

Name: _____

Date: _____ Period: _____

BIG THANK YOU TO MRS. GUGLIOTTA + MRS. KLEIN

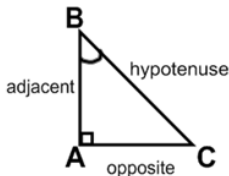
Trigonometry Topic 1: Right Triangle Trigonometry Notes (Day 1) SOH - CAH - TOA

SOH: $\sin \alpha = \frac{\text{opposite}}{\text{hypotenuse}}$

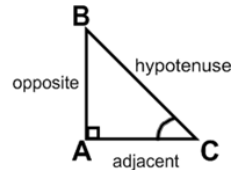
CAH: $\cos \alpha = \frac{\text{adjacent}}{\text{hypotenuse}}$

TOA: $\tan \alpha = \frac{\text{opposite}}{\text{adjacent}}$

Based on angle B



Based on angle C



How to label the sides:

- Hypotenuse is always the side opposite the right angle.
- Opposite: The side directly across from the given angle (does not touch the angle).
- Adjacent: (Next to) The side that touches the angle, but is not the hypotenuse.

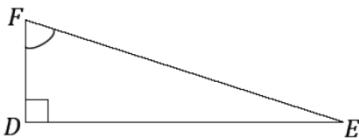
**** When deciding when to use the Pythagorean Theorem or Trigonometry ****

Picture contains angles → **Trigonometry**

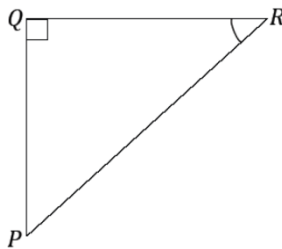
Picture contains **NO** angles → **Pythagorean Theorem**

Part 1: Directions: Practice labeling the three sides of a given right triangle based on the angle indicated.

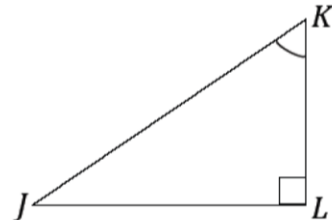
1.)



2.)

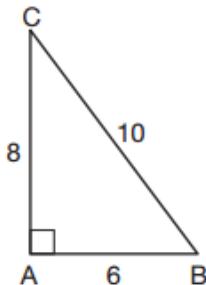


3.)

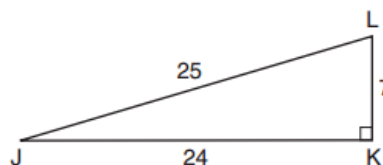


Part 2: Directions: Identify the trigonometric ratio for each of the following.

4.) In $\triangle ABC$, the $m\angle A = 90$, $AB = 6$, $AC = 8$ and $BC = 10$.
What is the ratio that represents the sine of $\angle B$?

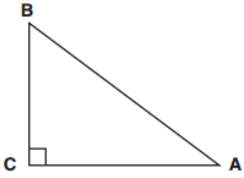


5.) In $\triangle JKL$, the $m\angle K = 90$, $KL = 7$, $JK = 24$ and $JL = 25$.
What is the ratio that represents the tangent of $\angle L$?

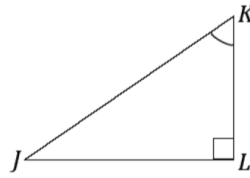


Part 3: Directions: Find all three trigonometry ratios for each of the following triangles.

- 6.) In $\triangle ABC$, the $m\angle C = 90$ and the $\cos B = \frac{4}{5}$.
Identify the ratio that represents the sine of B
the ratio that represents the tangent of B.

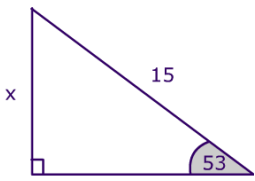


- 7.) In $\triangle JKL$, the $m\angle L = 90$ and the $\sin K = \frac{5}{13}$.
Identify the ratio that represents the cosine of K and
the ratio that represents the tangent of K.

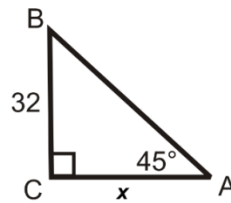


Part 4: Directions: Using your knowledge of trigonometry solve for the missing side of each triangle.

- 8.) Find the length of the missing side (x).



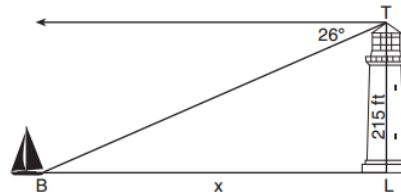
- 9.) Find the length of the missing side (x).



- 10.) As shown, a ladder is 12 feet long leaning against a wall and makes an angle of 72° with the ground. Find, to the nearest tenth, the distance from the wall to the base of the ladder.



