Day 3 Homework- 5.7 Pythagorean Theorem and Triples **Name:**

(1-4) Simplify each radical completely. Leave exact (no decimals)

1. $\sqrt{48}$

$\sqrt{16}\cdot 3$

$4\sqrt{3}$

2. $4\sqrt{63}$

$4\sqrt{9}\,7$

$4\cdot 3\sqrt{7}$

$12\sqrt{7}$

3. $\frac{12}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}}=\frac{12\sqrt{3}}{3}$

$4\sqrt{3}$

4. $\frac{\sqrt{64}}{\sqrt{6}}=\frac{8}{\sqrt{6}}\cdot\frac{\sqrt{6}}{\sqrt{6}}$

$=\frac{8\sqrt{6}}{6}$

$=\frac{4\sqrt{6}}{3}$

(5-6) Perform the indicated operation on the radicals and simplify completely. Leave exact (no decimals)

5. $4\sqrt{3}+5\sqrt{3}-2\sqrt{6}-4\sqrt{6}$

$9\sqrt{3}-6\sqrt{6}$

6. $2\sqrt{3}\left(5\sqrt{2}+6\sqrt{12}\right)$

$10\sqrt{6}+12\sqrt{36}$

$10\sqrt{6}+12\cdot 6$

$10\sqrt{6}+72$

7-12) Tell if the measures can be the side lengths of a triangle. If so, classify the triangle as acute, obtuse, or right.

7) 9, 12, 16

$16^2 ? 12^2+9^2$

$256 \quad 144+81$

$256>225$ OBtuse

8) 11, 14, 27

$27^2 ? 14^2+11^2$

$729 \quad 196+121$

$729>317$ OBtuse

9) 3, 4, 5 Right

*triple...must be

$5^2 ? 3^2+4^2$

$25=9+16$ ✓

Right

10) $\sqrt{3}$, 2, 3

$3^2 ? 2^2+\sqrt{3}^2$

$9 ? 4+3$

$9>7$ OBtuse

11) 0.05, 0.12, 0.13

5-12-13 triple

must be a

Right Δ

12) $\sqrt{11}$, $\sqrt{7}$, 4

$\approx 3.32 \quad \approx 2.65$

$4^2 ? \sqrt{11}^2+\sqrt{7}^2$

$16 ? 11+7$

$16<18$ acute

12-14) Does each set of number form a Pythagorean triple? Explain.

11) 4, 5, 6

NO!!

$4^2+5^2\neq 6^2$

12) 10, 24, 26 ÷2

5, 12, 13

yes!

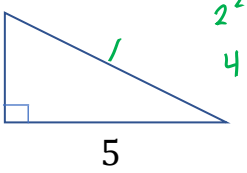
13) 15, 20, 25 ÷5

3, 4, 5

yes!

14-19). Find the missing side length in the triangle. Simplify any radical answers (no decimals). Determine if it is a triple or not.

14)



$2^2+5^2=x^2$

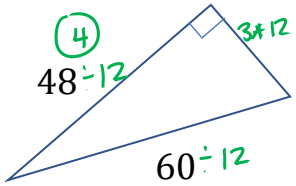
$4+25=x^2$

$\sqrt{29}=\sqrt{x^2}$

$x=\sqrt{29}$

not a triple!

15)



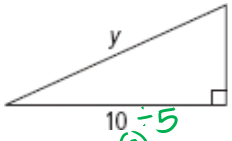
4

5

3-4-5 triple * 12

$3\times12=36$

16).



1

2

not a triple

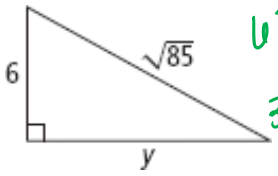
$1^2+2^2=y^2$

$\sqrt{5}=\sqrt{y^2}$

$y=\sqrt{5}*5$

$y=5\sqrt{5}$

17).



$6^2+y^2=\sqrt{85}^2$

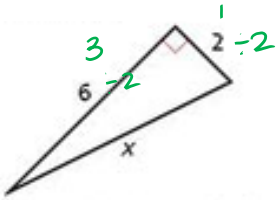
$36+y^2=85$

$\sqrt{y^2}=\sqrt{49}$

$y=7$

not a triple

18)



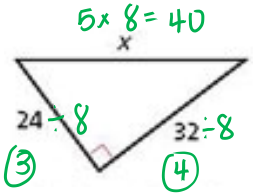
$1^2+3^2=x^2$

$10=x^2$

$x=\sqrt{10}$

not a triple!

19)



3

4

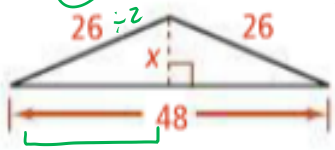
3-4-5 triple

* 8

$5\times8=40$

20-21) Let's take is up a notch! Given the diagrams below, find the value of x. Express your answer in simplest radical form.

20)



13

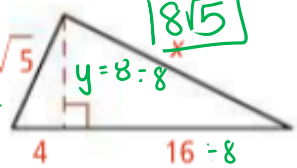
12

5-12-13 triple x 2

$x=5\times2$

$x=10$

21)



$8\sqrt{5}$

① $4^2+y^2=(4\sqrt{5})^2$

$16+y^2=16\cdot5$

$\sqrt{y^2}=\sqrt{64}$

$y=8$

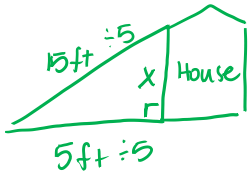
② $1^2+2^2=x^2$

$5=x^2$

$x=\sqrt{5}*8=8\sqrt{5}$

22-23) Applications:

22. A painter leans a 15-ft ladder against a house. The base of the ladder is 5 ft from the house. To the nearest tenth of a foot, how high on the house does the ladder reach?



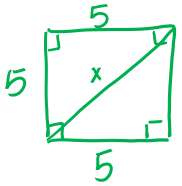
$1^2+x^2=3^2$

$1+x^2=9$

$\sqrt{x^2}=\sqrt{8}$

$x=2\sqrt{2}*5 \Rightarrow x=10\sqrt{2}\approx 14.1$ feet

23. A walkway forms on diagonal of a square playground. The length of the playground is 5 meter. To the nearest meter, how long is the walkway of the playground?



$5^2+5^2=x^2$

$25+25=x^2$

$\sqrt{50}=\sqrt{x^2}$

$x=\sqrt{50}\approx 7.07$

about 7 meters