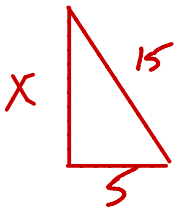
Advanced Geometry **Name:** key

Chapter 10 Review **Date:** _____ **Period:** _____

Identify the choice that best completes the statement or answers the question.

1.) A 15 foot ladder is leaning against a shed. The base of the ladder is 5 feet from the shed. About how high up the shed does the ladder reach?

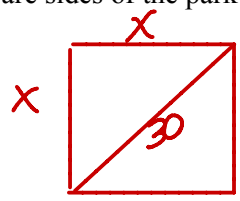
a. 14 ft.
b. 10 ft.
c. 20 ft.
d. 160 ft.



$5^2 + x^2 = 15^2$
$25 + x^2 = 225$
$x^2 = 200$
$x = 14.1$ ft

2.) A sidewalk forms the diagonal of a square park. The sidewalk is 30 meters long. To the nearest tenth of a meter, how long are sides of the park?

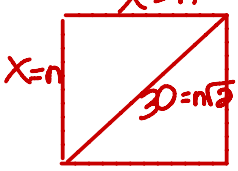
a. 15.0 m
b. 28.5 m
c. 75.0 m
d. 21.2 m



$x^2 + x^2 = 30^2$
$2x^2 = 900$
$x^2 = 450$
$x = 21.2$

or

using 45-45-90

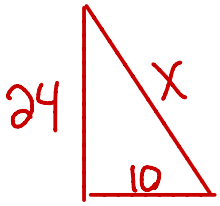


$n\sqrt{2} = 30$
$n = \frac{30}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$
$n = \frac{30\sqrt{2}}{2}$
$n = 15\sqrt{2}$

$x = 15\sqrt{2}$
$x \approx 21.2$

3.) A support wire is needed to stabilize a 24 foot pole. If the wire is to be anchored to the ground 10 ft from the base of the pole, how long will the wire have to be?

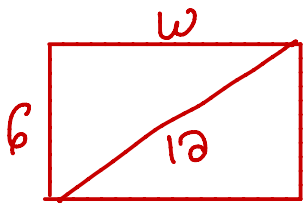
a. 34 ft.
b. 26 ft.
c. 14 ft.
d. 146 ft.



$24^2 + 10^2 = x^2$
$676 = x^2$
$26 = x$

4.) The length of a rectangle is 6 cm. The length of a diagonal of the rectangle is 12 cm. Find the exact width of the rectangle.

a. $6\sqrt{3}$ cm
b. $6\sqrt{5}$ cm
c. $6\sqrt{2}$ cm
d. 6 cm

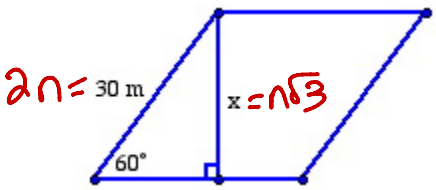


$6^2 + w^2 = 12^2$
$36 + w^2 = 144$
$w^2 = 108$
$w = \sqrt{108}$
$w = 2.3\sqrt{3}$
$w = 6\sqrt{3}$

108
2 54
2 27
3 9
3 3

5.) A rhombus has 30 m sides. If the angle at one corner is 60^0, find exact the height of the rhombus.

a. $15\sqrt{3}$ m
b. $30\sqrt{3}$ m
c. 15 m
d. 30 m



$2n = 30$
$n = 15$
$x = n\sqrt{3}$
$x = 15\sqrt{3}$

6.) Simplify $\sqrt{64}$

a. $6\sqrt{3}$
b. 8
c. 12
d. $6\sqrt{2}$

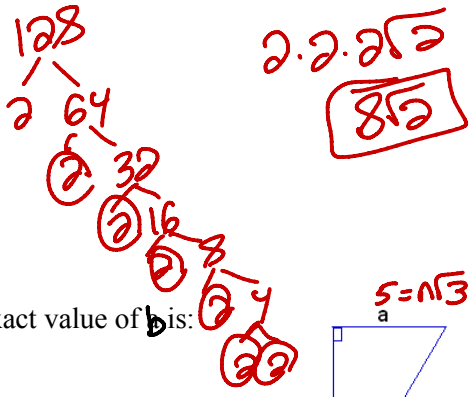
7.) Simplify $\sqrt{128}$

a. $6\sqrt{2}$

b. $6\sqrt{6}$

c. $4\sqrt{2}$

d. $8\sqrt{2}$



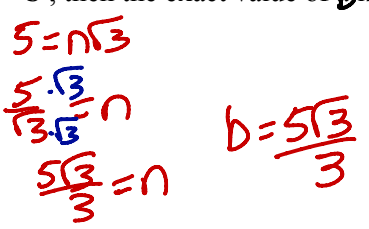
8.) If $a = 5$, then the exact value of b is:

