Answers for 7.5

For use with pages 469–472

7.5 Skill Practice

1. the opposite leg, the adjacent leg

2. *Sample answer:* All right triangles with an acute angle measuring $n°$ also have an acute angle measuring $(90 - n)°$. Therefore all the triangles with these measures will be similar.

3. $\frac{24}{7}$ or 3.4286, $\frac{7}{24}$ or 0.2917

4. $\frac{35}{12}$ or 2.9167, $\frac{12}{35}$ or 0.3429

5. $\frac{12}{5}$ or 2.4000, $\frac{5}{12}$ or 0.4167

6. 13.8

7. 7.6

8. 13.7

9. 6; 6; they are the same.

10. 10; 10; they are the same.

11. 6.9282; $4\sqrt{3}$; they are the same.

12. $\tan 30° = \frac{x}{x\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$,

$\tan 45° = \frac{x}{x} = 1$

13. Tangent is the ratio of the opposite and the adjacent side, not adjacent to hypotenuse; $\frac{80}{18}$.

14. The triangle is not a right triangle and the tangent ratio only applies to right triangles; not possible.

15. You need to know: that the triangle is a right triangle, which angle you will be applying the ratio to, and the lengths of the opposite side and the adjacent side to the angle. Pg 469

16. C **17.** C **18.** 17.2

19. 15.5 **20.** 19.3 **21.** 77.4

22. 89.6 **23.** 60.6 **24.** 97.3

25. 27.6 **26.** 37.2

27. 60; 54.0 **28.** 75; 89.4

29. 82; 154.2 **30.** about 128

7.5 Problem Solving

31. 555 ft **32.** 155 ft

33. about 33.4 ft

34. **a.** about 16.7 ft

b. about 24.2 ft

c. about 7.5 ft

d. 3; 7.5 ÷ 2 is 3.75, but there is not enough room for 4 students, so round down.

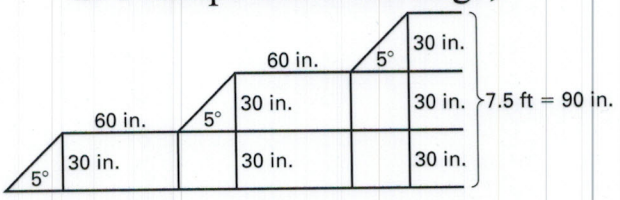
31. 555 ft

35. $\tan A = \frac{a}{b}$, $\tan B = \frac{b}{a}$; the tangent of one acute angle is the reciprocal of the other acute angle; complementary.

36. about 4.2 in.

37. **a.** 29 ft

b. 3 ramps and 2 landings;



c. 96 ft

38. about 8 ft; about 15 ft

7.5 Mixed Review

39. 20°, 80°, 80°; acute

40. about 34.3°, about 34.3°, about 111.4°; obtuse

41. 55°, 120°, 5°; obtuse

42. $<$; since $18 < 20$, by the Converse of the Hinge Theorem, $m\angle 1 < m\angle 2$.

43. $=$; by the SSS Similarity Theorem, the two triangles are similar; by the definition of similar polygons, corresponding angles are congruent; and by the definition of congruent angles, the measures of the angles are equal.

44. $>$; since $30 > 27$, by the Converse of the Hinge Theorem, $m\angle 1 > m\angle 2$.

45. 30

46. 11

47. 7