

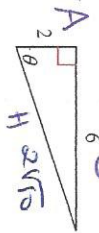
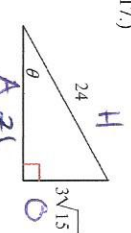
**Part A – The following problems will be MULTIPLE-CHOICE on the test.**

**I. Complete each sentence with the correct vocabulary word from your RT Trigonometry notes.**

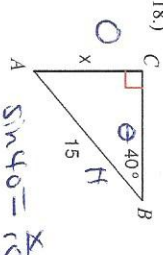
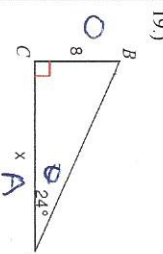
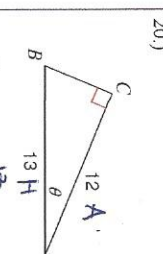
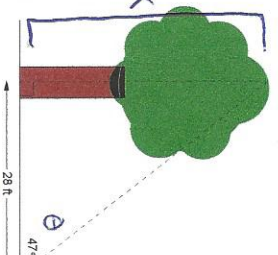
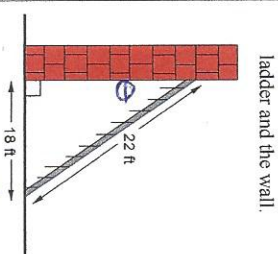
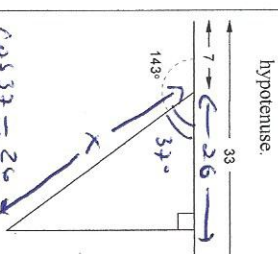
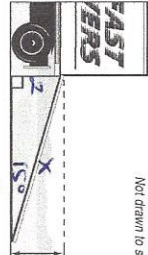
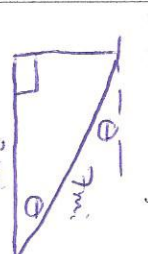
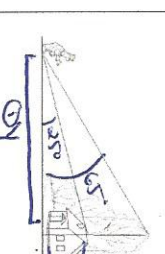
- 1.) A(n) right angle is an angle that equals  $90^\circ$ .
- 2.) Use inverse trigonometric functions to find the measures of angles in right triangles.
- 3.) The angle of depression represents the angle from the horizontal downward of an object.
- 4.) The longest side in a right triangle is called the hypotenuse.
- 5.) The cosine ratio is adjacent / hypotenuse.
- 6.) The opposite side refers to the side that's directly across from the referred angle in a right triangle.
- 7.) The Pythagorean Theorem can be only used in right triangles.
- 8.) The sine ratio is opposite / hypotenuse.
- 9.) The adjacent side refers to the side that's directly next to the referred angle in a right triangle.
- 10.) The tangent ratio is opposite / adjacent.
- 11.) The angle of elevation represents the angle from the horizontal upward of an object.
- 12.) To simplify a radical where make denominator produce an exact root is called rationalizing (the denominator).
- 13.) The name of the Greek symbol that is commonly used to indicate angles is called theta ( $\theta$ ).
- 14.) The relationship between angle of elevation and angle of depression is that they are alt. interior angles.
- 15.) When asked to solve a right triangle, must find all missing parts of the triangle (3 answers).

**II. Complete the table for finding the remaining side and the value of all THREE trig ratios.**

**Make sure your answers are completely simplified in fractional and radical form (No decimals)!**

Given Right Triangle	Work to Find Missing Side	THREE trig ratios for angle $\theta$
16.) 	$2^2 + 6^2 = x^2$ $40 = x^2$ $x = \sqrt{2 \cdot 2 \cdot 5}$ $x = 2\sqrt{10}$	$\sin \theta = \frac{2}{2\sqrt{10}} = \frac{1}{\sqrt{10}} = \frac{\sqrt{10}}{10}$ $\cos \theta = \frac{6}{2\sqrt{10}} = \frac{3}{\sqrt{10}} = \frac{3\sqrt{10}}{10}$ $\tan \theta = \frac{2}{6} = \frac{1}{3}$
17.) 	$x^2 + (3\sqrt{15})^2 = 25^2$ $x^2 + 135 = 625$ $x^2 = 490$ $x = 21$	$\sin \theta = \frac{24}{25}$ $\cos \theta = \frac{3\sqrt{15}}{25} = \frac{\sqrt{15}}{5}$ $\tan \theta = \frac{24}{3\sqrt{15}} = \frac{8\sqrt{15}}{15}$

