Geometry (E)
Chapter 9 Review

Name: KEY

Period: ____

1.) Simplify the following radicals.

a.) $\sqrt{72}$

9 8

3 3 4 2

$\sqrt{3\cdot3\cdot2\cdot2\cdot2}$

$3\cdot2\sqrt{2}$

$\boxed{6\sqrt{2}}$

b.) $\sqrt{128}$

4 32

2 2 8 4

2 2 4 2 2 2

$\sqrt{2\cdot2\cdot2\cdot2\cdot2\cdot2\cdot2}$

$2\cdot2\cdot2\sqrt{2}$

$\boxed{8\sqrt{2}}$

c.) $\sqrt{280}$

40 7

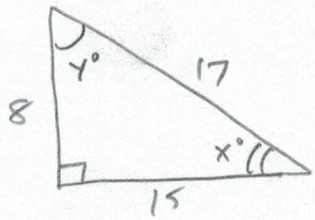
4 10 7

2 2 5 2 7

$2\sqrt{5\cdot2\cdot7}$

$\boxed{2\sqrt{70}}$

2.) Find the measure of all three angle in an 8-15-17 triple.



$x = \sin^{-1}\left(\frac{8}{17}\right)$

or

$x = \cos^{-1}\left(\frac{15}{17}\right)$

or

$x = \tan^{-1}\left(\frac{8}{15}\right)$

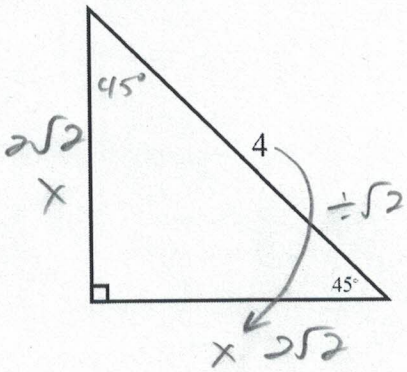
$x = 28.1°$

$y = 180 - 90 - 28.1$

$y = 61.9$

$\boxed{28.1°,\ 61.9°,\ 90°}$

3.) Find the missing side lengths of the triangle below. Then, find the perimeter rounded to the nearest tenth.



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

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

$x = 2\sqrt{2}$

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

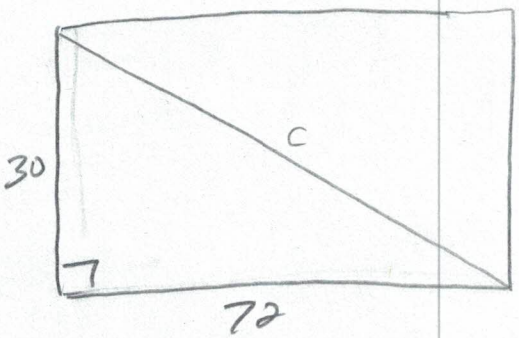
$= 2.828 + 2.828 + 4$

$= 9.656854249\ldots$

$\boxed{P = 9.7}$

Perimeter: $\boxed{9.7}$

4.) Find the length of one of diagonals of a rectangle with side lengths of 30 and 72.



METHOD 1

$30^2 + 72^2 = c^2$

$900 + 5184 = c^2$

$6084 = c^2$

$c = \sqrt{6084}$

$\boxed{c = 78}$

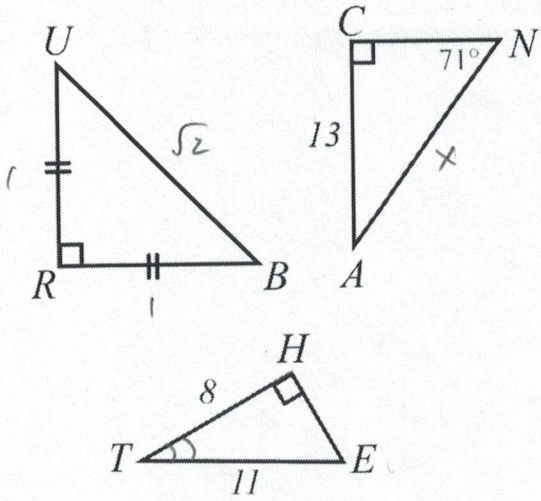
METHOD 2

$(5\text{-}12\text{-}13)\times 6$

30-72-78

$\boxed{78}$

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



a.) $m\angle U = \boxed{45°}$

b.) $m\angle A = \boxed{19°}$ $\quad 90 - 71 = 19°$

c.) $\sin\angle U = \boxed{\frac{1}{\sqrt{2}}}$ $\quad \frac{O}{H} = \frac{1}{\sqrt{2}}$

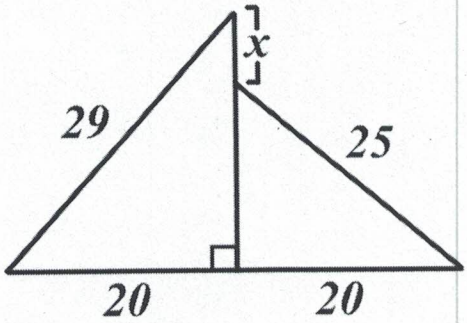
d.) $\tan\angle B = \boxed{1}$ $\quad \frac{O}{A} = \frac{1}{1}$

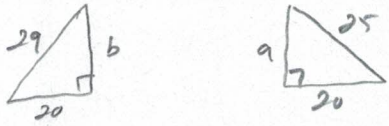
e.) $m\angle T = \boxed{43.3°}$ $\quad \cos^{-1}\left(\frac{8}{11}\right)$

f.) $\overline{AN} = \boxed{13.7}$ $\quad \sin 71° = \frac{13}{x}$

$x = \frac{13}{\sin 71°}$

6.) Find the length of the segment marked by the variable ***x***.





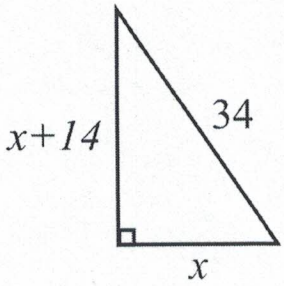
$20^2 + b^2 = 29^2$ $\quad (3\text{-}4\text{-}5) \times 5$

$b = 21$ $\quad a = 15$

$21 - 15 = \underline{6}$

$x = \boxed{6}$

7.) Challenge: Use the Pythagorean Theorem and factoring to find the side lengths of the right triangle below. ***<u>You must show your work (no guess and test!).</u>***



METHOD 1

TRIPLE!!

$(8\text{-}15\text{-}17) \times 2$

$16\text{-}30\text{-}34$

$\underline{x = 16}$

METHOD 2 (HARDER)

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

$x^2 + x^2 + \underline{28x} + 196 = 1156$

$\frac{2x^2 + 28x - 960}{2} = \frac{0}{2}$

$x^2 + 14x - \underline{480} = 0$

$x^2 + 30x - 16x - 480 = 0$

$x(x+30) - 16(x+30) = 0$

$(x+30)(x-16) = 0$

$x = -30, \boxed{16}$

480
1, 480
2, 240
3, 160
4, 120
5, 96
6, 80
8, 60
10, 48
12, 40
16, 30