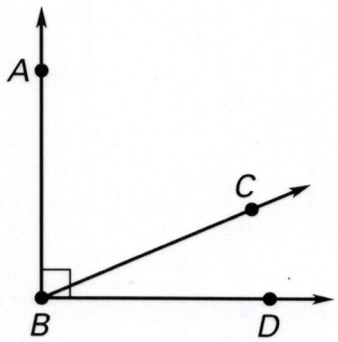
Answers for 1.5

For use with pages 38–41

1.5 Skill Practice

1.



No. *Sample answer:* Any two angles whose angle measures add up to 90° are complementary, but they do not have to have a common vertex and side.

2. Yes; no. *Sample answer:* To be a linear pair, the noncommon sides of two adjacent angles must be opposite rays, which make a straight angle; supplementary angles need not be linear pairs.

3. adjacent **4.** not adjacent

5. adjacent

6. $\angle RTS$ and $\angle UWV$, $\angle QTS$ and $\angle UWV$

7. $\angle GLH$ and $\angle HLJ$, $\angle GLJ$ and $\angle JLK$

8. 47° **9.** 69°

10. 1° **11.** 85°

12. 120° **13.** 25°

14. 50° **15.** 153°

16. B **17.** 135°, 45°

18. 67°, 113° **19.** 54°, 36°

20. vertical angles

21. linear pair

22. neither

23. vertical angles

24. neither

25. linear pair

26. neither

27. neither

28. 36° and 144°

29. The angles are complementary so they should be equal to 90°; $x + 3x = 90°$, $4x = 90$, $x = 22.5$.

30. C **31.** 10, 35

32. 14, 20 **33.** 55, 30

34. Never; an obtuse angle is larger than 90°, and it is not possible to have a complement of an angle that is greater than 90°.

35. Never; a straight angle is 180°, and it is not possible to have a supplement of an angle that is 180°.

36. Sometimes; all angles except a straight angle have a supplement.

37. Always; the sum of complementary angles is 90°, so each angle must be less than 90°, making them acute.

38. Always; an acute angle is less than 90°; since the sum of supplementary angles is 180° and one of the angles is less than 90°, the other angle must be larger than 90°, which makes it obtuse.

39. 71°, 19°

40. 78°, 12°

41. 68°, 22°

42. 124°, 56°

43. 58°, 122°

44. 132°, 48°

45. $(x + 90)°$. *Sample answer:* Since $m\angle GHJ = x°$ and $\angle RST$ is its complement, $m\angle RST = (90 - x)°$. $\angle ABC$ is a supplement of $\angle RST$ so $m\angle ABC = 180° - (90 - x)°$, $m\angle ABC = (x + 90)°$.

1.5 Problem Solving

46. complementary

47. neither

48. supplementary

49–52. Sample answers are given.

49. $\angle FGB$, $\angle BGC$

50. $\angle FGE$, $\angle BGC$

51. $\angle AGE$, $\angle EGD$

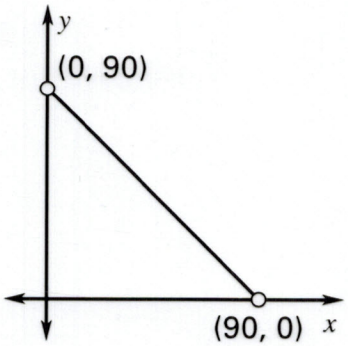
52. $\angle AGB$, $\angle BGC$

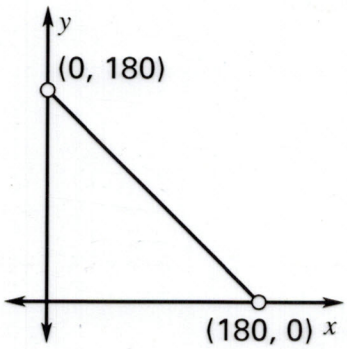
53. *Sample answer:* Subtract 90° from $m\angle FGB$.

54. The shadow gets shorter and the angle measure increases.

55. a. $y_1 = 90 - x$, $0 < x < 90$; $y_2 = 180 - x$, $0 < x < 180$; the measure of a complement must be less than 90° and the measure of its supplement must be less than 180°.

b.



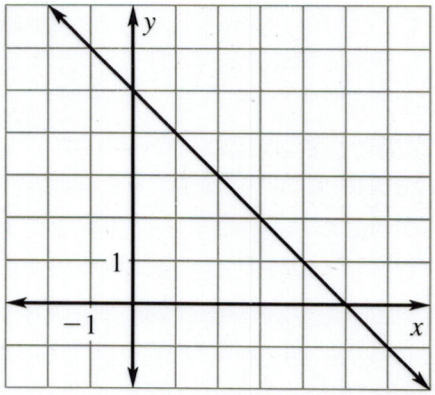


$0 < y_1 < 90$, $0 < y_2 < 180$

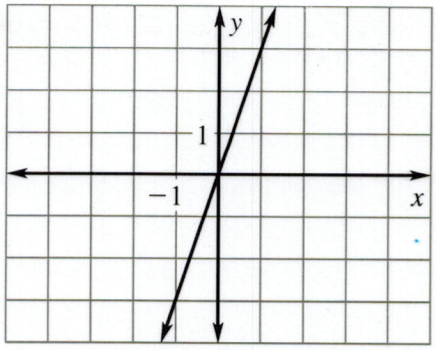
56. 47°, 43°. *Sample answer:* Solve the system: $x + y = 90$, $x + y - 86 = x - y$.

1.5 Mixed Review

57.



58.



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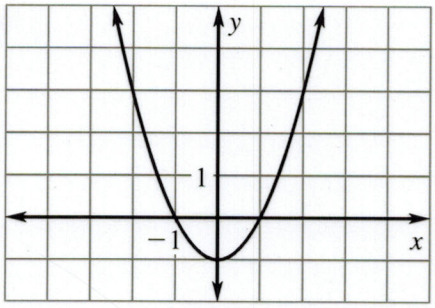

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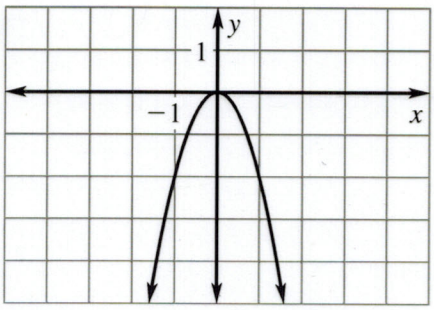

61. $\overline{HJ} \cong \overline{JK}, \overline{KL} \cong \overline{LH}$;
$\angle J \cong \angle L, \angle K \cong \angle H$

62. $\overline{EG} \cong \overline{GF} \cong \overline{FE}$;
$\angle E \cong \angle G \cong \angle F$

63. $\overline{AB} \cong \overline{BC} \cong \overline{CD} \cong \overline{DA}$;
$\angle A \cong \angle B \cong \angle C \cong \angle D$