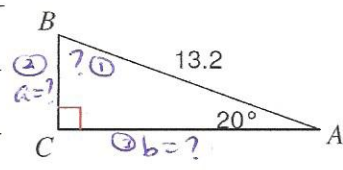
**III. Find the value of each indicated side x, indicated angle  $\theta$ , or what is asked. Show work and round to nearest tenth.**

18.)  $\sin 40 = \frac{x}{15}$ $x = 15 \sin 40$ $x = 9.6$	19.)  $\tan 24 = \frac{8}{x}$ $x = \frac{8}{\tan 24}$ $x = 18$	20.)  $\cos \theta = \frac{12}{13}$ $\theta = \cos^{-1}(\frac{12}{13})$ $\theta = 22.6^\circ$
21.) Find the height of the tree.  $\tan 47 = \frac{x}{28}$ $x = 28 \tan 47$ $x = 30.4$	22.) Find angle formed by the ladder and the wall.  $\sin \theta = \frac{18}{22}$ $\theta = \sin^{-1}(\frac{18}{22})$ $\theta = 54.4^\circ$	23.) Find the length of the hypotenuse.  $\cos 37 = \frac{33}{x}$ $x = \frac{33}{\cos 37}$ $x = 32.4$
24.) The tailgate of a moving truck is 2 feet above the ground. The incline of the ramp used for loading the truck is $15^\circ$ . What is the length of ramp in inches?  $\sin 15 = \frac{2}{x}$ $x = \frac{2}{\sin 15}$ $x = 7.75$ $x = 92.4$ in	25.) An airplane is starting to descend to a local airport's 3 mile runway. The airplane is 7 miles from the end of the runway. What is the plane's angle of depression to the end of the runway?  $\cos \theta = \frac{3}{7}$ $\theta = \cos^{-1}(\frac{3}{7})$ $\theta = 64.6^\circ$	26.) From his viewpoint, Larry estimates that there is a $25^\circ$ angle to the top of his house. At the same time, he estimates that there is a $65^\circ$ angle to the top of a nearby 83-foot tree. What is the height of Larry's house?  $\tan 25 = \frac{y}{38.7}$ $y = 38.7 \tan 25$ $y = 18.4$

Part B – The following problems will be SHORT ANSWER on the test.

IV. Solve each triangle. Make sure to use the appropriate letters. Round to nearest tenth.  
Must show appropriate work for FULL CREDIT!!

27.)  $B = 70^\circ$   
 $a = 4.5$   
 $b = 12.4$

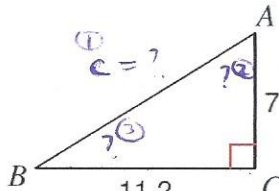


①  $B = 90 - 20$   
 $B = 70^\circ$

②  $\sin 20 = \frac{a}{13.2}$   
 $a = 13.2 \sin 20$   
 $a = 4.5$

③  $4.5^2 + b^2 = 13.2^2$   
 $b^2 = 153.99$   
 $b = 12.4$

28.)  $A = 58^\circ$   
 $B = 32^\circ$   
 $C = 13.2$



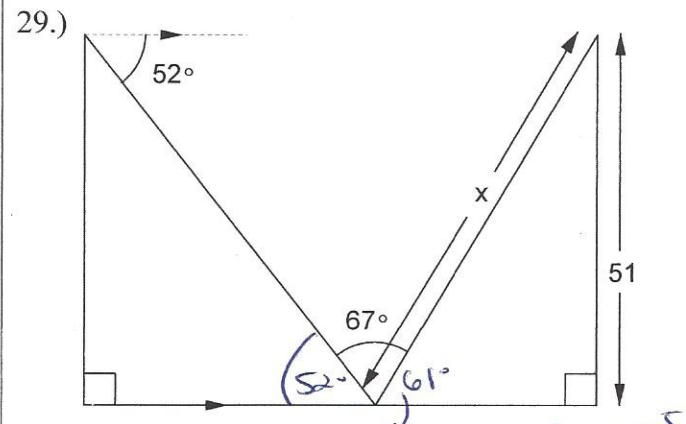
①  $11.2^2 + 7^2 = c^2$   
 $c^2 = 134.44$   
 $c = 13.2$

②  $\tan A = \frac{11.2}{7}$   
 $A = \tan^{-1}(\frac{11.2}{7})$   
 $A = 58^\circ$

③  $B = 90 - 58$   
 $B = 32^\circ$

V. Critical Thinking Problems – Find the indicated side or angle for each given diagram.  
Note: These diagrams are NOT DRAWN to SCALE!!

