Name: KEY

Period:_____ Date:_____

Geometry Worksheet

7.4 Right Triangles with an Altitude

I. Simplify each radical.

1) $\sqrt{144}$ = 12

2) $\sqrt{150}$ = $5\sqrt{6}$

3) $\sqrt{\frac{81}{100}}$ = $\frac{9}{10}$

4) $\frac{\sqrt{98}}{\sqrt{25}}$ = $\frac{7\sqrt{2}}{5}$

5) $\frac{\sqrt{121}}{\sqrt{25}}$ = $\frac{11}{5}$

6) $\frac{\sqrt{98}}{\sqrt{32}}$ = $\frac{7\sqrt{2}}{4\sqrt{2}} = \boxed{\frac{7}{4}}$

II. Find the geometric mean for each pair of numbers.

1) 7 and 9 $3\sqrt{7}$

2) 14 and 14 14

3) $2\sqrt{3}$ *and* $\sqrt{3}$ $\sqrt{6}$

4) $8\sqrt{2}$ *and* $\sqrt{2}$ 4

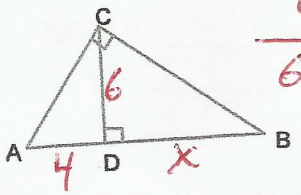
5) 10 and 8.1 9

6) $\frac{9}{16}$ *and* $\frac{25}{36}$ $\frac{15}{24} = \boxed{\frac{5}{8}}$

$\frac{\sqrt{9 \cdot 25}}{\sqrt{16 \cdot 36}} = \frac{3 \cdot 5}{4 \cdot 6}$

III. Use the figures to answer #1-7.

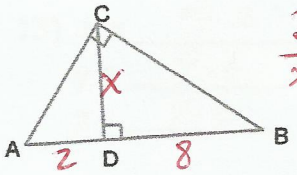
1) Find DB if AD = 4 and CD = 6. 9



$\frac{4}{6} = \frac{6}{x}$

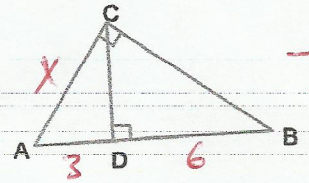
$x = 9$

2) If AD = 2 and DB = 8, find CD. 4



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

3) If AD = 3 and DB = 6, find AC. $3\sqrt{3}$

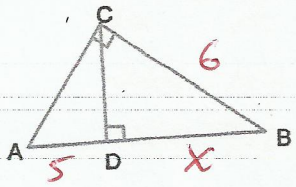


$\frac{9}{x} = \frac{x}{3}$

$x^2 = 27$

$x = 3\sqrt{3}$

4) Find DB if BC = 6 and AD = 5. 4



$\frac{5+x}{6} = \frac{6}{x}$

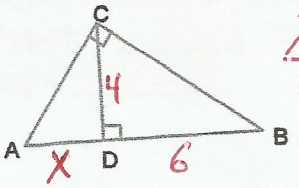
$x^2 + 5x = 36$

$x^2 + 5x - 36 = 0$

$(x+9)(x-4) = 0$

$x = -9, 4$

5) Find AD if DC = 4 and DB = 6. $8/3$

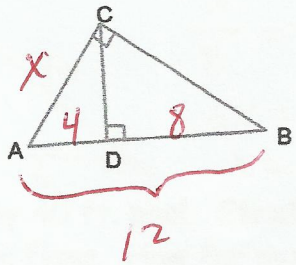


$\frac{x}{4} = \frac{4}{6}$

$6x = 16$

$x = 8/3$

6) If AB = 12 and DB = 8, find AC. $4\sqrt{3}$

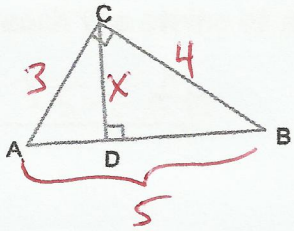


$\frac{4}{x} = \frac{x}{12}$

$x^2 = 48$

$x = 4\sqrt{3}$

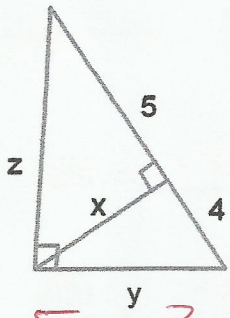
7) Find CD if AC = 3, BC = 4 and AB = 5. $\frac{12}{5}$