- 11.) The top of a lighthouse, T, is 215 feet above sea level, L, as shown. The angle of depression from the top of the lighthouse to a boat, B, at sea is 26° . Determine to the nearest foot, the horizontal distance, x, from the boat to the base of the lighthouse.



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Right Triangle Trigonometry Homework

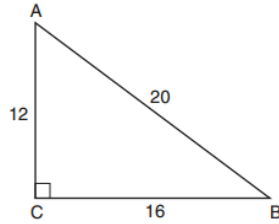
___ 1.) In $\triangle ABC$, the $m\angle C = 90$, if $AC = 12$, $BC = 16$ and $AB = 20$, which statement is not true?

[1] $\cos A = \frac{12}{20}$

[2] $\tan A = \frac{16}{12}$

[3] $\sin B = \frac{12}{20}$

[4] $\tan B = \frac{16}{20}$



___ 2.) The length of one side of a square is 13 feet. What is the length, to the nearest foot, of a diagonal?

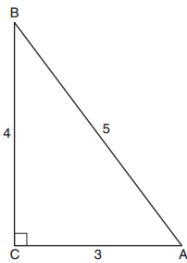
[1] 13

[2] 18

[3] 19

[4] 26

3.) In $\triangle ABC$, the $m\angle C = 90$, if $AC = 3$, $AB = 5$ and $BC = 4$, identify the ratio for the Sine, Cosine and Tangent of $\angle A$.



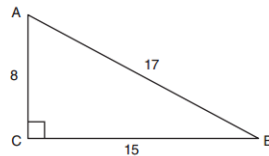
___ 4.) $\triangle ABC$ has legs of 8 and 15 and a hypotenuse of 17, as shown. The value of the tangent of $\angle B$ is:

[1] 0.4706

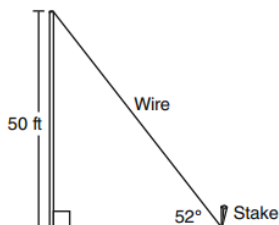
[2] 0.5333

[3] 0.8824

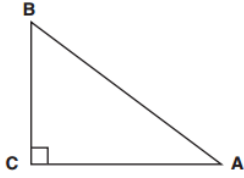
[4] 1.8750



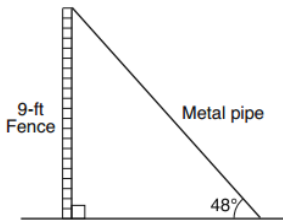
5.) A stake is to be driven into the ground away from the base of a 50-foot pole, as shown. A wire from the stake on the ground to the top of the pole is to be installed at an angle of elevation of 52° . Find the length of the wire to the nearest tenth.



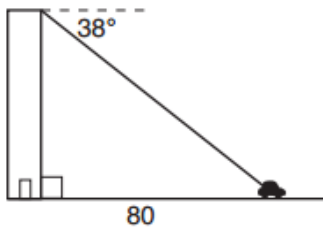
- 6.) In $\triangle ABC$, the $m\angle C = 90$ and the $\tan A = \frac{9}{40}$. Identify the ratio that represents the sine of A, the ratio that represents the cosine of A and the ratio that represents the tangent of B.



- 7.) A metal pipe is used to hold up a 9-foot fence, as shown. The pipe makes an angle of 48° with the ground.
- Determine, to the nearest foot, how far the bottom of the pipe is from the base of the fence.
 - Determine, to the nearest foot, the length of the metal pipe.



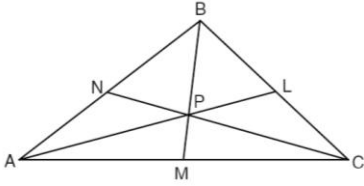
- 8.) From the top of an apartment building, the angle of depression to a car parked on the street below is 38° , as shown. The car is parked 80 feet from the base of the building. Find the height of the building to the nearest tenth of a foot.



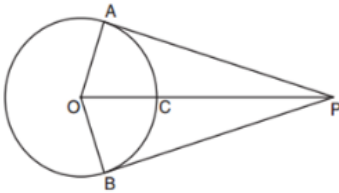
Review Section:

- 9.) A diameter of a circle has endpoints of $A(4, 7)$ and $B(-3, 5)$. What is the length of the diameter of the circle?

10.) In the diagram below, point P is the centroid of $\triangle ABC$. If $PM=2x + 5$ and $BP=7x + 4$, what is the length of PM ?



11.) In the diagram AP and BP are tangents to circle O. If $AO = 16$ and $PC = 18$, find the length of tangent AP.



12.) Nancy's rectangular garden is shown. If a diagonal walkway crosses her garden, what is its length?

