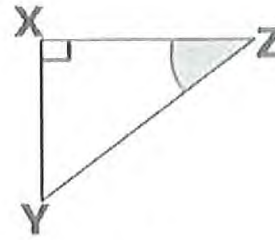


TRIG RATIOS PRACTICE #3

Identifying Opposite, Adjacent and Hypotenuse

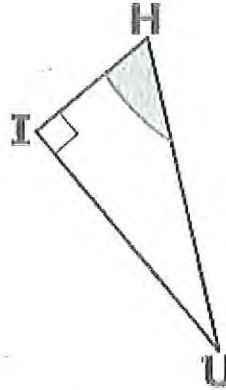
Identify

- 1) the hypotenuse
- 2) the side opposite of $\angle Z$: _____
- 3) the side adjacent to $\angle Z$: _____



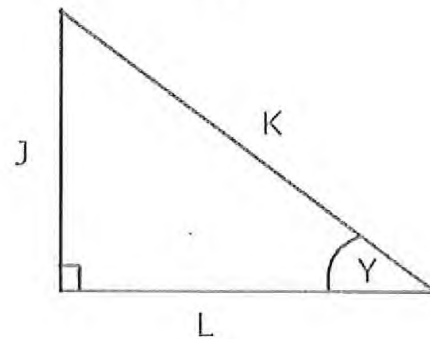
Identify

- 4) the hypotenuse
- 5) the side opposite of $\angle H$: _____
- 6) the side adjacent to $\angle H$: _____



Identify

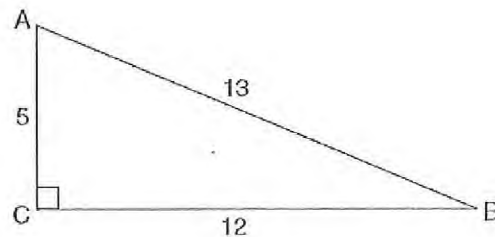
- 7) the hypotenuse
- 8) the side opposite of $\angle Y$: _____
- 9) the side adjacent to $\angle Y$: _____



Writing Sine, Cosine, Tangent Ratios

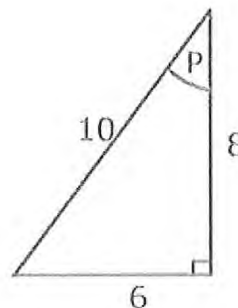
10) Which ratio represents $\cos A$ in the accompanying diagram of $\triangle ABC$?

- | | |
|---------------------|--------------------|
| (1) $\frac{5}{13}$ | (3) $\frac{5}{12}$ |
| (2) $\frac{12}{13}$ | (4) $\frac{12}{5}$ |



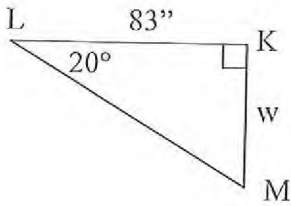
11) Which ratio represents $\sin P$ in the accompanying triangle?

- | | |
|--------------------|--------------------|
| (1) $\frac{6}{10}$ | (3) $\frac{6}{8}$ |
| (2) $\frac{8}{10}$ | (4) $\frac{10}{6}$ |

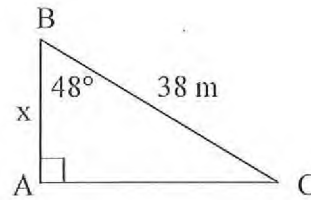


Find the value of the variable. Round to the nearest hundredth.

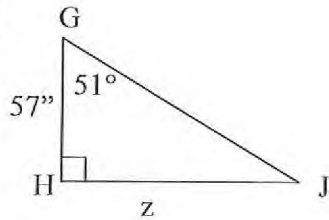
12)



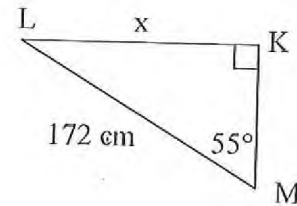
13)



14)



15)



16) Consider the following information: In $\triangle ABC$ with right $\angle C$, the measure of $\angle A = 31^\circ$. The length of side AB is 42cm.

a) Sketch and label a right triangle that matches this description.

b) Determine the length of side BC.

