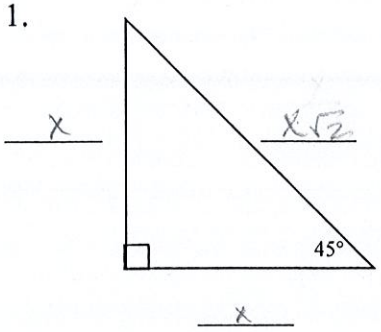
Name: Key

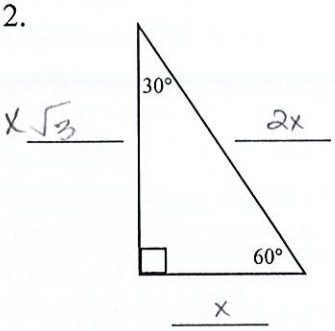
Review: Right Triangles

For each special right triangle, label the ratios in terms of x.

1.



2.



Fill in the table for the 45-45-90 Special Right Triangle.

	Leg 1	Leg 2	Hypotenuse
3.	$\frac{5\sqrt{2}}{\sqrt{2}} = 5$	5	$5\sqrt{2}$
4.	9	9	$9\sqrt{2}$
5.	$9\sqrt{2}$	$9\sqrt{2}$	$9\sqrt{2} \cdot \sqrt{2} = 18$
6.	$\frac{10}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{10\sqrt{2}}{2} = 5\sqrt{2}$	$5\sqrt{2}$	10

Fill in the table for the 30-60-90 Special Right Triangle.

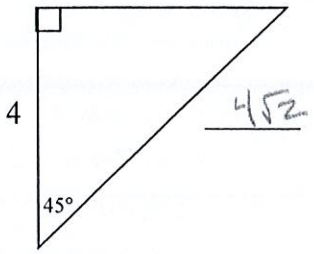
	Short Leg	Long Leg	Hypotenuse
7.	7	$7\sqrt{3} = x\sqrt{3}$	14
8.	8	$8\sqrt{3}$	16
9.	$6\sqrt{2}$	$6\sqrt{6}$	$\frac{12\sqrt{2}}{2} = \frac{2x}{2}$
10.	$\frac{14\sqrt{3}}{3}$	$\frac{14\sqrt{3}}{3} \cdot \frac{\sqrt{3}}{\sqrt{3}}$, $\frac{14}{\sqrt{3}} = \frac{x\sqrt{3}}{\sqrt{3}}$	$\frac{28\sqrt{3}}{3}$

$\frac{14}{\sqrt{3}} = \frac{x\sqrt{3}}{\sqrt{3}}$

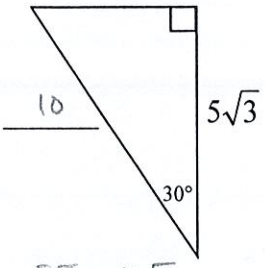
$\frac{14}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{14\sqrt{3}}{3} \cdot \sqrt{3}$

Find the missing side of the special right triangles. All answers should be in simplified radical form.

11. 4

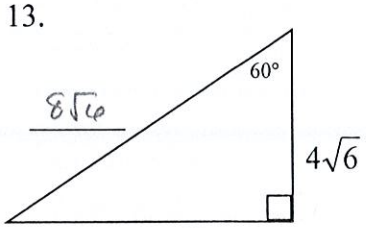


12. 5



$5\sqrt{3} = x\sqrt{3}$

13.



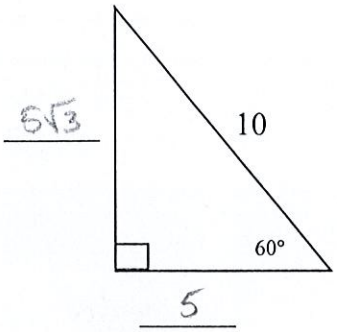
$4\sqrt{6} \cdot \sqrt{3}$

$4\sqrt{18}$

$\sqrt{9}\sqrt{2}$

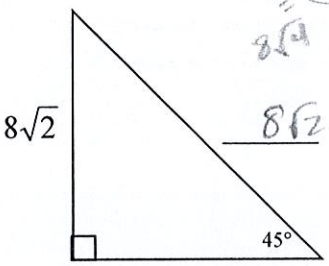
12

14.



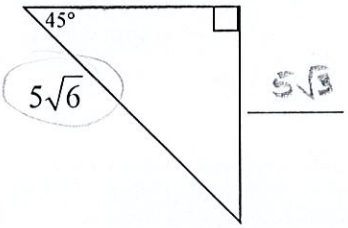
15. 10

$8\sqrt{9}$



$\frac{8\sqrt{2}}{\sqrt{2}}$

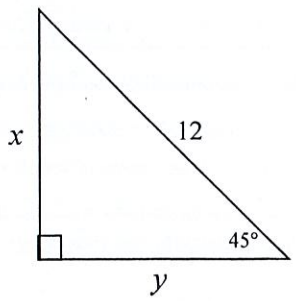
16. 5√3



$\frac{5\sqrt{6}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{2}$

Use the Special Right triangle ratios to find x, y, and the area of the figure.

