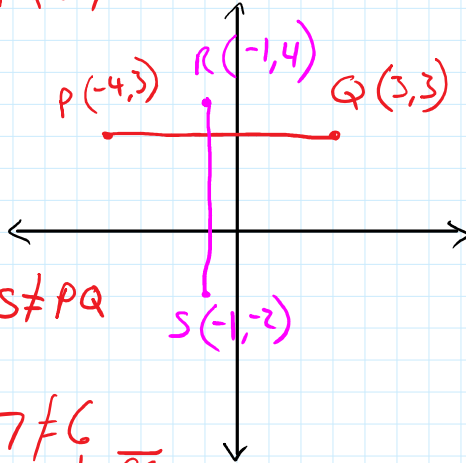


Plot the points  $P(-4, 3)$ ,  $Q(3, 3)$ ,  $R(-1, 4)$ , and  $S(-1, -2)$  in a coordinate plane. Then determine whether  $\overline{PQ}$  and  $\overline{RS}$  are congruent.

$$PQ = |-4 - 3|$$

$$= |-7|$$

$$PQ = 7$$



$$RS \neq PQ$$

$$7 \neq 6$$

$$\overline{RS} \neq \overline{PQ}$$

$$RS = |4 - (-2)|$$

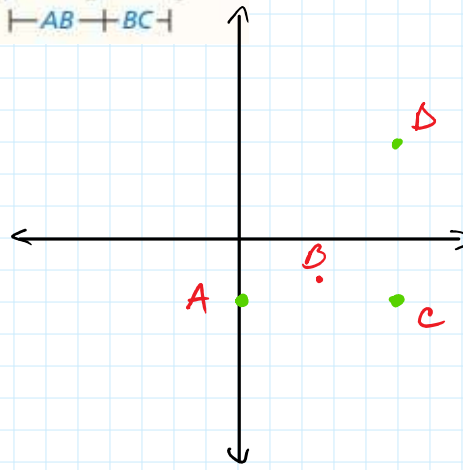
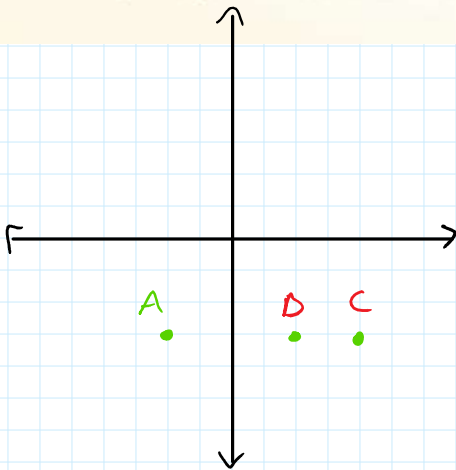
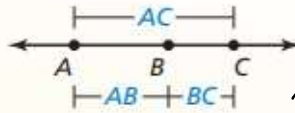
$$RS = 6$$

## Postulate

### Postulate 1.2 Segment Addition Postulate

If  $B$  is between  $A$  and  $C$ , then  $AB + BC = AC$ .

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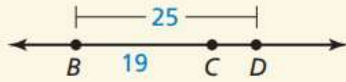


a. Find  $XZ = 41$



$$\begin{aligned} XY + YZ &= XZ \\ 14 + 27 &= XZ \\ 41 &= XZ \end{aligned}$$

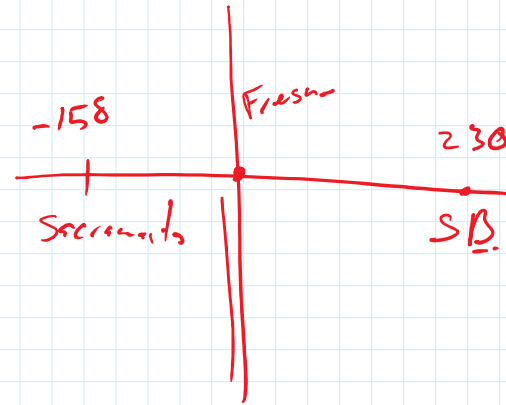
b. Find  $CD = 6$



$$\begin{aligned} BC + CD &= BD \\ \cancel{BC} - \cancel{BC} & \\ CD &= BD - BC \\ CD &= 25 - 19 \end{aligned}$$

$CD = 6$

The cities shown on the map lie approximately in a straight line. Find the distance from Sacramento, California, to San Bernardino, California.



Practice sec 1.2  
pg. 16: 1-21E, O, O,  
26