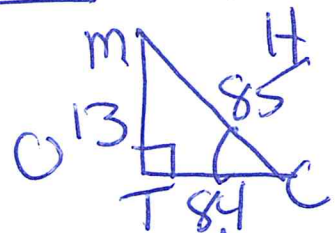


Right Triangles Word Problems (No Pictures!)

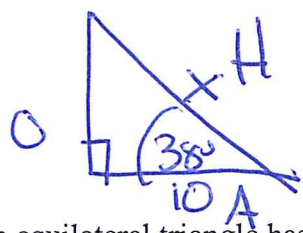
1. In triangle MCT , the measure of $\angle T = 90^\circ$, $MC = 85$ cm, $CT = 84$ cm, and $TM = 13$ cm. Which ratio represents the sine of $\angle C$?

- 1) $\frac{13}{85}$
- 2) $\frac{84}{85}$
- 3) $\frac{13}{84}$
- 4) $\frac{84}{13}$



$\sin \theta = \frac{O}{H}$
 $\sin C = \frac{13}{85}$

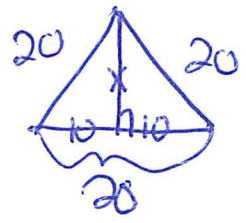
2. A right triangle contains a 38° angle whose adjacent side measures 10 centimeters. What is the length of the hypotenuse, to the nearest hundredth of a centimeter?



$\cos \theta = \frac{A}{H}$
 $\cos 38 = \frac{10}{x}$

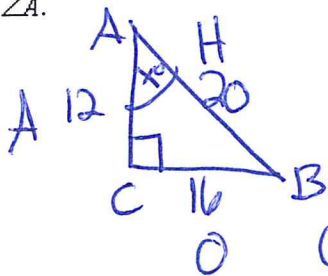
$\frac{7880}{7880} = \frac{10}{x}$
 $7880x = 10 \cdot 7880$
 $x = 12.69$

3. An equilateral triangle has sides of length 20. To the nearest tenth, what is the height of the equilateral triangle?



$a^2 + b^2 = c^2$
 $10^2 + x^2 = 20^2$
 $100 + x^2 = 400$
 $-100 \quad -100$
 $x^2 = 300$
 $x = 17.3$

4. In right triangle ABC , $AB = 20$, $AC = 12$, $BC = 16$, and $m\angle C = 90$. Find, to the nearest degree, the measure of $\angle A$.

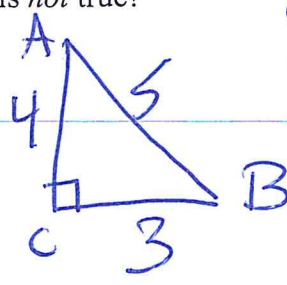


Since you have all three sides, you can choose which trig function to use.

$\cos \theta = \frac{A}{H}$
 $\cos x = \frac{12}{20}$
 $x = \cos^{-1}\left(\frac{12}{20}\right)$
 $x = 53^\circ$

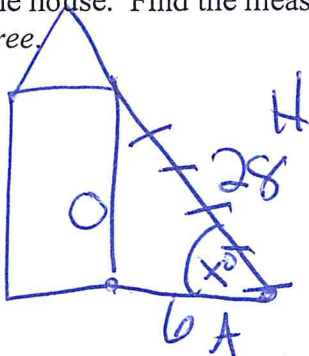
5. In $\triangle ABC$, $m\angle C = 90$. If $AB = 5$ and $AC = 4$, which statement is *not* true?

- 1) $\cos A = \frac{4}{5}$ ✓
- 2) $\tan A = \frac{3}{4}$ ✓
- 3) $\sin B = \frac{4}{5}$ ✓
- 4) $\tan B = \frac{5}{3}$ ✗



$a^2 + b^2 = c^2$
 $4^2 + x^2 = 5^2$
 $16 + x^2 = 25$
 $-16 \quad -16$
 $x^2 = 9$
 $x = 3$

6. A 28-foot ladder is leaning against a house. The bottom of the ladder is 6 feet from the base of the house. Find the measure of the angle formed by the ladder and the ground, to the *nearest degree*.



$$\cos \theta = \frac{A}{H}$$

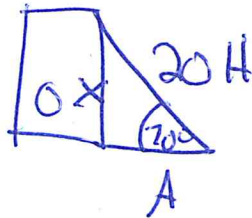
$$\cos x = \frac{6}{28}$$

$$x = \cos^{-1}\left(\frac{6}{28}\right)$$

$$x = 78^\circ$$

7. A 20-foot support post leans against a wall, making a 70° angle with the ground. To the *nearest tenth of a foot*, how far up the wall will the support post reach?

