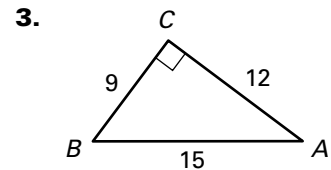
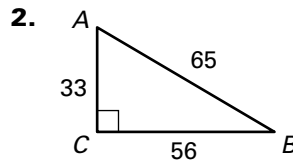
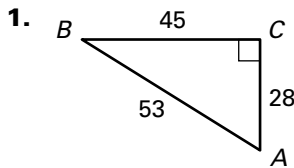
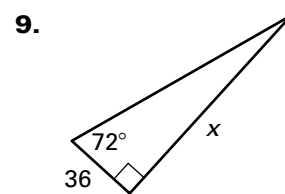
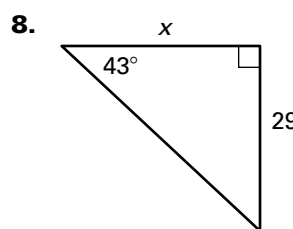
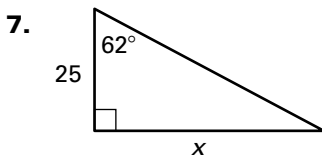
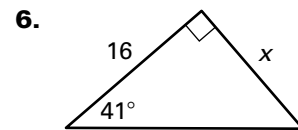
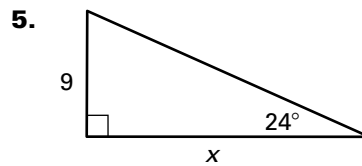
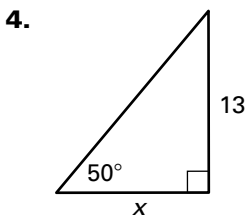


LESSON 7.5 Practice B
For use with pages 484–490

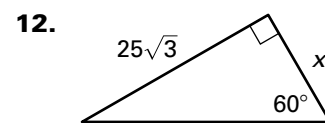
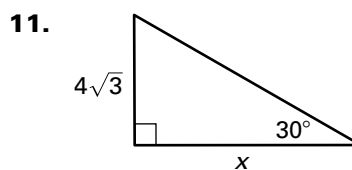
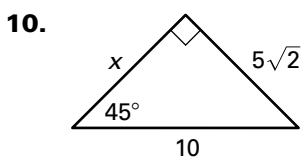
Find $\tan A$ and $\tan B$. Write each answer as a decimal rounded to four decimal places.



Find the value of x to the nearest tenth.



Find the value of x using the definition of tangent. Then find the value of x using the 45° - 45° - 90° Triangle Theorem or the 30° - 60° - 90° Triangle Theorem. Compare the results.



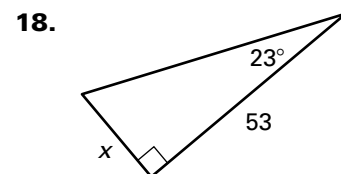
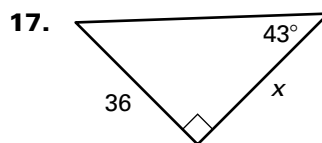
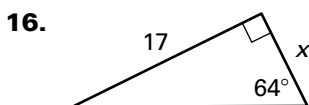
For acute $\angle A$ of a right triangle, find $\tan A$ by using the 45° - 45° - 90° Triangle Theorem or the 30° - 60° - 90° Triangle Theorem.

13. $m\angle A = 30^\circ$

14. $m\angle A = 45^\circ$

15. $m\angle A = 60^\circ$

Use a tangent ratio to find the value of x . Round to the nearest tenth.

