Key

Geometry Name: _____

Chapter 9 Right Triangle Trig Test Review Date: _____

1.) Classify ***each*** of the following triangles as acute, right, or obtuse based on the given side lengths. Put a star next to the Pythagorean Triple.

$a^2+b^2 \gtrless c^2$ (>, =, <)

a.) 5-6-7 → longest side is c

$5^2+6^2 \gtrless 7^2$

$25+36 \gtrless 49$

$61 > 49$ Acute △ longest leg not long enough

b.) 24-45-51

$24^2+45^2=51^2$ Right

c.) 20-20-35

$20^2+20^2<35^2$ obtuse

longest side really long short legs open wide to reach

2.) Simplify the following radicals.

1 4 9 16 25 36 49 64 81 100 121 144 169 196

a.) $\sqrt{280}$

1) Break up into perfect square + leftover
2) separate and take √

$\sqrt{4\cdot 70}$

$7\cdot 10$

$7\cdot 2\cdot 5$

$\sqrt{4}\cdot\sqrt{70}$

$2\sqrt{70}$

b.) $\frac{12}{\sqrt{10}}$ Rationalize Denominator

denominator · denominator

$\frac{12}{\sqrt{10}}\cdot\frac{\sqrt{10}}{\sqrt{10}}$

$\frac{12\sqrt{10}}{\sqrt{100}}$

$\frac{6}{5}\frac{12\sqrt{10}}{10}$

$\frac{6\sqrt{10}}{5}$

c.) $\sqrt{10}\cdot\sqrt{55}$

$\sqrt{10\cdot 55}$

$\sqrt{5\cdot 2\cdot 5\cdot 11}$

$\sqrt{25}\cdot\sqrt{22}$

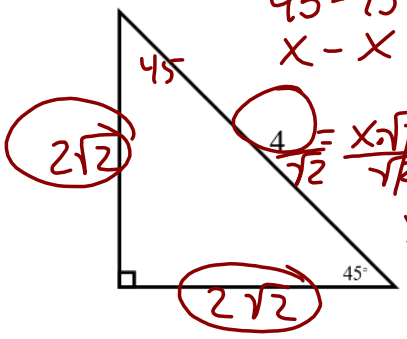
$5\sqrt{22}$

• multiply under √ together
• multiply outside √ together

3.) Find the missing side lengths of the triangle below. Then, find the perimeter in both simplest radical form and as a decimal rounded to the nearest tenth.

45-45-90

$x-x-x\sqrt{2}$



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

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

$x=\frac{4\sqrt{2}}{2}=2\sqrt{2}$

$P=2\sqrt{2}+2\sqrt{2}+4$

$=4\sqrt{2}+4$

$3\sqrt{2}\cdot 4\sqrt{6}$

$12\sqrt{2\cdot 2\cdot 3}$

$12\sqrt{4}\sqrt{3}$

$12\cdot 2\sqrt{3}$

$24\sqrt{3}$

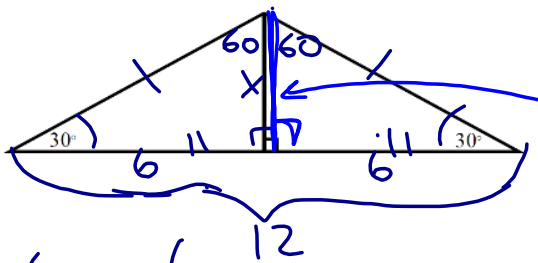
Radical Form: $4\sqrt{2}+4$

Decimal: 9.7

4.) The base angles of the isosceles triangle below are 30°. If the length of the entire base is 12, find the length of the altitude drawn to the base.

