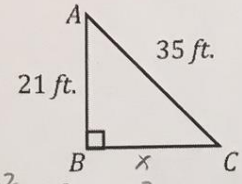
Name: KEY Date: _____ Period: _____ Geo w/ Trig

Sections 8.2-8.3 Review

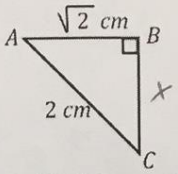
Find the missing side lengths for each of the following triangles. Leave your answer in simplest radical form.

1)



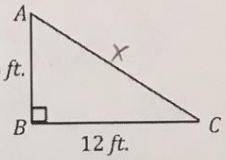
$21^2 + x^2 = 35^2$
$441 + x^2 = 1225$
$x^2 = 784$
$x = \sqrt{784} = 28$

2)



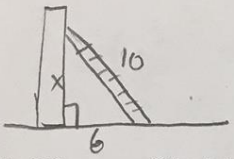
$(\sqrt{2})^2 + x^2 = 2^2$
$2 + x^2 = 4$
$x^2 = 2$
$x = \sqrt{2}$

3)



$6^2 + 12^2 = x^2$
$36 + 144 = x^2$
$180 = x^2$
$x = \sqrt{180}$
$x = \sqrt{36} \cdot \sqrt{5}$
$x = 6\sqrt{5}$

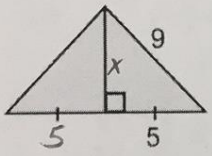
4) A 10-foot ladder is placed against a building. The base of the ladder is 6 feet from the building. How high does the ladder reach on the building?



$x^2 + 6^2 = 10^2$
$x^2 + 36 = 100$
$x^2 = 64$
$x = 8$

8 ft high

5) Find the area of the triangle below. Leave your answer in simplest radical form.



$5^2 + x^2 = 9^2$
$25 + x^2 = 81$
$x^2 = 56$
$x = \sqrt{56}$
$\sqrt{4}\sqrt{14}$
$x = 2\sqrt{14}$

$A = \frac{1}{2}bh$
$A = \frac{1}{2}(10)(2\sqrt{14})$
$= \frac{1}{2} \cdot 20\sqrt{14}$
$= 10\sqrt{14}$ units^2

Determine whether the following side lengths create a triangle. If yes, classify the triangle as acute, right, or obtuse.

6) 10, 11, 20

$10 + 11 > 20$
$21 > 20$ ✓
Yes

$20^2 \stackrel{?}{>} 10^2 + 11^2$
$400 = 100 + 121$
$400 > 221$
Obtuse

7) $5\sqrt{2}$, 10, 11

7.07

$5\sqrt{2} + 10 > 11$
$17.07 > 11$ ✓
Yes

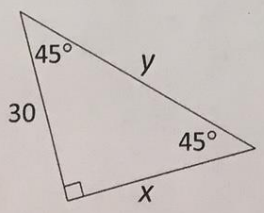
$11^2 \stackrel{?}{>} (5\sqrt{2})^2 + (10)^2$
$121 = 50 + 100$
$121 < 150$
Acute

8) 12, 14, 49

$12 + 14 > 49$
$26 \not> 49$ ✗
Not a Triangle

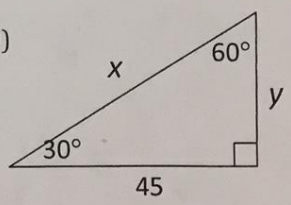
Find the missing variables in each of the following triangles.

9)



$x = 30$ $y = 30\sqrt{2}$

10)

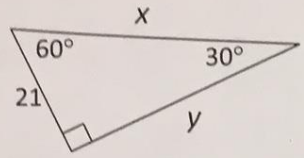


30	60	90
1	$\sqrt{3}$	2
y	45	x

$\frac{1}{y} = \frac{\sqrt{3}}{45}$
$45 = \sqrt{3}y$
$y = \frac{45}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$
$y = \frac{45\sqrt{3}}{3} = 15\sqrt{3}$

$x = 15\sqrt{3}$ $y = 30\sqrt{3}$

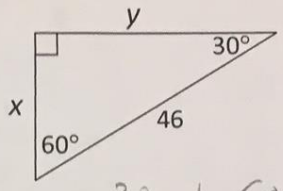
11)