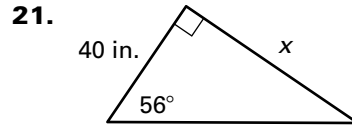
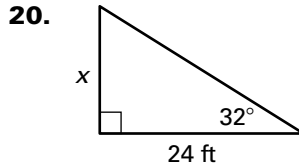
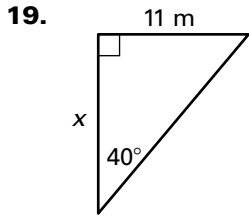


LESSON
7.5

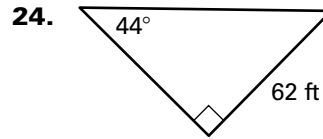
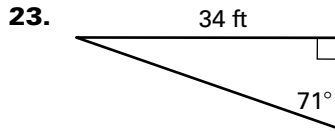
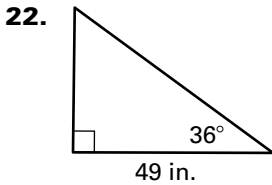
Practice B *continued*

For use with pages 484–490

Find the area of the triangle. Round your answer to the nearest tenth.

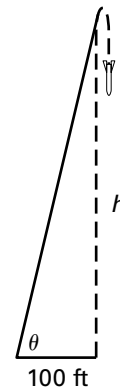


Find the perimeter of the triangle. Round to the nearest tenth.

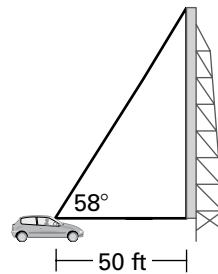


25. **Model Rockets** To calculate the height h reached by a model rocket, you move 100 feet from the launch point and record the angle of elevation θ to the rocket at its highest point. The values of θ for three flights are given below. Find the rocket's height to the nearest foot for the given θ in each flight.

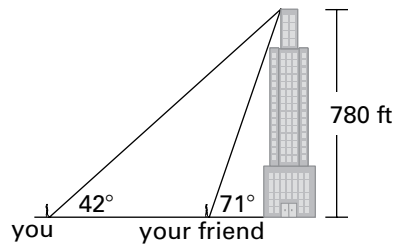
- a. $\theta = 77^\circ$
- b. $\theta = 81^\circ$
- c. $\theta = 83^\circ$



26. **Drive-in Movie** You are 50 feet from the screen at a drive-in movie. Your eye is on a horizontal line with the bottom of the screen and the angle of elevation to the top of the screen is 58° . How tall is the screen?



27. **Skyscraper** You are a block away from a skyscraper that is 780 feet tall. Your friend is between the skyscraper and yourself. The angle of elevation from your position to the top of the skyscraper is 42° . The angle of elevation from your friend's position to the top of the skyscraper is 71° . To the nearest foot, how far are you from your friend?

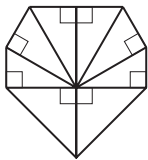


Lesson 7.4, continued

c. $d = \sqrt{\ell^2 + w^2 + h^2}$; From the equations above, let $\ell = AC$, $w = BC$, $b = AB$, and $h = AD$, where b is the length of the diagonal of the base. Rewrite the first equation given as $b = \sqrt{\ell^2 + w^2}$. Rewrite the second equation as $d = \sqrt{b^2 + h^2}$. Substitute for b in the second equation to obtain

$$\begin{aligned} d &= \sqrt{b^2 + h^2} \\ &= \sqrt{(\sqrt{\ell^2 + w^2})^2 + h^2} \\ &= \sqrt{\ell^2 + w^2 + h^2}. \end{aligned}$$

Challenge Practice

1. Yes; *Sample answer:*  2. 5.46

3. 4 points; (1, 1), (1, -1), (-1, 1), (-1, -1)

4. The shortest leg of the 30° - 60° - 90° triangle is the hypotenuse of the 45° - 45° - 90° triangle. The hypotenuse of the 45° - 40° - 90° triangle is $x\sqrt{2}$. Using 30° - 60° - 90° triangle properties, the length y is equal to two times the shortest leg of the 30° - 60° - 90° triangle. $y = 2 \cdot x\sqrt{2} = 2x\sqrt{2}$. As long as x is an integer, $2x\sqrt{2}$ will always be irrational, so y can never be an integer.

