

### **Geometry Make up Work 4/13 – 4/17**

**Objective:** Using a pair of corresponding angles of similar right triangles, show that the relationship of the side ratios are the same. This relationship leads to the definition of trigonometric ratios for acute angles, specifically sine, cosine and tangent ratios.

Monday	Pythagorean Theorem Worksheet
Tuesday	Pythagorean Theorem Word Problems
Wednesday	Review and Take Notes on Trig Function Power Point.
Thursday	Pages 1-3 on the Sin/Cos/Tan assignment
Friday	Page 4 on the Sin/Cos/Tan assignment



## The Pythagorean Theorem

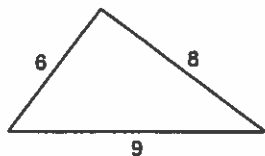
For Monday

Name \_\_\_\_\_

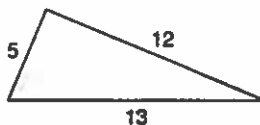
Date \_\_\_\_\_ Period \_\_\_\_\_

Do the following lengths form a right triangle?

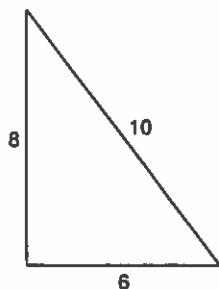
1)



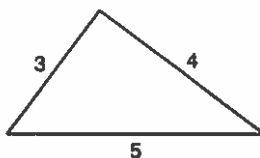
2)



3)



4)

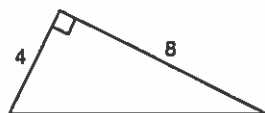


5)  $a = 6.4$ ,  $b = 12$ ,  $c = 12.2$

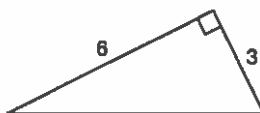
6)  $a = 2.1$ ,  $b = 7.2$ ,  $c = 7.5$

Find each missing length to the nearest tenth.

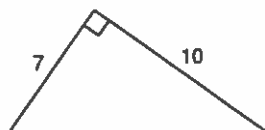
7)



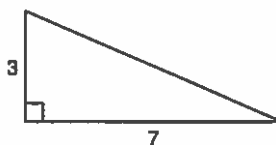
8)



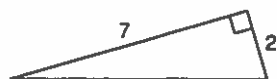
9)



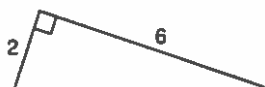
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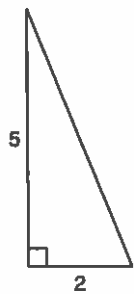
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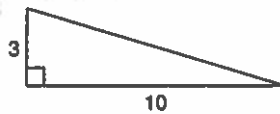
12)



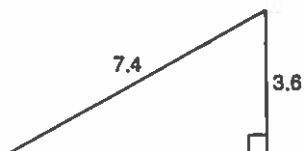
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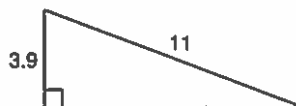
14)



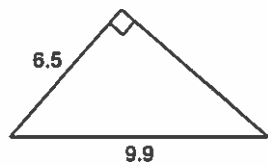
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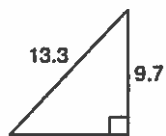
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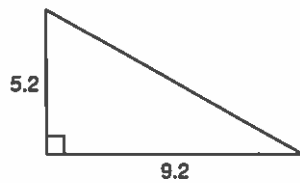
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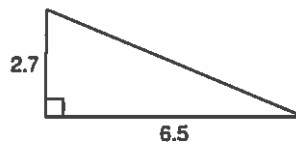
18)



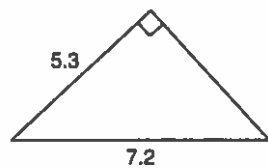
19)