17.



$\frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$

$x =$ $6\sqrt{2}$

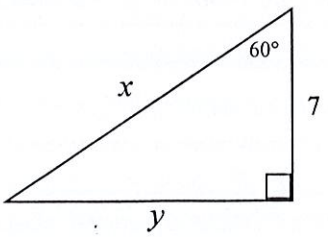
$y =$ $6\sqrt{2}$

Area = $36\sqrt{2}$

$\frac{72\sqrt{2}}{2}$

50.9

18.



$x =$ 14

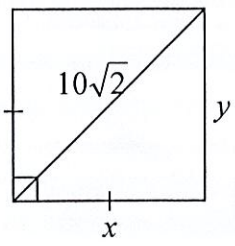
$y =$ $7\sqrt{3}$

Area = $\frac{49\sqrt{3}}{2}$

$7(7\sqrt{3}) = 49\sqrt{3}/2$

42.4

19.



$\frac{10\sqrt{2}}{\sqrt{2}}$

$x =$ 10

$y =$ 10

Area = 50

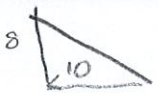
For each problem, draw a picture, then use special right triangles or Pythagorean Theorem to solve the problem.

20. A 12 foot ladder is placed against a vertical wall. The ladder forms a 45° angle with the wall. About how far up the wall does the ladder reach?

Answer: $6\sqrt{2}$

$\frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2}$ 8.5

21. Danny walked ten kilometers east, then 8 kilometers north to take her bird to the vet. When she left the vet, the bird flew back home. How far did the bird have to fly?



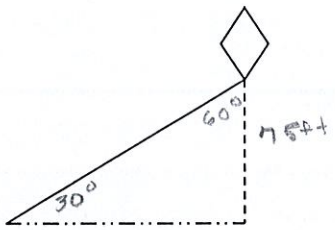
Answer: 12.8 km

$8^2 + 10^2 = c^2$

$64 + 100 = c^2$

$164 = c^2$

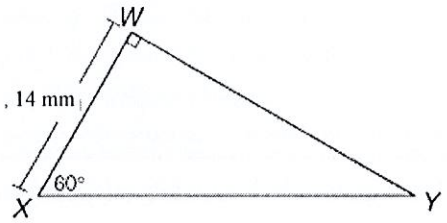
22. Michelle was flying her new kite in April. When the kite was 75 feet above the ground, the string fell to the ground to form a 30° angle with the ground. How long was the string?



Answer: 150 ft

23.

ΔWXY is a right triangle.



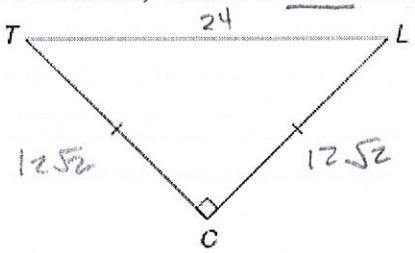
Find the length of $\overline{WY}$.

$14\sqrt{3}$

24.

ΔTCL is shown below.

If $TL = 24$ inches, what is the area of ΔTCL?



$\frac{24}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{24\sqrt{2}}{2} = 12\sqrt{2}$

$12\sqrt{2} \cdot 12\sqrt{2} = 144\sqrt{4} =$

$144 \cdot 2$

$288 \div 2 =$

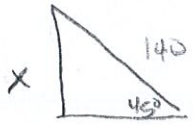
144

25. Downtown there is a square garden with a diagonal walkway through it. If that walkway is 40 meters long, how long is one of its sides to the nearest tenth of a meter?

$\frac{40}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{40\sqrt{2}}{2} = 20\sqrt{2}$

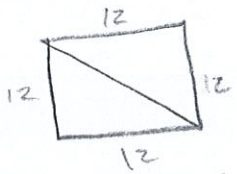
28.3

26. A kite string is 140 feet long from the kite to the ground. The string makes a 45° angle with the ground. About how high off the ground is the kite?



$\frac{140}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{140\sqrt{2}}{2} = 70\sqrt{2}$

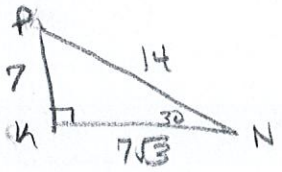
27.
A fence around a square garden has a perimeter of 48 feet. Find the approximate length of the diagonal of this square garden.



$12^2 + 12^2 = c^2$

16.97 ft

28.
In ΔPKN, $PN = 14$ inches, $m\angle N = 30°$, and $m\angle K = 90°$. ~~Which is closest to the~~ perimeter of ΔPKN?



$14 = 2x$

$x = 7$

29. Which of the following sets of numbers represents the side lengths in units of a right triangle?

a. ~~3, 6, 9.2~~ 94.09
b. ~~4, 6, 7.6~~ 57.76
c. 4, 5, 6.4 40.96
d. ~~6, 7, 10.5~~ 110.25