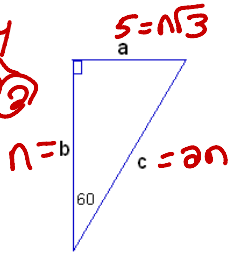
a. $5\sqrt{3}$

b. $\frac{5\sqrt{2}}{2}$

c. $\frac{5\sqrt{3}}{3}$

d. 5





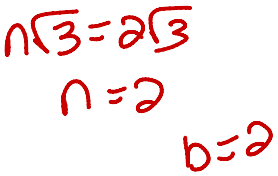
9.) If $a = 2\sqrt{3}$, then the exact value of b is:

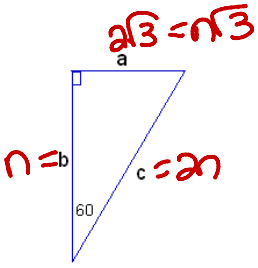
a. 2

b. 6

c. $4\sqrt{3}$

d. $4\sqrt{2}$





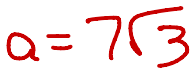
10.) If b=7, then the exact value of c is:

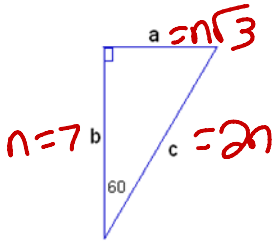
a. 7

b. 3.5

c. $7\sqrt{3}$

d. 14





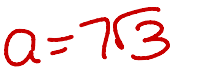
11.) If $b = 7$, then the exact value of a is:

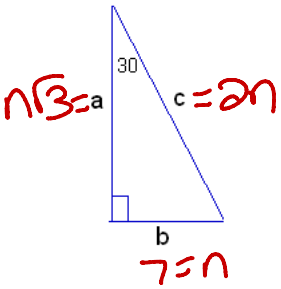
a. 7

b. $7\sqrt{2}$

c. $7\sqrt{3}$

d. 14





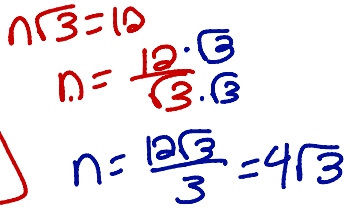
12.) If $a = 12$, then the value of b, to the nearest tenth is:

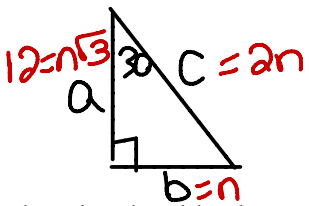
a. 6.0

b. 4.2

c. 4.0

d. 3.5





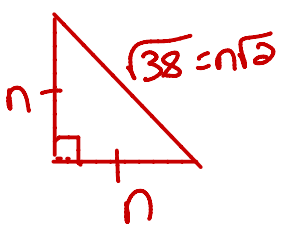
13.) What is the length of each leg of an isosceles triangle with a hypotenuse of $\sqrt{38}$.

a. $\sqrt{19}$

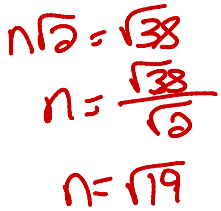
b. 19

c. $4\sqrt{19}$

d. $2\sqrt{19}$



right



14.) What is the distance between (7,3) and (1, 5)?

a. $4\sqrt{10}$
b. $2\sqrt{10}$
c. $\sqrt{14}$
d. $10\sqrt{4}$

$\sqrt{(5-3)^2+(1-7)^2}$
$\sqrt{2^2+(-6)^2}$
$\sqrt{4+36}$
$\sqrt{40}$
$2\sqrt{2\cdot 5}$
$2\sqrt{10}$

40
2 20
2 10
2 5

15.) Which of the following groups of side lengths would form a 30^0- 60^0- 90^0 triangle?

a. $5, 10, 10\sqrt{3}$
b. $5, 5, 5\sqrt{2}$
c. $5, 5\sqrt{2}, 5\sqrt{2}$
d. $5, 5\sqrt{3}, 10$

$n, n\sqrt{3}, 2n$
$n = 5$

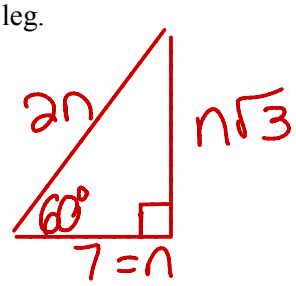
16.) Which of the following groups of side lengths would form a 45^0- 45^0- 90^0 triangle?

e. $5, 10, 10\sqrt{3}$
f. $5, 5, 5\sqrt{2}$
g. $5, 5\sqrt{2}, 5\sqrt{2}$
h. $5, 5\sqrt{3}, 10$

$n, n, n\sqrt{2}$
$n = 5$

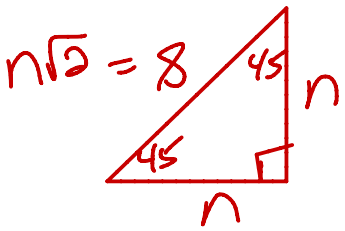
Solve the following problems using special right triangles, draw a picture.