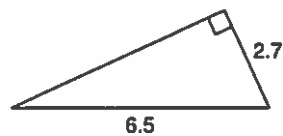
20)



21)



22)



# For Tuesday

## Pythagorean Theorem word problems ws #1

Name \_\_\_\_\_

Solve each of the following. Please draw a picture and use the Pythagorean Theorem to solve. ***Be sure to label all answers and leave answers in exact simplified form.***

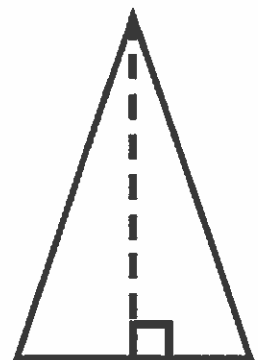
1. The bottom of a ladder must be placed 3 feet from a wall. The ladder is 12 feet long. How far above the ground does the ladder touch the wall?
2. A soccer field is a rectangle 90 meters wide and 120 meters long. The coach asks players to run from one corner to the corner diagonally across the field. How far do the players run?
3. How far from the base of the house do you need to place a 15' ladder so that it exactly reaches the top of a 12' wall?
4. What is the length of the diagonal of a 10 cm by 15 cm rectangle?
5. The diagonal of a rectangle is 25 in. The width is 15 in. What is the area of the rectangle?

6. Two sides of a right triangle are 8" and 12".
- A. Find the area of the triangle if 8 and 12 are legs.

- B. Find the area of the triangle if 8 and 12 are a leg and hypotenuse.

7. The area of a square is  $81 \text{ cm}^2$ . Find the perimeter of the square.

8. An isosceles triangle has congruent sides of 20 cm. The base is 10 cm. What is the area of the triangle?



9. A baseball diamond is a square that is 90' on each side. If a player throws the ball from 2<sup>nd</sup> base to home, how far will the ball travel?
10. Jill's front door is 42" wide and 84" tall. She purchased a circular table that is 96 inches in diameter. Will the table fit through the front door?

For Wednesday

The Trigonometric Functions  
we will be looking at

**SINE**  
**COSINE**  
**TANGENT**

The Trigonometric Functions

**SINE**  
**COSINE**  
**TANGENT**

**SINE**

Pronounced  
"sign"

**COSINE**

Pronounced  
"co-sign"





# TANGENT

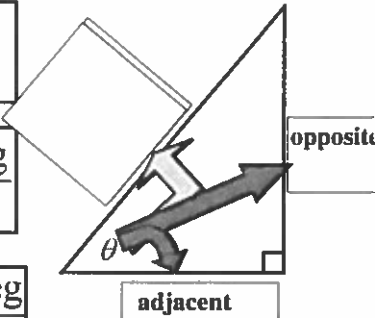
Pronounced  
"tan-gent"

# Greek Letter $\theta$

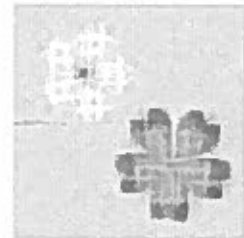
Pronounced  
"theta"

Represents an unknown angle

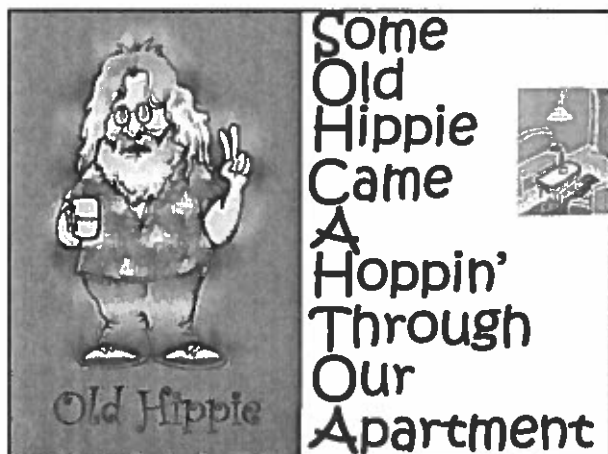
$Sin = \frac{Opp\ Leg}{Hyp}$
$Cos = \frac{Adj\ Leg}{Hyp}$
$Tan = \frac{Opp\ Leg}{Adj\ Leg}$



