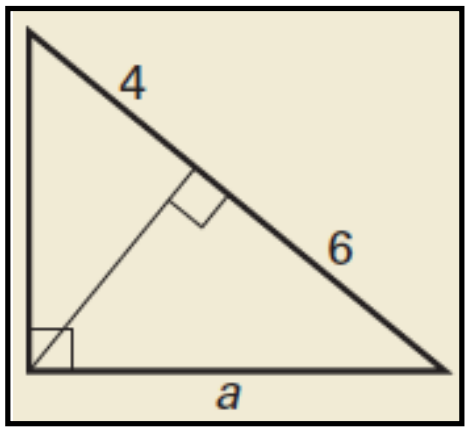
Bellwork
01/12/2012

Find the value of the variable.

1.



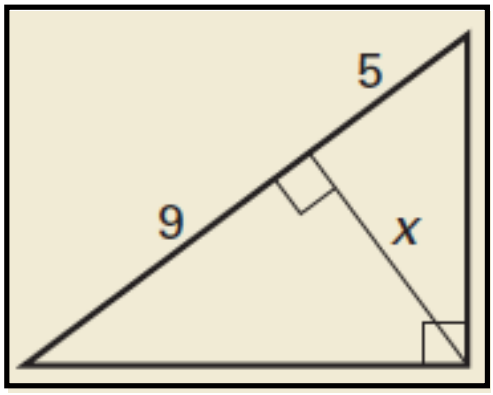
$$\frac{10}{a} = \frac{a}{6}$$

$$a^2 = 60$$

$$4 \cdot 15$$

$$a = 2\sqrt{15}$$

2.



$$\frac{9}{x} = \frac{x}{5}$$

$$x^2 = 45$$

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

Geometry
7.4 Special Right Triangles
Standard(s): 3

Vocabulary:

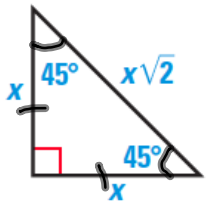
THEOREM *For Your Notebook*

THEOREM 7.8 45°-45°-90° Triangle Theorem

In a 45°-45°-90° triangle, the hypotenuse is $\sqrt{2}$ times as long as each leg.

hypotenuse = leg • $\sqrt{2}$

Proof: Ex. 30, p. 463



THEOREM *For Your Notebook*

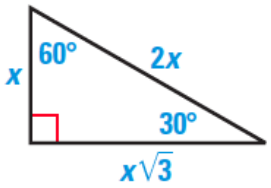
THEOREM 7.9 30°-60°-90° Triangle Theorem

In a 30°-60°-90° triangle, the hypotenuse is twice as long as the shorter leg, and the longer leg is $\sqrt{3}$ times as long as the shorter leg.

hypotenuse = 2 • shorter leg

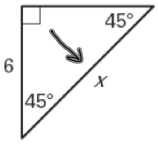
longer leg = shorter leg • $\sqrt{3}$

Proof: Ex. 32, p. 463

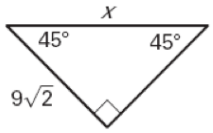


Find Values Using Special Right ∆'s

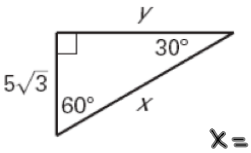
Find the value of the variables. Write your answer in simplest radical form.



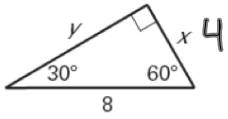
45-45-90
$h = l \cdot \sqrt{2}$
$x = 6\sqrt{2}$



45-45-90
$h = l \cdot \sqrt{2}$
$x = 9\sqrt{2} \cdot \sqrt{2}$
$9 \cdot 2$
$x = 18$

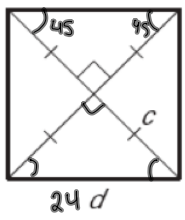


30-60-90
$h = l_s \cdot 2$
$l_l = l_s \cdot \sqrt{3}$
$l_s = 5\sqrt{3}$
$x = 5\sqrt{3} \cdot 2$
$x = 10\sqrt{3}$
$y = 5\sqrt{3} \cdot \sqrt{3}$
$5 \cdot 3$
$y = 15$



4

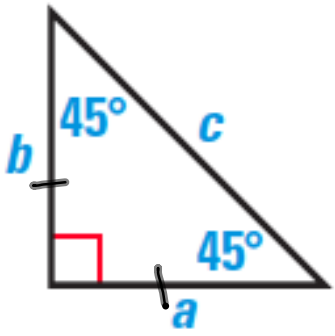
30-60-90
1) $\frac{8}{2} = \frac{2 \cdot x}{2}$
$x = 4$
2) $y = 4 \cdot \sqrt{3}$
$y = 4\sqrt{3}$



$d = 24$
45-45-90
$h = l \cdot \sqrt{2}$
$24 = l \cdot \sqrt{2}$
$\frac{24}{\sqrt{2}} = \frac{c\sqrt{2}}{\sqrt{2}}$
$c = \frac{24}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$
$12\ \frac{24\sqrt{2}}{2}$
$c = 12\sqrt{2}$
$d = 24$

Use Special Right Δ's to Find Info

Complete the table.



a	7	11	$5\sqrt{2}$		$\sqrt{5}$
b	7	11	$5\sqrt{2}$		
c	$7\sqrt{2}$	$11\sqrt{2}$	10	$6\sqrt{2}$	

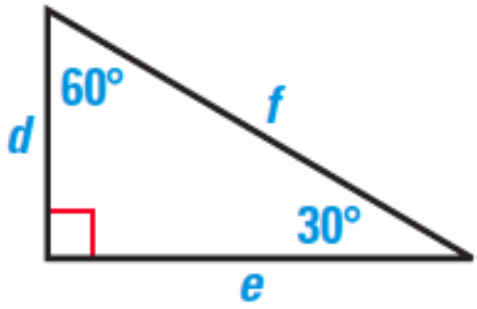
45-45-90

$h = l\sqrt{2}$

$\frac{10}{\sqrt{2}} = \frac{l \cdot \sqrt{2}}{\sqrt{2}}$

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

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



d	5	7	8		
e	$5\sqrt{3}$	$7\sqrt{3}$	$8\sqrt{3}$		12
f	10	14	16	$18\sqrt{3}$	

30-60-90

$h = l_s \cdot 2$

$l_l = l_s\sqrt{3}$

$\frac{8\sqrt{3}}{\sqrt{3}} = \frac{l_s \cdot \sqrt{3}}{\sqrt{3}}$

Determine the Type of Special Δ

The side lengths of a triangle are given. Determine whether it is 45-45-90, 30-60-90, or neither.

Note: Start with the smallest #!

7, 7, 7√3

~~45-45-90~~

$h = l \cdot \sqrt{2}$

Neither!

7, 14, 7√3

30-60-90

$h = 2 \cdot l_s$

$l_l = l_s \cdot \sqrt{3}$

Homework Assignment

Worksheet 7.4B