GUIDED PRACTICE

Vocabulary Check ✓

1. What is a *postulate*?

Concept Check ✓

2. Draw a sketch of three collinear points. Label them. Then write the Segment Addition Postulate for the points.

3. Use the diagram. How can you determine BD if you know BC and CD? if you know AB and AD?
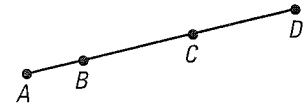
Skill Check ✓

Find the distance between the two points.

4. $C(0, 0)$, $D(5, 2)$ 5. $G(3, 0)$, $H(8, 10)$ 6. $M(1, -3)$, $N(3, 5)$

7. $P(-8, -6)$, $Q(-3, 0)$ 8. $S(7, 3)$, $T(1, -5)$ 9. $V(-2, -6)$, $W(1, -2)$

Use the Distance Formula to decide whether $\overline{JK} \cong \overline{KL}$.

10. $J(3, -5)$
$K(-1, 2)$
$L(-5, -5)$

11. $J(0, -8)$
$K(4, 3)$
$L(-2, -7)$

12. $J(10, 2)$
$K(7, -3)$
$L(4, -8)$

PRACTICE AND APPLICATIONS

MEASUREMENT Measure the length of the segment to the nearest millimeter.

13.

14.

15.

16.

17.

18.

BETWEENNESS Draw a sketch of the three collinear points. Then write the Segment Addition Postulate for the points.

19. E is between D and F.   20. H is between G and J.

21. M is between N and P.   22. R is between Q and S.

LOGICAL REASONING In the diagram of the collinear points, $PT = 20$, $QS = 6$, and $PQ = QR = RS$. Find each length.

23. QR 24. RS

25. PQ 26. ST

27. RP 28. RT

29. SP 30. QT
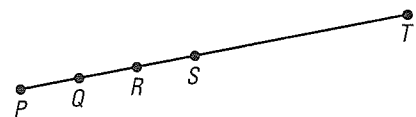
USING ALGEBRA Suppose M is between L and N. Use the Segment Addition Postulate to solve for the variable. Then find the lengths of $\overline{LM}$, $\overline{MN}$, and $\overline{LN}$.

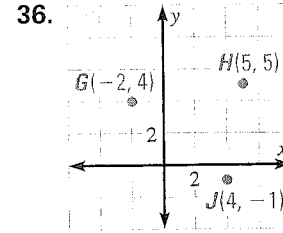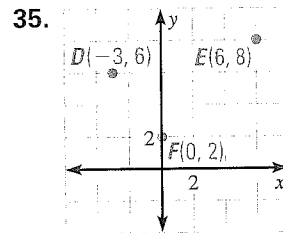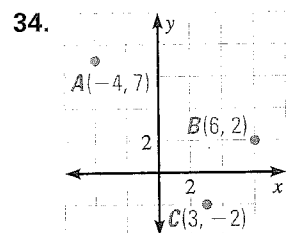**31.** $LM = 3x + 8$
$MN = 2x - 5$
$LN = 23$

32. $LM = 7y + 9$
$MN = 3y + 4$
$LN = 143$

33. $LM = \frac{1}{2}z + 2$
$MN = 3z + \frac{3}{2}$
$LN = 5z + 2$

DISTANCE FORMULA Find the distance between each pair of points.

34.

35.

36.

DISTANCE FORMULA Find the lengths of the segments. Tell whether any of the segments have the same length.

37.

38.

39.
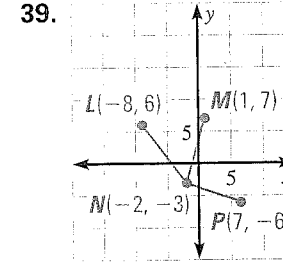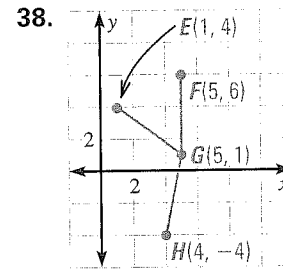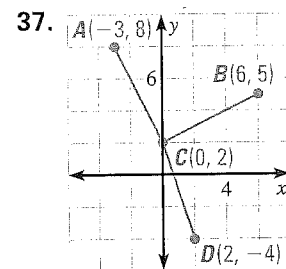
CONGRUENCE Use the Distance Formula to decide whether $\overline{PQ} \cong \overline{QR}$.

40. $P(4, -4)$
$Q(1, -6)$
$R(-1, -3)$

41. $P(-1, -6)$
$Q(-8, 5)$
$R(3, -2)$

42. $P(5, 1)$
$Q(-5, -7)$
$R(-3, 6)$

43. $P(-2, 0)$
$Q(10, -14)$
$R(-4, -2)$

CAMBRIA INCLINE In Exercises 44 and 45, use the information about the incline railway given below.
In the days before automobiles were available, railways called "inclines" brought people up and down hills in many cities. In Johnstown, Pennsylvania, the Cambria Incline was reputedly the steepest in the world when it was completed in 1893. It rises about 514 feet vertically as it moves 734 feet horizontally.

44. On graph paper, draw a coordinate plane and mark the axes using a scale that allows you to plot $(0, 0)$ and $(734, 514)$. Plot the points and connect them with a segment to represent the incline track.

45. Use the Distance Formula to estimate the length of the track.
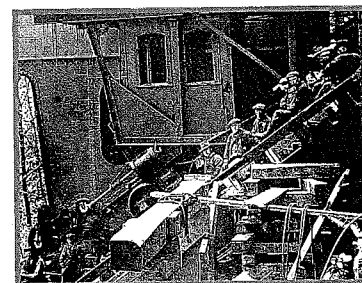
Workers constructing the
Cambria Incline