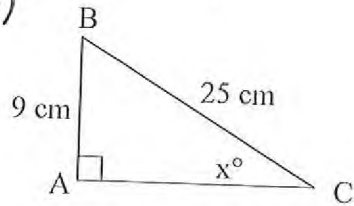
c) Determine the length of the third side.

17) Consider the equation $\tan 74^\circ = \frac{x}{58\text{cm}}$

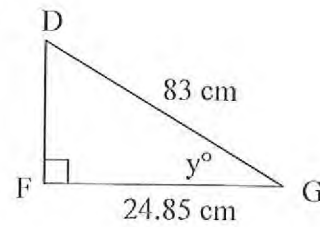
a) Sketch and label a right triangle that matches this equation. Solve for x.

Find the value of the variable. Round to the nearest hundredth.

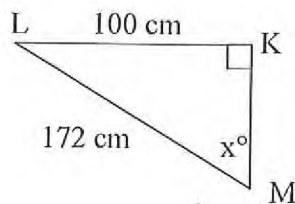
18)



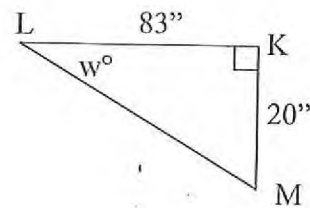
19)



20)



21)



22) Consider the following information: In $\triangle ABC$ with right $\angle C$, the length of side AB is 42 cm, and the length of side AC is 20 cm.

a) Sketch and label a right triangle that matches this description.

b) Determine the measure of angle B to the nearest hundredth.

c) Determine the measure of the third angle.

23) Consider the equation $\tan x^\circ = \frac{74\text{cm}}{58\text{cm}}$

a) Sketch and label a right triangle that matches this equation. Solve for x .

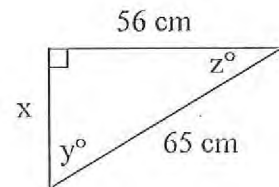
24) A 32-foot ladder is leaning against a tree. The base of the ladder rests 7 feet away from the foot of the tree. Assuming the tree is growing straight up:

- Make a labeled sketch of the situation.
- What acute angle does the ladder form with the ground?
- How high up the tree does the ladder reach?

25) The following equations specify a specific right triangle: $\tan C = \frac{38}{40}$; $\cos B = \frac{38}{x}$.

- Make a labeled sketch of this triangle.
- Determine the measure of angle B to the nearest tenth.
- Determine the measure of angle C to the nearest tenth.
- Determine the length of side x to the nearest hundredth.

26) Use the Pythagorean Theorem, SOHCAHTOA, and the fact that the sum of the three interior angles of a triangle sum to 180° to determine all unknown sides and angles of the triangle pictured at right. Round all quantities, when necessary, to the nearest hundredth.

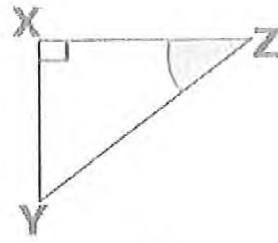


TRIG RATIOS PRACTICE #3

Identifying Opposite, Adjacent and Hypotenuse

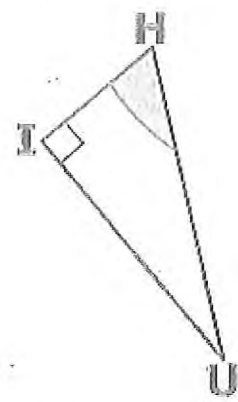
Identify

- 1) the hypotenuse YZ
- 2) the side opposite of $\angle Z$: XY
- 3) the side adjacent to $\angle Z$: XZ



