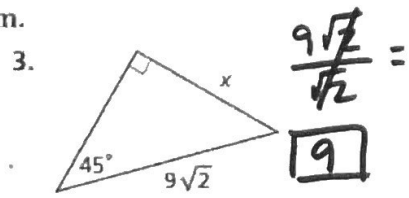
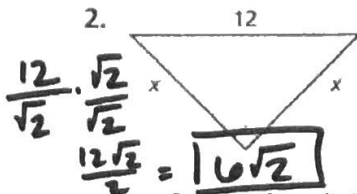
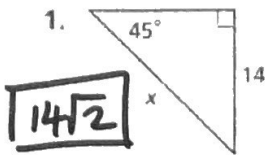


Key

Find the value of x . Give your answer in simplest radical form.

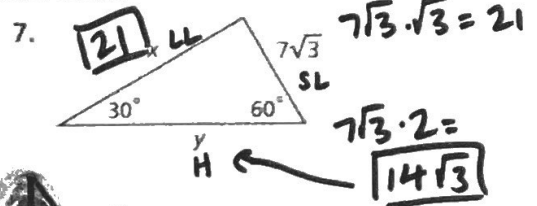
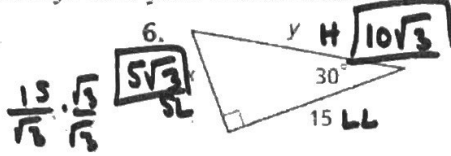
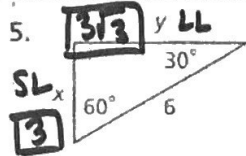


4. **Transportation** The two arms of the railroad sign are perpendicular bisectors of each other. In Pennsylvania, the lengths marked in red must be 19.5 inches. What is the distance labeled d ? Round to the nearest tenth of an inch.

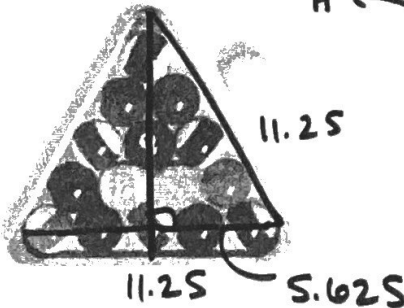


$19.5 \cdot \sqrt{2} = 27.6$

Find the values of x and y . Give your answers in simplest radical form.



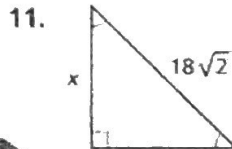
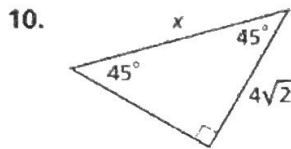
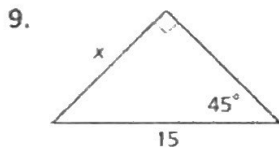
8. **Entertainment** Regulation billiard balls are $2\frac{1}{4}$ inches in diameter. The rack used to group 15 billiard balls is in the shape of an equilateral triangle. What is the approximate height of the triangle formed by the rack? Round to the nearest quarter of an inch.



$5.625 \cdot \sqrt{3} = 9.75$

PRACTICE AND PROBLEM SOLVING

Find the value of x . Give your answer in simplest radical form.



$a = \frac{1}{2}bh$

Multi-Step Find the perimeter and area of each figure. Give your answers in simplest radical form.

17. a $45^\circ-45^\circ-90^\circ$ triangle with hypotenuse length 12 inches

$P = 12\sqrt{2} + 12$, $A = 36$

18. a $30^\circ-60^\circ-90^\circ$ triangle with hypotenuse length 28 centimeters

$P = 42 + 14\sqrt{3}$, $A = 98\sqrt{3}$

19. a square with diagonal length 18 meters

$P = 36\sqrt{2}$, $A = 162$

20. an equilateral triangle with side length 4 feet

$P = 12$, $A = 4\sqrt{3}$

21. an equilateral triangle with height 30 yards

$P = 60\sqrt{3}$, $A = 300\sqrt{3}$

$\frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2}$

$6\sqrt{2} + 6\sqrt{2} + 12 = 12\sqrt{2} + 12$

$A = \frac{1}{2}(14)(14\sqrt{3})$

$\frac{18}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{18\sqrt{2}}{2} = 9\sqrt{2}$