17.) A right triangle has a 60 degree angle, and the leg adjacent to that angle has a length of 7 in. Find the length of the other leg.



$7\sqrt{3}$ in

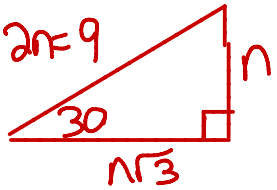
18.) A right triangle has a 45 degree angle, and the hypotenuse has a length of 8 ft. Find the length of a leg.



$n\sqrt{2} = 8$
$n = \frac{8 \cdot \sqrt{2}}{\sqrt{2} \cdot \sqrt{2}}$
$n = \frac{8\sqrt{2}}{2} = 4\sqrt{2}$

$4\sqrt{2}$ ft

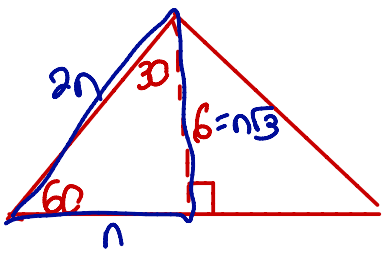
19.) The hypotenuse of a right triangle with a 30 degree angle has a length of 9 cm. What is the length of the leg adjacent to the 30 degree angle?



$2n = 9$
$n = 4.5$

$n\sqrt{3}$
$4.5\sqrt{3}$ cm

20.) The height of an equilateral triangle is 6 in. Find the perimeter of the triangle. [Draw a picture and use the properties of special triangles]



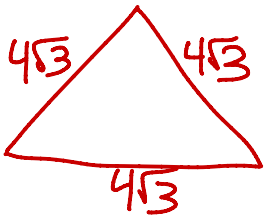
$n\sqrt{3}=6$

$n=\frac{6}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}$

$n=\frac{6\sqrt{3}}{3}$

$n=2\sqrt{3}$

$2n=2(2\sqrt{3})=4\sqrt{3}$



$P=4\sqrt{3}+4\sqrt{3}+4\sqrt{3}$

$P=12\sqrt{3}$ in

State if the three side lengths form an acute, obtuse, or right triangle.

19.) 6 mi, $2\sqrt{55}$ mi, 17 mi

$a^2+b^2=6^2+(2\sqrt{55})^2$

$=36+4(55)$

$=36+220=256$

$c^2=17^2=289$

$a^2+b^2<c^2$ → obtuse

20.) 4.8 km, 28.6 km, 29 km

$a^2+b^2=4.8^2+28.6^2$

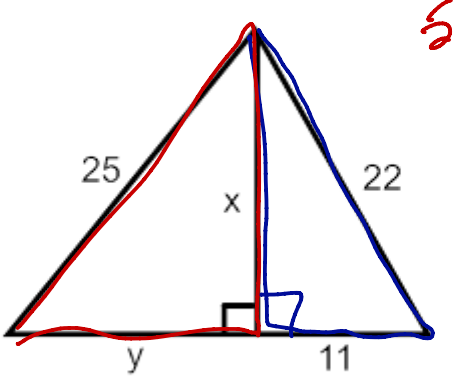
$=841$

$c^2=29^2=841$

$a^2+b^2=c^2$ → right

Use Pythagorean Theorem to find the missing segments of each triangle.

21.) x = y =



$11^2+x^2=22^2$

$121+x^2=484$

$x^2=363$

$x=\sqrt{363}$

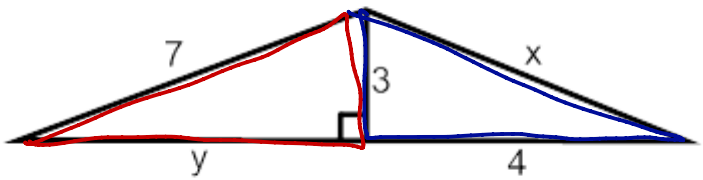
$\sqrt{363}^2+y^2=25^2$

$363+y^2=625$

$y^2=262$

$y=\sqrt{262}$

22.) x = y =



$3^2+y^2=7^2$

$9+y^2=49$

$y^2=40$

$y=\sqrt{40}$

$y=2\sqrt{2\cdot5}$

$y=2\sqrt{10}$

$3^2+4^2=x^2$

$25=x^2$

$5=x$