**We need a way  
to remember  
all of these  
ratios...**





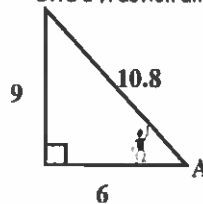


## Finding sin, cos, and tan.

*(Just writing a ratio or decimal.)*

Find the sine, the cosine, and the tangent of angle A.

Give a fraction and decimal answer (round to 4 places).



$$\sin A = \frac{\text{opp}}{\text{hyp}} = \frac{9}{10.8} \approx .8333$$

$$\cos A = \frac{\text{adj}}{\text{hyp}} = \frac{6}{10.8} \approx .5556$$

Shrink yourself  
down and stand  
where the angle is.

$$\tan A = \frac{\text{opp}}{\text{adj}} = \frac{9}{6} \approx 1.5$$



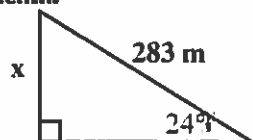
Now, figure out your ratios.







**Ex: 3 Find the missing side. Round to the nearest tenth.**



$$\sin(24) = \frac{x}{283}$$

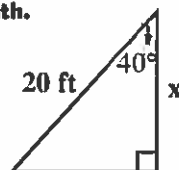
Shrink yourself down and stand where the angle is.

$$283 \sin(24) = x$$

Now, figure out which trig ratio you have and set up the problem.

$$x \approx 115.1 \text{ m}$$

**Ex: 4 Find the missing side. Round to the nearest tenth.**



$$\cos(40) = \frac{x}{20}$$

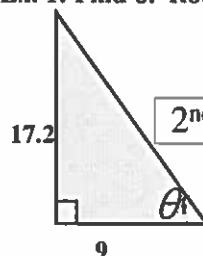
$$20 \cos(40) = x$$

$$x \approx 15.3 \text{ ft}$$

## Finding an angle.

(Figuring out which ratio to use and getting to use the 2<sup>nd</sup> button and one of the trig buttons.)

**Ex. 1: Find  $\theta$ . Round to four decimal places.**



$$\tan \theta = \frac{17.2}{9}$$

2<sup>nd</sup> [ ] 17.2 [ ÷ ] 9 [ ] )

$$\theta \approx 62.3789^\circ$$

Shrink yourself down and stand where the angle is.

Now, figure out which trig ratio you have and set up the problem.

Make sure you are in degree mode (not radians).





Ex. 2: Find  $\theta$ . Round to three decimal places.



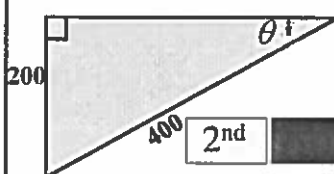
$$\cos \theta = \frac{7}{23}$$

2nd [ ] 7 [ ÷ ] 23 [ ] )

$$\theta \approx 72.281^\circ$$

*Make sure you are in degree mode (not radians).*

Ex. 3: Find  $\theta$ . Round to three decimal places.



$$\sin \theta = \frac{200}{400}$$

2nd [ ] 200 [ ÷ ] 400 [ ] )

$$\theta = 30^\circ$$

*Make sure you are in degree mode (not radians).*

When we are trying to find a **side**  
we use  $\sin$ ,  $\cos$ , or  $\tan$ .

When we are trying to find an **angle**  
we use  $\sin^{-1}$ ,  $\cos^{-1}$ , or  $\tan^{-1}$ .



For Thursday

ID: 1

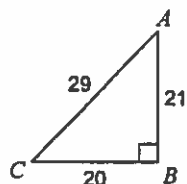
PMath 10 - Mr. Duncan

Name \_\_\_\_\_

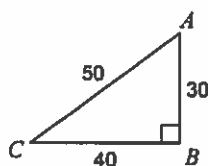
## Sine, Cosine, and Tangent Practice

Find the value of each trigonometric ratio. Express your answer as a fraction in lowest terms.