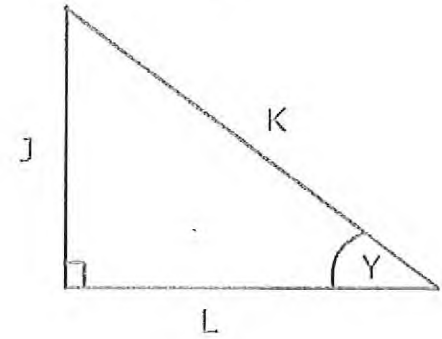
Identify

- 4) the hypotenuse HU
- 5) the side opposite of $\angle H$: IU
- 6) the side adjacent to $\angle H$: HI



Identify

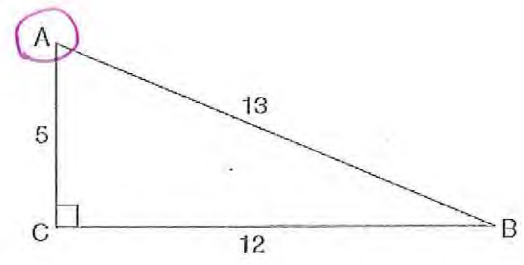
- 7) the hypotenuse K
- 8) the side opposite of $\angle Y$: J
- 9) the side adjacent to $\angle Y$: L



Writing Sine, Cosine, Tangent Ratios

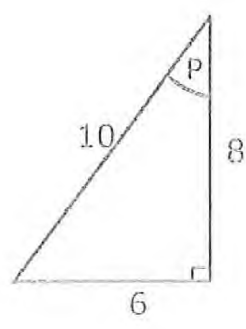
10) Which ratio represents $\cos A$ in the accompanying diagram of $\triangle ABC$?

- | | |
|---------------------|--------------------|
| (1) $\frac{5}{13}$ | (3) $\frac{12}{5}$ |
| (2) $\frac{12}{13}$ | (4) $\frac{13}{5}$ |



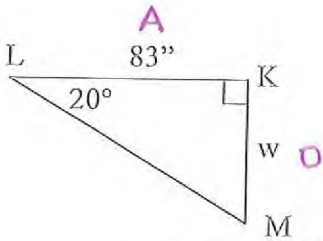
11) Which ratio represents $\sin P$ in the accompanying triangle?

- | | |
|--------------------|--------------------|
| (1) $\frac{6}{10}$ | (3) $\frac{6}{8}$ |
| (2) $\frac{8}{10}$ | (4) $\frac{10}{6}$ |



Find the value of the variable. Round to the nearest hundredth.

12)

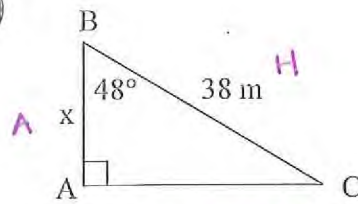


$$83 \cdot \tan 20^\circ = \frac{w}{83} \cdot 83$$

$$83 \cdot \tan 20^\circ = w$$

$$\boxed{30.21 = w}$$

13)

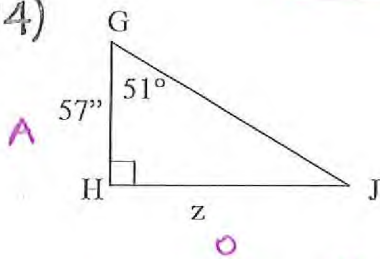


$$38 \cdot \cos 48^\circ = \frac{x}{38} \cdot 38$$

$$38 \cdot \cos 48^\circ = x$$

$$\boxed{25.43 = x}$$

14)

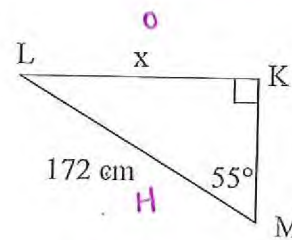


$$57 \cdot \tan 51^\circ = \frac{z}{57} \cdot 57$$

$$57 \cdot \tan 51^\circ = z$$

$$\boxed{70.39 = z}$$

15)