5. $VW \approx 2.54$, $VX \approx 9.80$, $WX \approx 9.46$

6. $BC = \frac{1}{2}$, $BD \approx 1.8$

Lesson 7.5

Practice Level A

1. $\tan A = \frac{3}{4} = 0.75$, $\tan B = \frac{4}{3} = 1.3333$
 2. $\tan A = \frac{21}{20} = 1.05$, $\tan B = \frac{20}{21} = 0.9524$
 3. $\tan A = \frac{5}{12} = 0.4167$, $\tan B = \frac{12}{5} = 2.4$
 4. $\tan A = \frac{24}{7} = 3.4286$, $\tan B = \frac{7}{24} = 0.2917$
 5. $\tan A = \frac{45}{28} = 1.6071$, $\tan B = \frac{28}{45} = 0.6222$
 6. $\tan A = \frac{8}{15} = 0.5333$, $\tan B = \frac{15}{8} = 1.875$
 7. 8.7 8. 22 9. 16.8 10. 42.8 11. 25
 12. 20.6 13. 5; 5 14. 6; 6 15. 6; 6 16. 10.1
 17. 35.8 18. 60 19. 86.6 cm^2 20. 68.6 ft^2

21. 333.1 in.^2 22. 125.8 in. 23. 55.3 ft
 24. 20.5 m 25. 47 ft 26. 24 ft 27. 555 ft

Practice Level B

1. $\tan A = 1.6071$, $\tan B = 0.6222$
 2. $\tan A = 1.6970$, $\tan B = 0.5893$
 3. $\tan A = 0.75$, $\tan B = 1.3333$ 4. 10.9
 5. 20.2 6. 13.9 7. 47.0 8. 31.1 9. 110.8
 10. $5\sqrt{2}$; $5\sqrt{2}$ 11. 12; 12 12. 25; 25 13. $\frac{\sqrt{3}}{3}$
 14. 1 15. $\sqrt{3}$ 16. 8.3 17. 38.6 18. 22.5
 19. 72.1 m^2 20. 180.0 ft^2 21. 1186.0 in.^2
 22. 145.2 in. 23. 81.7 ft 24. 215.5 ft
 25. a. 433 ft b. 631 ft c. 814 ft 26. 80 ft
 27. 598 ft

Practice Level C

1. 10.2 2. 14.4 3. 17.1 4. 42.2 5. 64.2
 6. 37.2 7. $\frac{7\sqrt{2}}{2}$; $\frac{7\sqrt{2}}{2}$ 8. $4\sqrt{6}$; $4\sqrt{6}$
 9. $\frac{5\sqrt{21}}{3}$; $\frac{5\sqrt{21}}{3}$ 10. 12.7 11. 21.7 12. 17.7
 13. 39.3 cm^2 14. 159.6 ft^2 15. 924.1 in.^2
 16. 137.3 in. 17. 25.4 ft 18. 95.5 m 19. about 51.96 in.
 20. 18.7 21. 70.9 ft 22. 84.5 ft
 23. Longer; as the sun sets the angle decreases and the tangent of the angle also decreases. The height of the lighthouse is constant so the shadow has to lengthen for the ratio to get smaller.
 24. $h = x(\tan 62^\circ)$; $h = (x + 16)(\tan 45^\circ)$
 25. 34.2 ft 26. 875 ft

Review for Mastery

1. $\tan A \approx 0.9524$; $\tan B = 1.05$
 2. $\tan A \approx 5.4545$; $\tan B \approx 0.1833$ 3. 68.6
 4. 17.4
 5. $x = 3\sqrt{3}$; $x \approx 5.2$; the results are the same.

Problem Solving Workshop: Using Alternative Methods

1. 90 ft 2. 46 ft

Challenge Practice

1. $\tan x^\circ = \frac{a}{b}$; $\tan(90^\circ - x^\circ) = \frac{b}{a}$
 2. They are reciprocals of each other.