$a = \frac{1}{2}(4)(2\sqrt{3})$



$\frac{30}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{30\sqrt{3}}{3} = 10\sqrt{3}$

$\frac{1}{2}(20\sqrt{3})(30) =$

Find the coordinates of point P under the given conditions. Give your answers in simplest radical form.

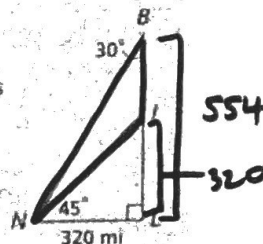
24. $\triangle PQR$ is a 45° - 45° - 90° triangle with vertices $Q(4, 6)$ and $R(-6, -4)$, and $m\angle P = 90^\circ$. P is in Quadrant II. $(-6, 6)$
25. $\triangle PST$ is a 45° - 45° - 90° triangle with vertices $S(4, -3)$ and $T(-2, 3)$, and $m\angle S = 90^\circ$. P is in Quadrant I. $(10, 3)$
26. $\triangle PWX$ is a 30° - 60° - 90° triangle with vertices $W(-1, -4)$ and $X(4, -4)$, and $m\angle W = 90^\circ$. P is in Quadrant II. $(-1, -4 + \sqrt{3})$ or $(-1, 4.66)$



Real-World Connection

29. The figure shows an airline's routes among four cities. The airline offers one frequent-flier mile for each mile flown (rounded to the nearest mile). How many frequent-flier miles do you earn for each flight?

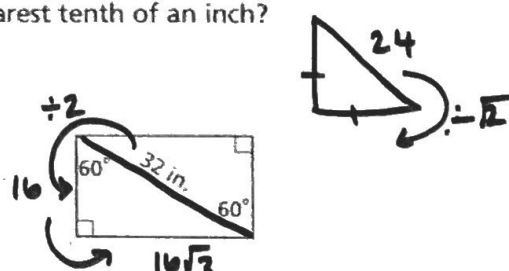
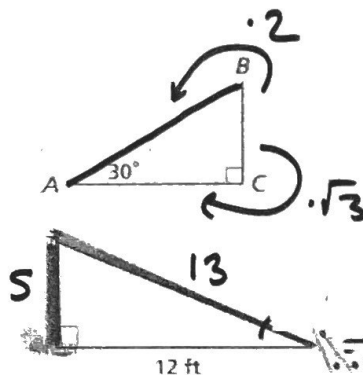
- a. Nelson (N) to Belton (B) $320 \cdot 2 = 640$
- b. Idria (I) to Nelson (N) $320 \cdot \sqrt{2} = 320\sqrt{2} = 453$
- c. Belton (B) to Idria (I)



$554 - 320 = 234$

TEST PREP

30. Which is a true statement?
 (A) $AB = BC\sqrt{2}$ (B) $AC = BC\sqrt{3}$
 (C) $AB = BC\sqrt{3}$ (D) $AC = AB\sqrt{2}$
31. An 18-foot pole is broken during a storm. The top of the pole touches the ground 12 feet from the base of the pole. How tall is the part of the pole left standing?
 (A) 5 feet (B) 6 feet
 (C) 13 feet (D) 22 feet
32. The length of the hypotenuse of an isosceles right triangle is 24 inches. What is the length of one leg of the triangle, rounded to the nearest tenth of an inch?
 (A) 13.9 inches (B) 17.0 inches
 (C) 33.9 inches (D) 41.6 inches
33. **Gridded Response** Find the area of the rectangle to the nearest tenth of a square inch. $a = bh$
 $16 \cdot 16\sqrt{3} = 443.4$



CHALLENGE AND EXTEND

HOT Multi-Step Find the value of x in each figure.