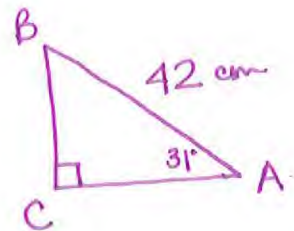
$$172 \cdot \sin 55^\circ = \frac{x}{172} \cdot 172$$

$$172 \cdot \sin 55^\circ = x$$

$$\boxed{140.89 = x}$$

16) Consider the following information: In $\triangle ABC$ with right $\angle C$, the measure of $\angle A = 31^\circ$. The length of side AB is 42 cm.

a) Sketch and label a right triangle that matches this description.



b) Determine the length of side BC.

$$42 \cdot \sin 31^\circ = \frac{BC}{42} \cdot 42$$

$$42 \cdot \sin 31^\circ = BC$$

$$\boxed{BC = 21.63}$$

c) Determine the length of the third side.

$$42 \cdot \cos 31^\circ = \frac{AC}{42} \cdot 42$$

$$42 \cdot \cos 31^\circ = AC$$

$$\boxed{36.00 = AC}$$

OR

$$21.63^2 + AC^2 = 42^2$$

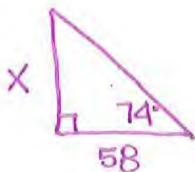
$$467.86 + AC^2 = 1764$$

$$AC^2 = 1296.14$$

$$\boxed{AC = 36.00}$$

17) Consider the equation $\tan 74^\circ = \frac{x}{58 \text{ cm}}$

a) Sketch and label a right triangle that matches this equation. Solve for x.



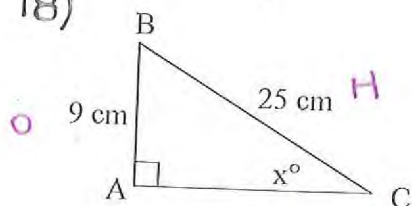
$$58 \cdot \tan 74^\circ = \frac{x}{58} \cdot 58$$

$$58 \cdot \tan 74^\circ = x$$

$$\boxed{202.27 = x}$$

Find the value of the variable. Round to the nearest hundredth.

18)

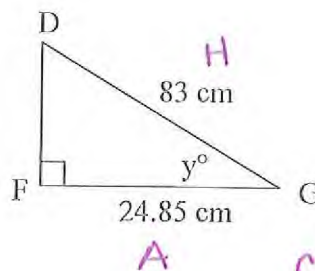


$$\sin x^\circ = \frac{9}{25}$$

$$x^\circ = \sin^{-1}\left(\frac{9}{25}\right)$$

$$x^\circ = 21.10^\circ$$

19)

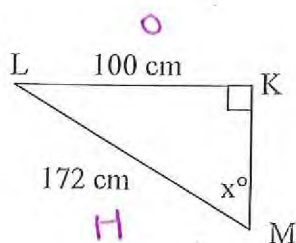


$$\cos y^\circ = \frac{24.85}{83}$$

$$y^\circ = \cos^{-1}\left(\frac{24.85}{83}\right)$$

$$y^\circ = 72.58^\circ$$

20)

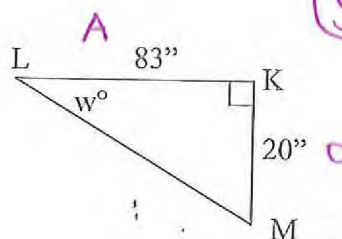


$$\sin x^\circ = \frac{100}{172}$$

$$x^\circ = \sin^{-1}\left(\frac{100}{172}\right)$$

$$x^\circ = 35.55^\circ$$

21)



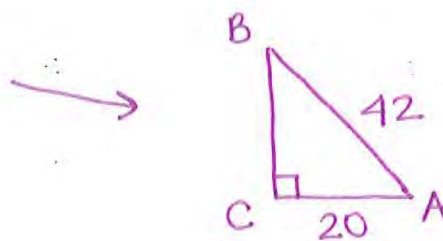
$$\tan w^\circ = \frac{20}{83}$$

$$w^\circ = \tan^{-1}\left(\frac{20}{83}\right)$$

$$w^\circ = 13.55^\circ$$

22) Consider the following information: In $\triangle ABC$ with right $\angle C$, the length of side AB is 42 cm, and the length of side AC is 20 cm.

