Quiz 1 (20 pts.) Name: _____

True or False (1 pt. each)

Answer the following by circling TRUE or FALSE. If the answer is false you must explain why in the space provided for full credit.

1.) **T** (**F**) Euclid — Pythagoras was a Greek mathematician most known for writing *The Elements*.

2.) **T** (**F**) obtuse — If $\angle A$ measures 132° then $\angle A$ is an acute angle.

3.) (**T**) **F** — If two of the angles in triangle A are equal to two of the angles in triangle B then triangle A and B are similar triangles.

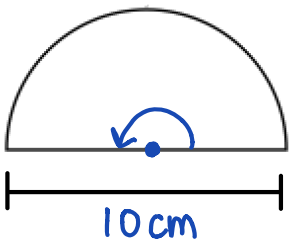
4.) **T** (**F**) $c = 5$ — A right triangle with legs $a = 3$ cm and $b = 4$ cm has a hypotenuse $c = 25$ cm.

$3^2 + 4^2 = c^2 \Rightarrow 9 + 16 = c^2 \Rightarrow 25 = c^2 \Rightarrow 5 = c$

5.) (**T**) **F** — An angle α with positive measurement occurs when the terminal side of the angle is rotated counterclockwise.

Short Answer

6.) (3 pts.) Find the arc length of a semi-circle that has a diameter of 10 cm.



$C = \pi d = 10\pi$

$\theta = 180°$

$\frac{\theta}{360°} = \frac{s}{C}$

$\Rightarrow \frac{180°}{360°} = \frac{s}{10\pi}$

$\Rightarrow \frac{1}{2} = \frac{s}{10\pi}$

$\Rightarrow (10\pi)(1) = 2s$

$\Rightarrow 10\pi = 2s$

$\Rightarrow$ 5π cm $= s$ or 15.7 cm

7.) (4 pts.) Convert the following to the appropriate form indicated. (You must show your work for full credit.)

(a) $343°25'40''$ to decimal degree form (*Round to three decimal places*)

$25' = \frac{25}{60}$ $\quad 40'' = \frac{40}{3,600}$

$\Rightarrow 343°25'40'' = 343 + \frac{25}{60} + \frac{40}{3,600} = \boxed{343.428°}$

(b) $84.574°$ to degree-minute-second form (*Round to the nearest second*)

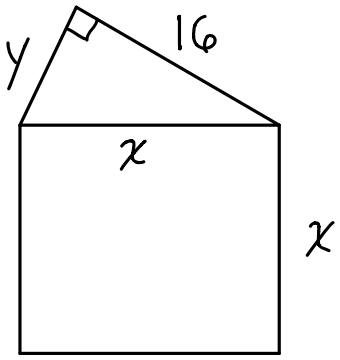
$84°(0.574 \cdot 60)' = 84°34.44'$

$84°34.44' = 84°34'(0.44 \cdot 60)$

$= 84°34'26.4''$

$\approx \boxed{84°34'26''}$

8.) (3 pts.) The figure below is comprised of a square with area $400m^2$ and a triangle. Find the missing length y.



$x^2 = 400$

$\Rightarrow x = 20$

$y^2 + 16^2 = 20^2$

$y^2 + 256 = 400$

$y^2 = 144$

$\boxed{y = 12 \text{ m}}$

9.) (2 pts.) Find the height $\overline{AB}$ of the tree in the figure below if the man is 5.5 ft tall, $\overline{AC} = 24$, and $\overline{CD} = 2.1$.

$\triangle ABC \sim \triangle DEC$

$\Rightarrow \frac{ED}{CD} = \frac{AB}{AC}$

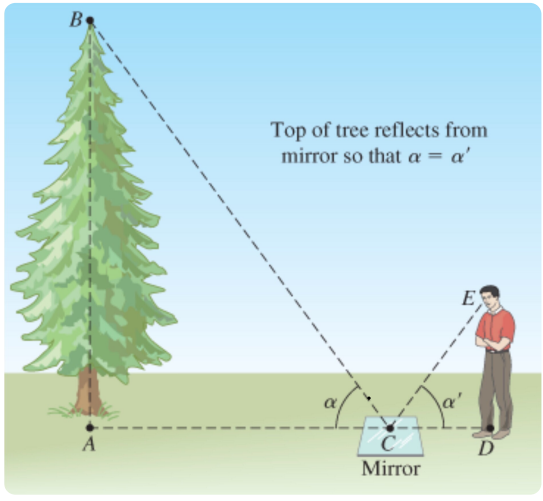
$\Rightarrow \frac{5.5}{2.1} = \frac{x}{24}$

$\Rightarrow 2.1x = (24)(5.5)$

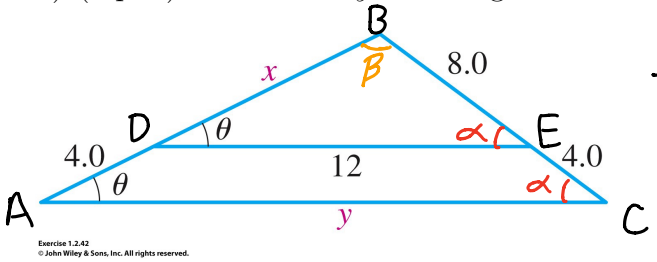
$2.1x = 132$

$x = 62.857$

$\Rightarrow \boxed{\overline{AB} = 62.9 \text{ ft}}$



10.) (3 pts.) Find x and y in the figure below.



$\triangle ABC \sim \triangle DBE$

$\frac{x}{8} = \frac{x+4}{12} \Rightarrow 12x = 8(x+4)$

$\Rightarrow 12x = 8x + 32$

$\Rightarrow 4x = 32$

$\Rightarrow \boxed{x = 8}$

$\frac{8}{12} = \frac{12}{y} \Rightarrow 8y = 144 \Rightarrow \boxed{y = 18}$