

Name: Ken Period: _____

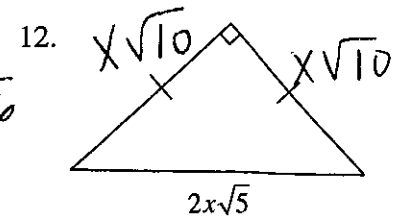
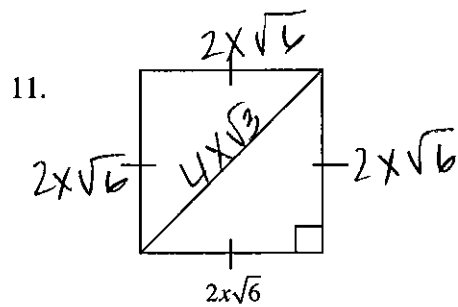
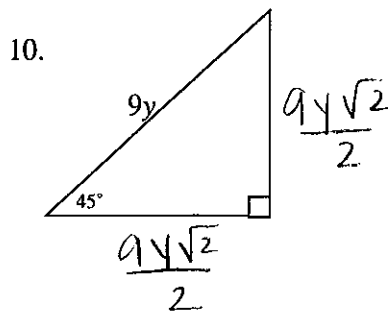
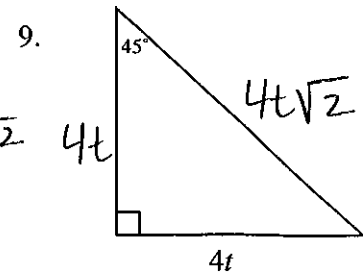
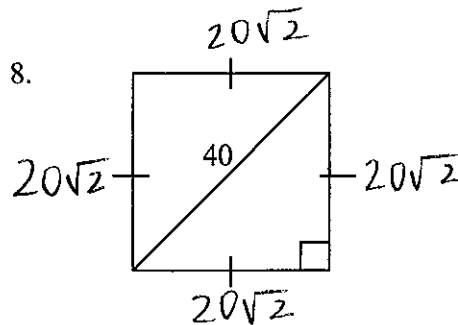
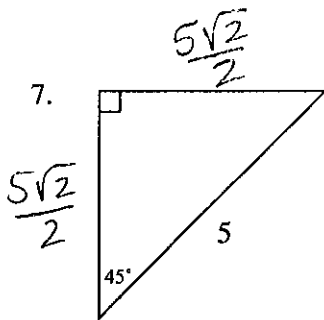
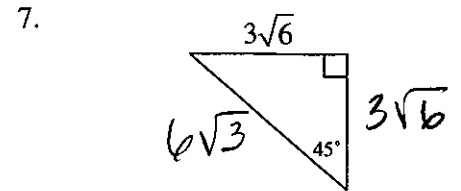
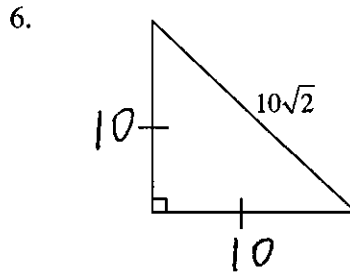
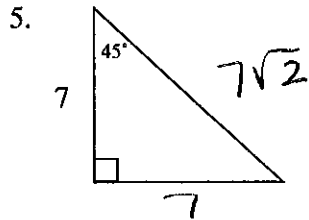
45-45-90 Triangles

~~Don't forget your book work!~~

I. Complete the following table for the 45-45-90 triangles using exact simplified radical values.

	Leg 1	Leg 2	Hypotenuse
Ratios	x	x	$x\sqrt{2}$
1.	3	3	$3\sqrt{2}$
2.	8	8	$8\sqrt{2}$
3.	$5\sqrt{2}/2$	$5\sqrt{2}/2$	5
4.	$4\sqrt{2}$	$4\sqrt{2}$	8

II. Fill in the length of each segment in the following figures.



For 13 – 15, tell if the given values could be the sides of a 45°-45°-90° triangle.

13. $3\sqrt{70}, 3\sqrt{70}, 12\sqrt{35}$
NO

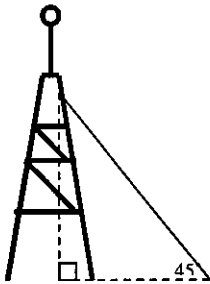
14. $\sqrt{10}, \sqrt{10}, 2\sqrt{5}$
YES

15. $\sqrt{6}, \sqrt{6}, \sqrt{3}$
NO

16. Sam has a square backyard divided into 2 sections along the 40 foot diagonal. One of these sections is used as a garden. What is the approximate **area** of the garden?

$$400 \text{ ft}^2$$

17. A guy wire supporting a radio tower is positioned 145 feet up the tower. It forms a 45° angle with the ground. About how long is the wire?