a) Sketch and label a right triangle that matches this description.



b) Determine the measure of angle B to the nearest hundredth.

$$\sin B = \frac{20}{42}$$

$$B = \sin^{-1}\left(\frac{20}{42}\right) = 28.44^\circ$$

c) Determine the measure of the third angle.

$$\angle A + \angle B + \angle C = 180$$

$$\angle A + 28.44^\circ + 90^\circ = 180^\circ$$

$$\angle A = 61.56^\circ$$

OR

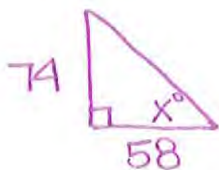
$$\cos A = \frac{20}{42}$$

$$A = \cos^{-1}\left(\frac{20}{42}\right)$$

$$A = 61.56^\circ$$

23) Consider the equation $\tan x^\circ = \frac{74}{58}$

a) Sketch and label a right triangle that matches this equation. Solve for x.



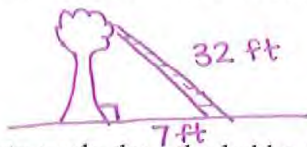
$$\tan x^\circ = \frac{74}{58}$$

$$x^\circ = \tan^{-1}\left(\frac{74}{58}\right)$$

$$x^\circ = 51.91^\circ$$

24) A 32-foot ladder is leaning against a tree. The base of the ladder rests 7 feet away from the foot of the tree. Assuming the tree is growing straight up:

a) Make a labeled sketch of the situation.



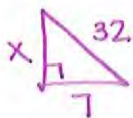
b) What acute angle does the ladder form with the ground?



$$\cos X^\circ = \frac{7}{32}$$

$$X^\circ = \cos^{-1}\left(\frac{7}{32}\right) = 77.36^\circ$$

c) How high up the tree does the ladder reach?



$$x^2 + 7^2 = 32^2$$

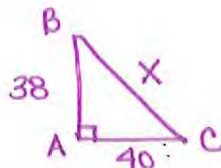
$$x^2 + 49 = 1024$$

$$x^2 = 975$$

$$x = 31.22 \text{ ft}$$

25) The following equations specify a specific right triangle: $\tan C = \frac{38}{40}$; $\cos B = \frac{38}{x}$.

a) Make a labeled sketch of this triangle.



b) Determine the measure of angle B to the nearest tenth.

$$\tan B = \frac{40}{38}$$

$$B = \tan^{-1}\left(\frac{40}{38}\right) = 46.5^\circ$$

c) Determine the measure of angle C to the nearest tenth.

$$\tan C = \frac{38}{40}$$

$$C = \tan^{-1}\left(\frac{38}{40}\right) = 43.5^\circ$$

$$\angle A + \angle B + \angle C = 180^\circ$$

$$90^\circ + 46.5^\circ + \angle C = 180^\circ$$

$$\angle C = 43.5^\circ$$

d) Determine the length of side x to the nearest hundredth.

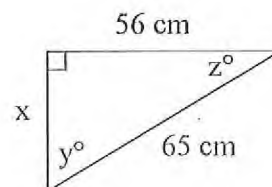
$$38^2 + 40^2 = x^2$$

$$1444 + 1600 = x^2$$

$$3044 = x^2$$

$$55.17 = x$$

26) Use the Pythagorean Theorem, SOHCAHTOA, and the fact that the sum of the three interior angles of a triangle sum to 180° to determine all unknown sides and angles of the triangle pictured at right. Round all quantities, when necessary, to the nearest hundredth.



$$x^2 + 56^2 = 65^2$$

$$x^2 + 3136 = 4225$$

$$x^2 = 1089$$

$$x = 33$$

$$\sin y^\circ = \frac{56}{65}$$

$$y^\circ = \sin^{-1}\left(\frac{56}{65}\right)$$

$$y^\circ = 59.49^\circ$$

$$90^\circ + 59.49^\circ + z^\circ = 180^\circ$$

$$149.49^\circ + z^\circ = 180^\circ$$

$$z^\circ = 30.51^\circ$$