

PHYSICS 2204  
UNIT 2: DYNAMICS  
WORKSHEET #3: TRIGONOMETRY

STUDENT NAME: \_\_\_\_\_

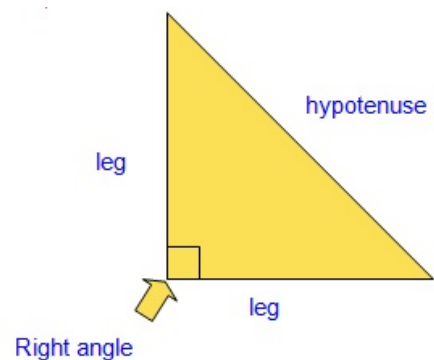
**Trigonometry** is a branch of mathematics that studies triangles and the relationships between their sides and the angles between these sides



THE PYTHAGOREAN THEOREM:

$$\text{hypotenuse}^2 = \text{leg}^2 + \text{leg}^2$$

Note: The hypotenuse,  $c$ , is always the longest side.



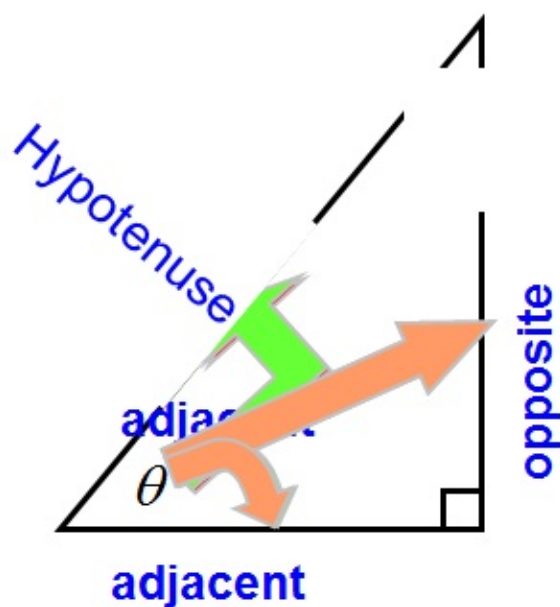
THE TRIGONOMETRIC FUNCTIONS

### The Trigonometric Functions

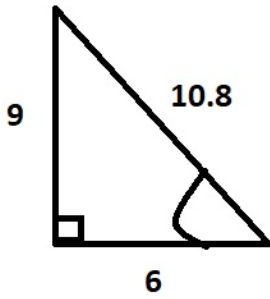
$$\text{Sin} = \frac{\text{Opp Leg}}{\text{Hyp}}$$

$$\text{Cos} = \frac{\text{Adj Leg}}{\text{Hyp}}$$

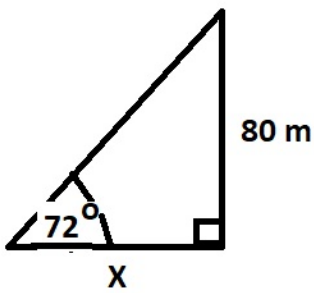
$$\text{Tan} = \frac{\text{Opp Leg}}{\text{Adj Leg}}$$



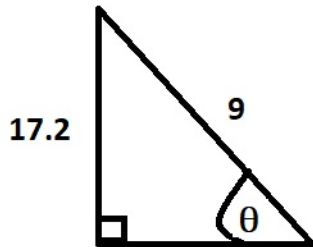
**Example 1:** Find the sine, the cosine, and the tangent of angle A. Give a fraction and decimal answer (round to 4 places).



**Example 2:** Find the missing side. Round to the nearest tenth.



**Example 3:** Find  $\theta$ . Round to four decimal places.

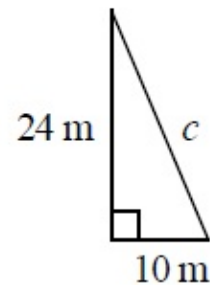


**PART A: MULTIPLE CHOICE**

Instructions: Shade the letter of the correct answer on the computer scorable answer sheet provided

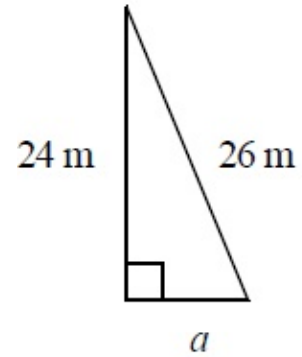
1. In the given right triangle, find the missing length

- (A) 25 m
- (B) 26 m
- (C) 27 m
- (D) 28 m



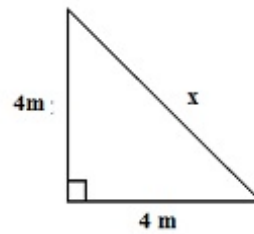
2. In the given right triangle, find the missing length.

- (A) 10 m
- (B) 14 m
- (C) 21 m
- (D) 28 m



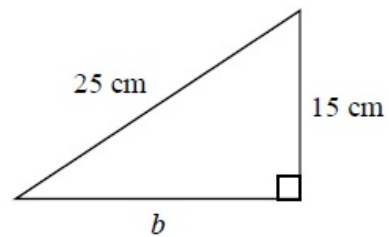
3. Find the length of the hypotenuse. Round to the nearest tenth if necessary.

- (A) 2.8 m
- (B) 5.7 m
- (C) 6.9 m
- (D) 8.0 m



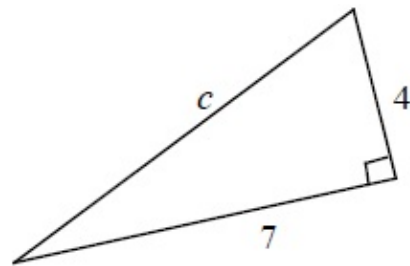
4. Find the length of the unknown side. Round your answer to the nearest tenth.