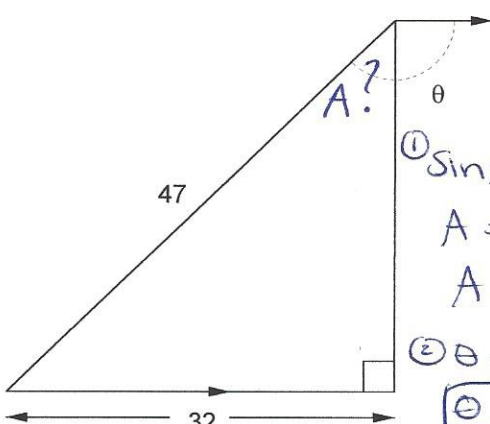
29.)



$\sin 61 = \frac{51}{x}$   
 $x = \frac{51}{\sin 61}$   
 $x = 58.3$

①  $180 - 52 - 67 = 61^\circ$

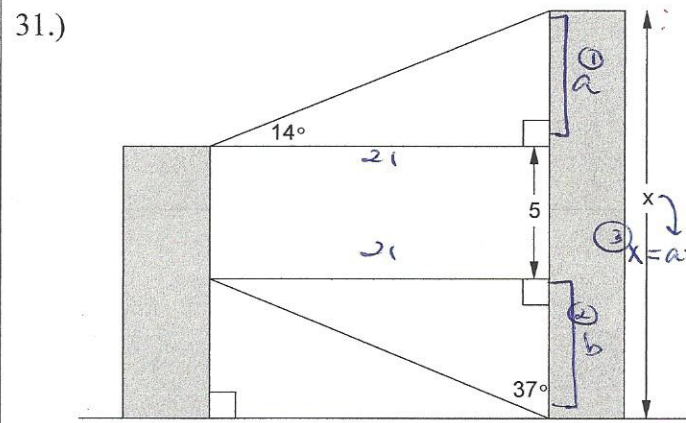
30.)



①  $\sin A = \frac{32}{47}$   
 $A = \sin^{-1}(\frac{32}{47})$   
 $A = 42.9^\circ$

②  $\theta = 42.9 + 90$   
 $\theta = 132.9^\circ$

31.)

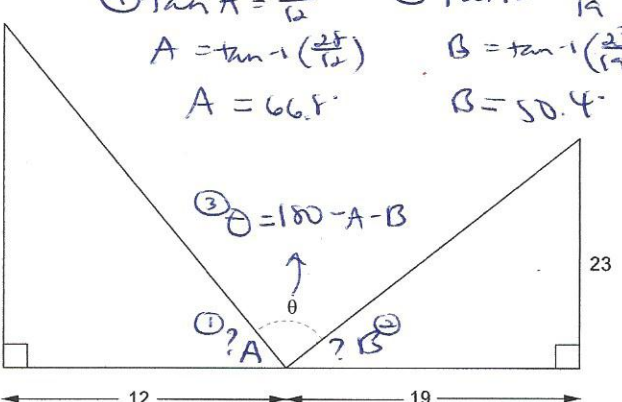


①  $\tan 14 = \frac{a}{21}$   
 $a = 21 \tan 14$   
 $a = 5.2$

②  $\tan 37 = \frac{b}{21}$   
 $b = \frac{21}{\tan 37}$   
 $b = 27.9$

③  $x = 5.2 + 27.9 + 5$   
 $x = 38.1$

32.)



①  $\tan A = \frac{28}{12}$   
 $A = \tan^{-1}(\frac{28}{12})$   
 $A = 66.5^\circ$

②  $\tan B = \frac{23}{19}$   
 $B = \tan^{-1}(\frac{23}{19})$   
 $B = 50.4^\circ$

③  $\theta = 180 - A - B$   
 $\theta = 180 - 66.5 - 50.4$   
 $\theta = 62.8^\circ$