- 1) 6.8
- 2) 6.9
- 3) 18.7
- 4) 18.8



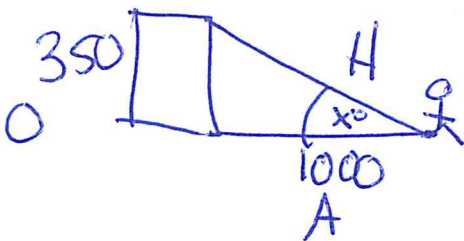
$$\sin \theta = \frac{O}{H}$$

$$\sin 70 = \frac{x}{20}$$

$$.9397 = \frac{x}{20}$$

$$x = 18.8$$

8. A man standing on level ground is 1000 feet away from the base of a 350-foot-tall building. Find, to the *nearest degree*, the measure of the angle of elevation to the top of the building from the point on the ground where the man is standing.



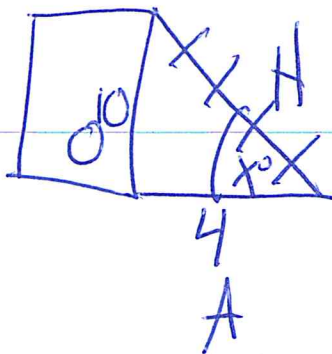
$$\tan \theta = \frac{O}{A}$$

$$\tan^{-1} \tan x = \frac{350}{1000}$$

$$x = \tan^{-1}\left(\frac{350}{1000}\right)$$

$$x = 19^\circ$$

9. A ladder leans against a building. The top of the ladder touches the building 10 feet above the ground. The foot of the ladder is 4 feet from the building. Find, to the *nearest degree*, the angle that the ladder makes with the level ground.



$$\tan \theta = \frac{O}{A}$$

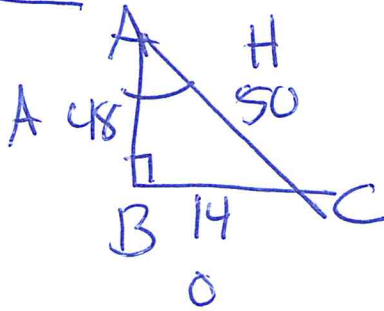
$$\tan^{-1} \tan x = \frac{10}{4}$$

$$x = \tan^{-1}\left(\frac{10}{4}\right)$$

$$x = 68^\circ$$

10. In $\triangle ABC$, the measure of $\angle B = 90^\circ$, $AC = 50$, $AB = 48$, and $BC = 14$. Which ratio represents the tangent of $\angle A$?

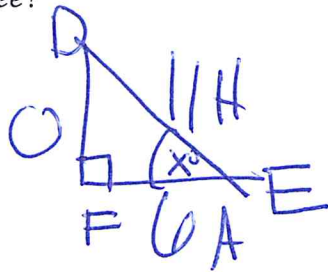
- 1) $\frac{14}{50}$ 3) $\frac{48}{50}$
 2) $\frac{14}{48}$ 4) $\frac{48}{14}$



$$\tan \theta = \frac{O}{A}$$

$$\tan A = \frac{14}{48}$$

11. In right triangle EFD , $ED = 11$, $EF = 6$, and $m\angle F = 90$. What is the measure of angle E , to the nearest degree?



$$\cos \theta = \frac{A}{H}$$

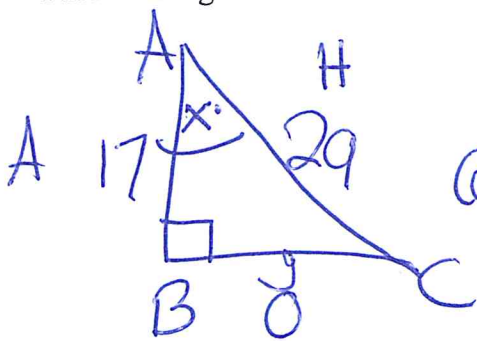
$$\cos X = \frac{6}{11}$$

$$X = \cos^{-1}\left(\frac{6}{11}\right)$$

$$X = 57^\circ$$

12. In right triangle ABC shown below, $AC = 29$ inches, $AB = 17$ inches, and $m\angle ABC = 90$. Find the number of degrees in the measure of angle BAC , to the nearest degree.

Find the length of \overline{BC} to the nearest inch.



$$\cos \theta = \frac{A}{H}$$

$$\cos X = \frac{17}{29}$$

$$X = \cos^{-1}\left(\frac{17}{29}\right)$$

$$X = 54^\circ$$

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

$$17^2 + y^2 = 29^2$$

$$289 + y^2 = 841$$

$$-289 \quad -289$$

$$y^2 = 552$$

$$y = 23$$