- (A) 10 cm
- (B) 20 cm
- (C) 29.2 cm
- (D) 400 cm



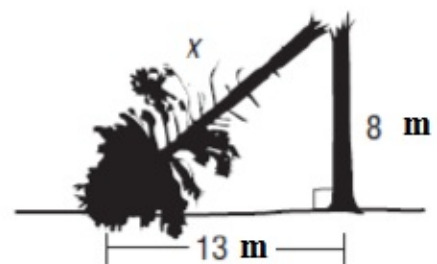
5. Find the length of the hypotenuse. Round your answer to the nearest hundredth

- (A) 3.32
- (B) 8.06
- (C) 9.95
- (D) 11.00



6. A large pine tree was struck by lightning and fell as shown by the diagram below. Which equation could be used to find the length of the fallen part of the tree?

- (A)  $8^2 + 13^2 = x$
- (B)  $\sqrt{8^2 + 13^2} = x$
- (C)  $13^2 - 8^2 = x$
- (D)  $\sqrt{13^2 - 8^2} = x$



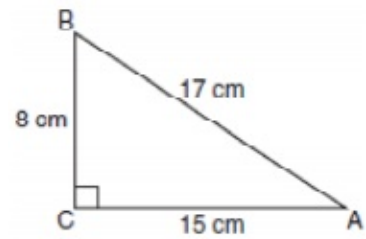
7. Which equation shows a correct trigonometric ratio for angle A in the right triangle below?

(A)  $\sin A = \frac{15}{17}$

(B)  $\cos A = \frac{15}{17}$

(C)  $\tan A = \frac{8}{17}$

(D)  $\tan A = \frac{5}{8}$



8. What is  $\cos 40^\circ$  equal to?

(A) 0.6428

(B) 0.7660

(C) 0.8391

(D) 66.42

9. If  $\cos \theta = 0.2725$ , what is the value of  $\theta$  to the nearest degree?

(A)  $15^\circ$

(B)  $29^\circ$

(C)  $74^\circ$

(D)  $81^\circ$

10. Find the value of the indicated angle

(A)  $24^\circ$

(B)  $42^\circ$

(C)  $66^\circ$

(D)  $48^\circ$



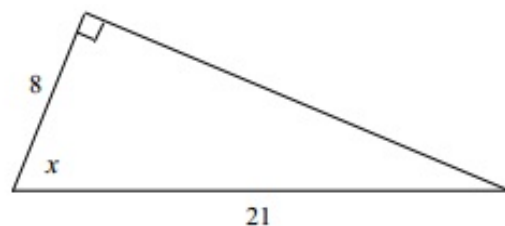
11. Find the measure of  $x$  in the right triangle.

(A)  $20.9^\circ$

(B)  $22.4^\circ$

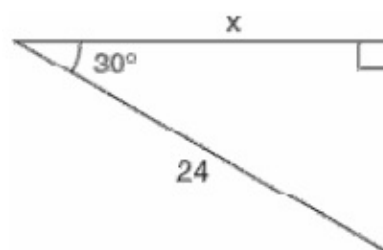
(C)  $67.6^\circ$

(D)  $69.1^\circ$



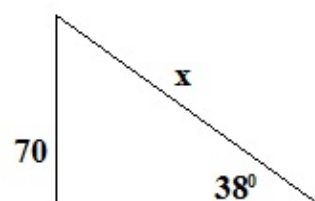
12. In the right triangle shown in the diagram below, what is the value of  $x$  to the nearest whole number?

- (A) 12
- (B) 14
- (C) 21
- (D) 28



13. Find  $x$  in the diagram shown to the right:

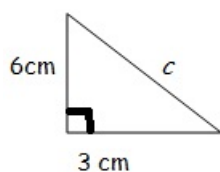
- (A) 43.1
- (B) 88.8
- (C) 89.6
- (D) 113.7



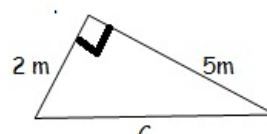
**PART B: WRITTEN RESPONSE**

1. Find the length of the missing side in the following examples. Round answers to the nearest tenth, if necessary.

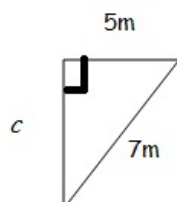
(A)



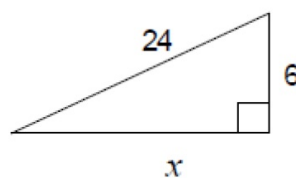
(B)



(C)

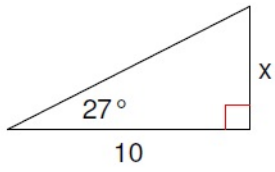


(D)

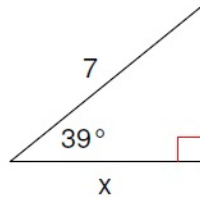


2. Find the missing side. Round to the nearest tenth.

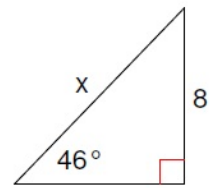
(A)



(B)

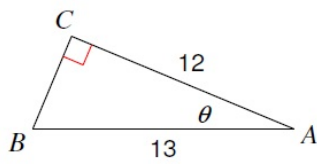


(C)

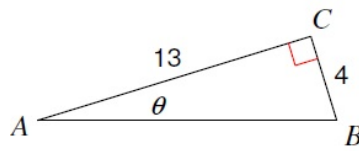


3. Find the measure of each angle indicated. Round to the nearest tenth

(A)



(B)



(C)