30	60	90
1	$\sqrt{3}$	2
21	y	x

x = 42 y = $21\sqrt{3}$

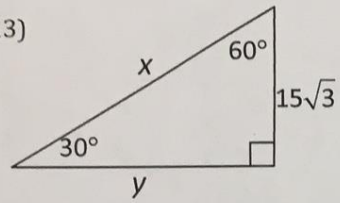
12)



30	60	90
1	$\sqrt{3}$	2
x	y	46

x = 23 y = $23\sqrt{3}$

13)



30	60	90
1	$\sqrt{3}$	2
$15\sqrt{3}$	y	x

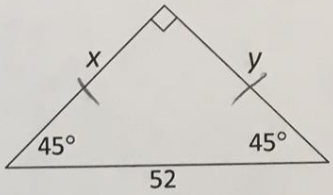
$\frac{1}{15\sqrt{3}} = \frac{\sqrt{3}}{y}$

$y = 15\sqrt{3}$

$y = 45$

x = $30\sqrt{3}$ y = 45

14)



45	45	90
1	1	$\sqrt{2}$
x	y	52

$\frac{1}{x} = \frac{\sqrt{2}}{52}$

$52 = x\sqrt{2}$

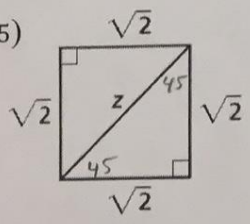
$x = \frac{52}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{52\sqrt{2}}{2}$

$= 26\sqrt{2}$

x = $26\sqrt{2}$ y = $26\sqrt{2}$

Find the value of each variable. Leave your answers in simplest radical form.

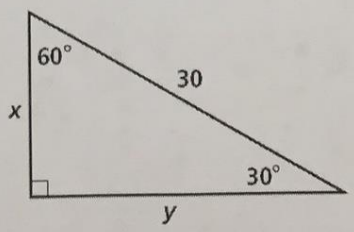
15)



$z = \sqrt{2} \cdot \sqrt{2} = 2$

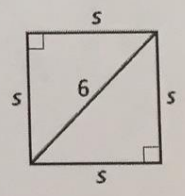
z = 2

16)



x = 15 y = $15\sqrt{3}$

17)



45	45	90
1	1	$\sqrt{2}$
s	s	6

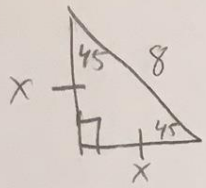
$\frac{1}{s} = \frac{\sqrt{2}}{6}$ $6 = s\sqrt{2}$

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

$= 3\sqrt{2}$

s = $3\sqrt{2}$

18) The hypotenuse of an isosceles right triangle is 8 in. Find the length of a leg. Leave in simplest radical form.



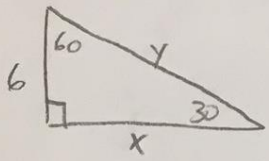
45	45	90
1	1	$\sqrt{2}$
X	X	8

$\frac{1}{x} = \frac{\sqrt{2}}{8}$

$8 = x\sqrt{2}$

$x = \frac{8}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{8\sqrt{2}}{2} = \boxed{4\sqrt{2}}$

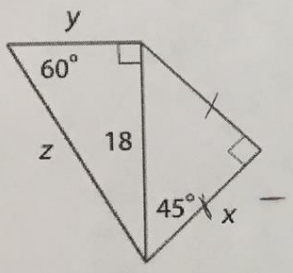
19) In a 30°- 60° - 90° triangle, the shorter leg is 6 ft long. Find the length of the other two sides. Leave in simplest radical form.



$x = \boxed{6\sqrt{3}}$

$y = 2(6) = \boxed{12}$

20) Find the value of each missing variable. Leave your answer in simplest radical form.



45	45	90
1	1	$\sqrt{2}$
X	X	18

$\frac{1}{x} = \frac{\sqrt{2}}{18}$

$18 = x\sqrt{2}$

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

$\boxed{x = 9\sqrt{2}}$

30	60	90
1	$\sqrt{3}$	2
y	18	z

$\frac{1}{y} = \frac{\sqrt{3}}{18}$

$18 = y\sqrt{3}$

$y = \frac{18}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{18\sqrt{3}}{3} = 6\sqrt{3}$

$\boxed{y = 6\sqrt{3}}$

$z = 2 \cdot 6\sqrt{3}$

$\boxed{z = 12\sqrt{3}}$