30-60-90

$x-x\sqrt{3}-2x$



Altitude line from a vertex perpendicular to the opposite side

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

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

$\frac{6\sqrt{3}}{3}=2\sqrt{3}$ is length of altitude

SOH CAH TOA

5.) Use the right triangles below to find the following:

To solve for Angle
1) set up ratio
2) take inverse trig

a.) $m\angle U = 45°$ $\tan(x) = \frac{8}{8}$ $x = \tan^{-1}(\frac{8}{8})$ $x = 45$

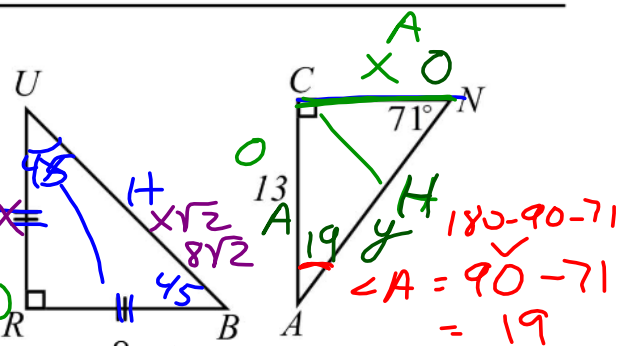
b.) $\overline{CN} = 4.47$ $x \cdot \tan(71) = \frac{13}{x} \cdot x$ $\frac{x\tan(71)}{\tan(71)} = \frac{13}{\tan(71)}$ $x = \frac{13}{\tan(71)}$

To Solve for side
1) set up ratio
2) multiply by denominator
3) divide by trig function

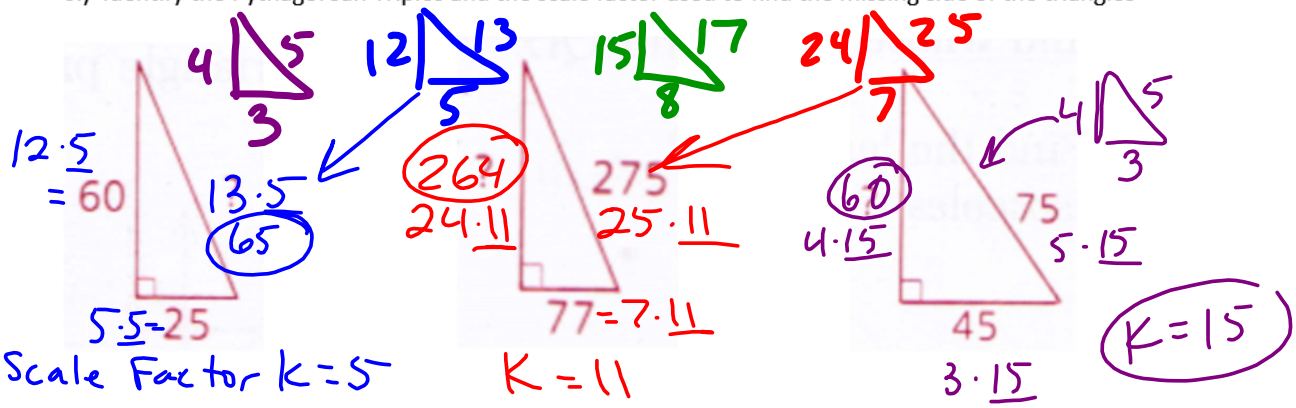
c.) $\overline{UB} = 8\sqrt{2}$ 45-45-90 $x - x - x\sqrt{2}$

d.) $m\angle A = 19°$ $180-90-71$ $\angle A = 90 - 71 = 19$

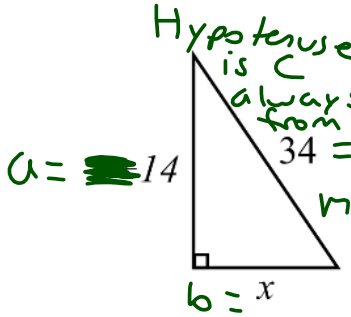
e.) $\overline{AN} = 13.75$ $\sin(71) = \frac{13}{y}$ or $\cos(19) = \frac{13}{y}$ $y = \frac{13}{\sin(71)}$



6.) Identify the Pythagorean Triples and the scale factor used to find the missing side of the triangles



7.) Use the Pythagorean Theorem and factoring to find the side lengths of the right triangle below.
You must show your work (no guess and test!).



Hypotenuse is c always across from 90° angle must be alone

$a^2 + b^2 = c^2$

$14^2 + x^2 = 34^2$

$196 + x^2 = 1156$

$-196 \quad -196$

$x^2 = 960$ undo square with $\sqrt{}$

$x = \sqrt{960}$

$x = 30.98$

$x = 31.0$