$\frac{4}{5} = \frac{x}{3}$

IV. Find each indicated variable.

8) x = $2\sqrt{5}$
y = 6
z = $3\sqrt{5}$



$\frac{4}{x} = \frac{x}{5}$ $\quad \frac{4}{y} = \frac{y}{9}$

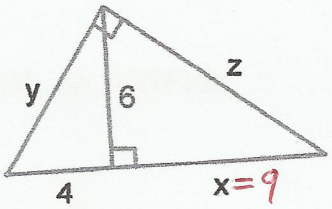
$x^2 = 20$ $\quad y^2 = 36$

$\boxed{x = 2\sqrt{5}}$ $\quad \boxed{y = 6}$

$\frac{5}{z} = \frac{z}{9}$ $\quad \boxed{z = 3\sqrt{5}}$

$z^2 = 45$

9) x = 9
y = $2\sqrt{13}$
z =

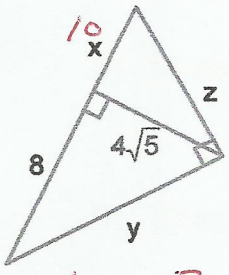


$\frac{4}{6} = \frac{6}{x}$ $\quad \frac{4}{y} = \frac{y}{13}$

$\boxed{x = 9}$ $\quad \boxed{y = 2\sqrt{13}}$

$\frac{9}{z} = \frac{z}{13}$ $\quad \boxed{z = 3\sqrt{13}}$

10) x = 10
y = 12
z = $6\sqrt{5}$



$\frac{x}{4\sqrt{5}} = \frac{4\sqrt{5}}{8}$ $\quad \frac{18}{y} = \frac{y}{8}$

$8x = 80$ $\quad y^2 = 144$

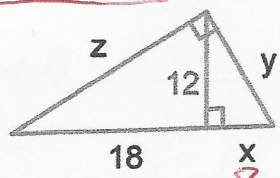
$\boxed{x = 10}$ $\quad \boxed{y = 12}$

$\frac{10}{z} = \frac{z}{18}$

$z^2 = 180$

$\boxed{z = 6\sqrt{5}}$

11) x = 8
y = $4\sqrt{13}$
z = $6\sqrt{13}$



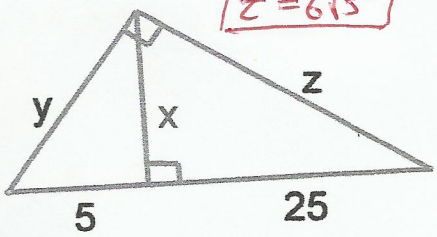
8

$\frac{18}{12} = \frac{12}{x}$ $\quad \frac{8}{y} = \frac{y}{26}$ $\quad \frac{18}{z} = \frac{z}{26}$

$18x = 144$ $\quad y^2 = 208$ $\quad z^2 = 468$

$\boxed{x = 8}$ $\quad \boxed{y = 4\sqrt{13}}$ $\quad \boxed{z = 6\sqrt{13}}$

12) x = $5\sqrt{5}$
y = $5\sqrt{6}$
z = $5\sqrt{30}$

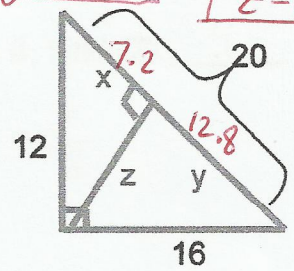


$\frac{5}{x} = \frac{x}{25}$ $\quad \frac{5}{y} = \frac{y}{30}$ $\quad \frac{25}{z} = \frac{z}{30}$

$x^2 = 125$ $\quad y = 150$ $\quad z^2 = 750$

$\boxed{x = 5\sqrt{5}}$ $\quad \boxed{y = 5\sqrt{6}}$ $\quad z = 5\sqrt{30}$

13) x = 7.2
y = 9.6
z = 9.6



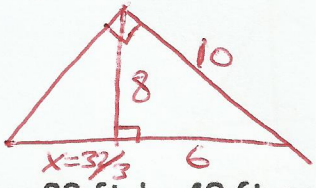
$\frac{12}{20} = \frac{x}{12}$

$20x = 144$

$x = 7.2$

14) A right triangle has an altitude of 8 m. and a leg length of 10 m. Find the length of its hypotenuse and the length of the other leg.

hypot. = $50/3 \approx 16.\overline{6}$
leg = ≈ 13.4



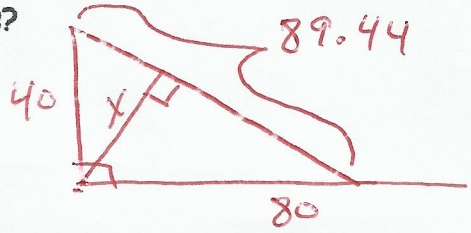
$\frac{x}{8} = \frac{8}{6}$

$6x = 64$

$x = 32/3$

15) A swimmer is sitting at a corner of an 80 ft. by 40 ft. pool. Stretched diagonally across the pool opposite the swimmer is a string of plastic flags. How far must the swimmer swim to reach the string of plastic flags?

≈ 35.8 ft.



$\frac{40}{89.44} = \frac{x}{80}$

$x \approx 35.8$