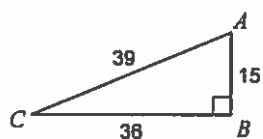
1)  $\sin C$



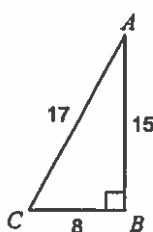
2)  $\sin C$



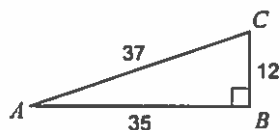
3)  $\cos C$



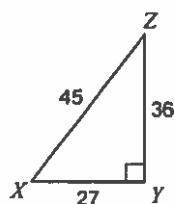
4)  $\cos C$



5)  $\tan A$



6)  $\tan X$



**Find the value of each trigonometric ratio to the nearest ten-thousandth.**

7)  $\sin 62^\circ$

8)  $\sin 14^\circ$

9)  $\cos 60^\circ$

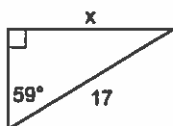
10)  $\cos 31^\circ$

11)  $\tan 79^\circ$

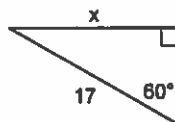
12)  $\tan 25^\circ$

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

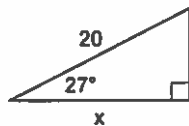
13)



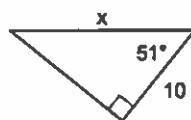
14)



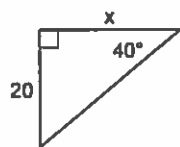
15)



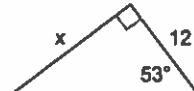
16)



17)



18)



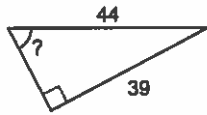
## For Friday

**Solve the following word problems. For each question, draw a diagram to help you.**

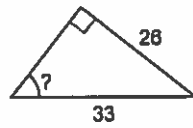
- 31) An airplane is flying at an altitude of 6000 m over the ocean directly toward a coastline. At a certain time, the angle of depression to the coastline from the airplane is  $14^\circ$ . How much farther (to the nearest kilometer) does the airplane have to fly before it is directly above the coastline?
- 32) From a horizontal distance of 80.0 m, the angle of elevation to the top of a flagpole is  $18^\circ$ . Calculate the height of the flagpole to the nearest tenth of a metre.
- 33) A 9.0 m ladder rests against the side of a wall. The bottom of the ladder is 1.5 m from the base of the wall. Determine the measure of the angle between the ladder and the ground, to the nearest degree.
- 34) The angle of elevation of the sun is  $68^\circ$  when a tree casts a shadow 14.3 m long. How tall is the tree, to the nearest tenth of a metre?
- 35) A wheelchair ramp is 4.2 m long. It rises 0.7 m. What is its angle of inclination to the nearest degree?
- 36) A person flying a kite has released 176 m of string. The string makes an angle of  $27^\circ$  with the ground. How high is the kite? How far away is the kite horizontally? Answer to the nearest metre.

**Find the measure of the indicated angle to the nearest degree.**

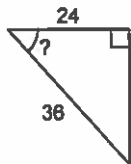
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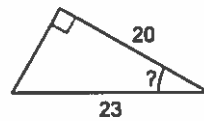
20)



21)



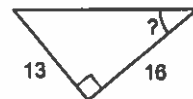
22)



23)



24)



**Find each angle measure to the nearest degree.**

25)  $\sin X = 0.7547$

26)  $\sin A = 0.4540$

27)  $\cos Y = 0.5736$

28)  $\cos B = 0.5000$

29)  $\tan B = 0.6249$

30)  $\tan C = 0.1405$