$$145\sqrt{2} \text{ feet}$$

18. Find the perimeter and area of a 45° - 45° - 90° triangle with a hypotenuse length 12 inches. Give your answers in simplest radical form.

$$12 + 12\sqrt{2} \text{ inches}$$

19. Find the perimeter and area of a square with diagonal length 18 meters. Give your answers in simplest radical form.

$$A = 162 \text{ m}^2$$

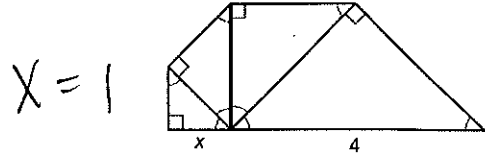
$$P = 36\sqrt{2} \text{ m}$$

20. This triangle loom is made from wood strips shaped into a 45° - 45° - 90° triangle. Pegs are placed every $\frac{1}{2}$ inch along each leg.

Suppose you make a loom with an 18-inch hypotenuse. Approximately how many pegs will you need?

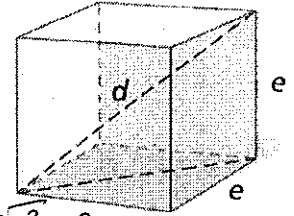
$$\sim 87 \text{ pegs}$$

21. Find the value of x in simplest radical form.



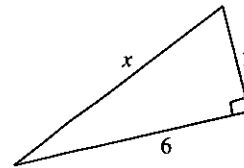
22. Each edge of the cube has length e .

a. Find the diagonal length d if $e = 1$, $e = 2$, and $e = 3$. Give the answers in simplest radical form.

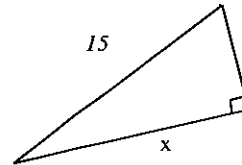


$$d = \sqrt{3}, d = \sqrt{10}, d = 3\sqrt{3}$$

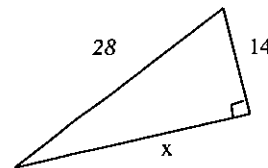
23. Solve for the following. Leave answer in simplest radical form.



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

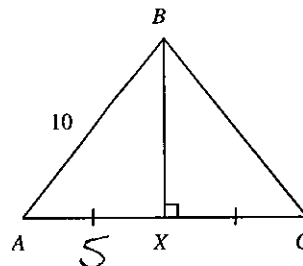


$$x = 12$$



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

24. Given $AC = 10$, find BX in simplest radical form.



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

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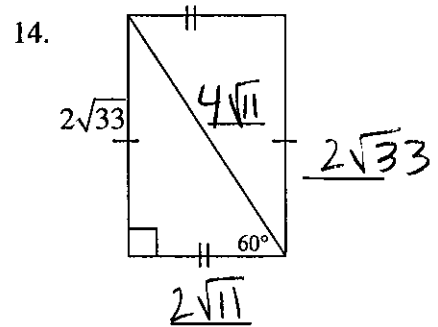
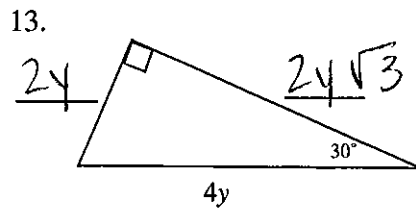
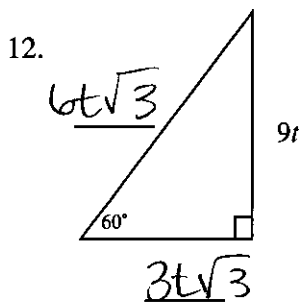
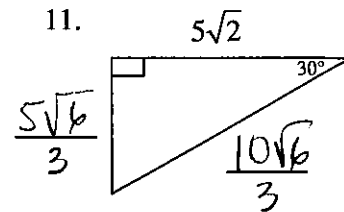
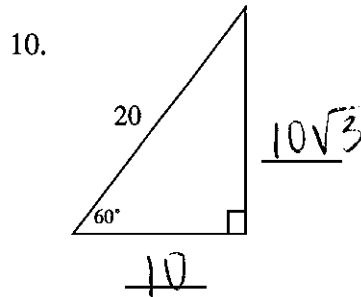
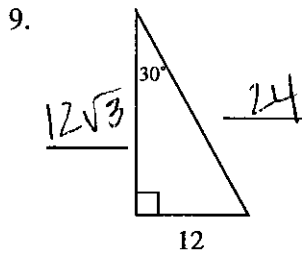
30-60-90 Triangles

1. In a 30°-60°-90° triangle, the short leg is located across from what angle? _____

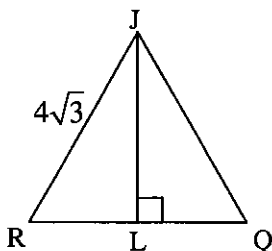
Complete the table for a 30°-60°-90° triangle using exact (radical) values.

	Short Leg	Long Leg	Hypotenuse
Ratios	x	$x\sqrt{3}$	$2x$
2.	5	$5\sqrt{3}$	10
3.	7	$7\sqrt{3}$	14
4.	6	$6\sqrt{3}$	12
5.	$2\sqrt{3}$	6	$4\sqrt{3}$
6.	$3\sqrt{3}$	9	$6\sqrt{3}$
7.	$5y\sqrt{3}$	$15y$	$10y\sqrt{3}$
8.	$7ab\sqrt{2}$	$7ab\sqrt{6}$	$14ab\sqrt{2}$

Fill in the blanks for the special right triangles.

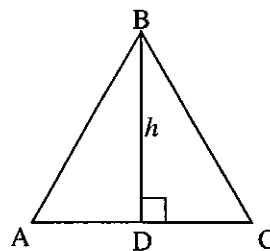


15. $\triangle RJQ$ is equilateral.



$JQ = 4\sqrt{3}$
 $RL = 2\sqrt{3}$
 $LQ = 2\sqrt{3}$
 $JL = 6$

16. $\triangle ABC$ is equilateral.



$AD = \frac{h\sqrt{3}}{3}$
 $DC = \frac{h\sqrt{3}}{3}$
 $AB = \frac{2h\sqrt{3}}{3}$
 $BC = \frac{2h\sqrt{3}}{3}$

For 17 - 20, tell if the given values could be the sides of a 30°-60°-90° triangle.

17. 2, $2\sqrt{3}$, 4

Yes

18. 9, 3, $3\sqrt{3}$

NO

19. $\sqrt{3}$, 3, $\sqrt{6}$

NO

20. $4\sqrt{6}$, $2\sqrt{6}$, $6\sqrt{2}$

Yes

Squared not doubled

$\sqrt{3} \times 2 = 2\sqrt{3}$
not $\sqrt{6}$

21. The hypotenuse of a 30-60-90 triangle is $12\sqrt{2}$ ft. Find the area of the triangle.

$36\sqrt{3} \text{ ft}^2$

22. Find the perimeter and area of a 30°-60°-90° triangle with hypotenuse length 28 centimeters.

$P = 42 + 14\sqrt{3} \text{ cm}$

$A = 98\sqrt{3} \text{ cm}^2$

23. Find the perimeter and area of an equilateral triangle with side length 4 feet.

$P = 12 \text{ feet}$

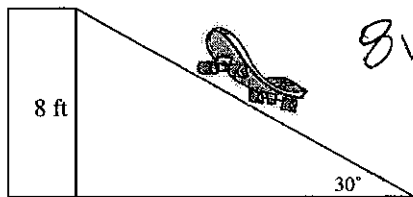
$A = 2\sqrt{3} \text{ ft}^2$

24. Find the perimeter and area of an equilateral triangle with height 30 yards.

$P = 60\sqrt{3}$

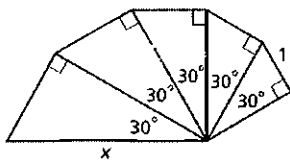
$A = 300\sqrt{3}$

25. A skate board ramp must be set up to rise from the ground at 30°. If the height from the ground to the platform is 8 feet, how far from the platform must the ramp be set?



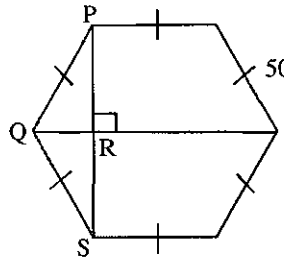
$8\sqrt{3} \text{ feet}$

26. Find the value of x in simplest radical form.



$x = \frac{32}{9}$

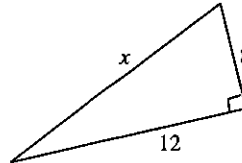
27. Find QR and PS. Answer in simplest radical form.



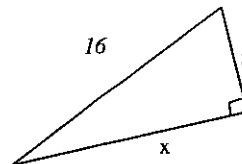
$QR = 25$

$PS = 50\sqrt{3}$

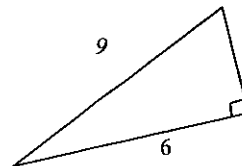
28. Solve for the following. Leave answer in simplest radical form.



$x = 4\sqrt{13}$



$x = 8\sqrt{3}$



$x = 3\sqrt{5}$

29. The perimeter of a rectangle is 60 in. The length is four times the width. What is the length of the diagonal?

$6\sqrt{17} \text{ in}$