

Sine and Cosine Law Quiz 2006

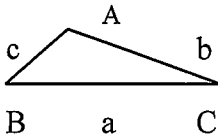


****LOUISE KIDS NEVER FINISH THIS!

Name: ANSWERS?

Part 1- Sine and Cosine Law

Use this happy little non-right triangle for the next problems (obviously it's not drawn to scale for each problem)



1. $A=38.7^\circ$ $a=172$ $c=203$
 $A=38.7$
 $B=93.8$
 $C=47.5$
 $a=172$
 $b=204.80$
 $c=203$

$$\frac{\sin 38.7}{172} = \frac{\sin C}{203}$$

$$\cdot 625 =$$

$$\cdot 0036 = \frac{\sin C}{203}$$

$$\begin{array}{r} 180 \\ - 86.2 \\ \hline 93.8 \end{array}$$

$C = 47.5^\circ$

$$\cdot 0036 = \frac{\sin 47.5}{b}$$

2. $A=45^\circ$ $a=83$ $b=79$

$A=45^\circ$
 $B=42.3^\circ$
 $C=92.7^\circ$
 $a=83$
 $b=79$
 $c=117.5$

$$\frac{\sin 45^\circ}{83} =$$

$$\cdot \frac{707}{83} = \cdot 0085$$

$$\cdot 0085 = \frac{\sin 92.7^\circ}{c}$$

$$\cdot 0085 = \frac{\sin B}{79}$$

$$\cdot 67 = \sin B$$

$B = 42.3^\circ$

3. $A=51^\circ$ $b=40$ $c=45$

$A=51^\circ$
 $B=57.5^\circ$
 $C=71.5^\circ$
 $a=36.87$
 $b=40$
 $c=45$

$$a^2 = 40^2 + 45^2 - 2(40)(45) \cos 51^\circ$$

$$a^2 = 1600 + 2025 - 2265.5$$

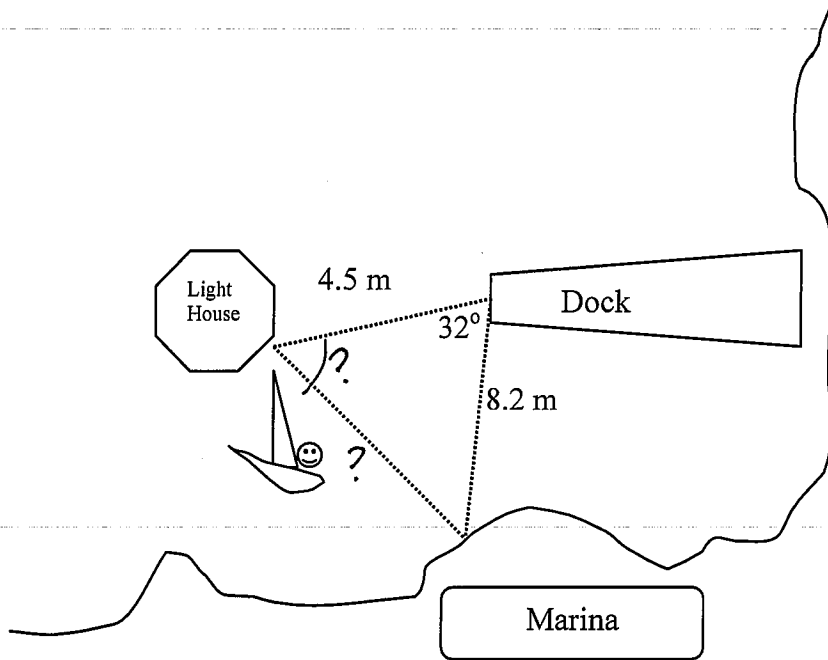
$$a^2 = 3625 - 2265.5$$

$$a^2 = 1359.5$$

$$a = 36.87$$

$$\frac{\sin 51^\circ}{36.87} =$$

$$\cdot 02 = \frac{\sin B}{40} \quad B = 57.47$$



5. Hugo is taking a boat tour of the lake- The route is shown on the map above.

a- How far is it from the lighthouse to the marina?

$$c^2 = (4.5)^2 + 8.2^2 - 2(4.5)(8.2) \cos 32^\circ$$

$$c^2 = 4.5^2 + 8.2^2 - 2(4.5)(8.2) \cos 32^\circ$$

$$20.25 + 67.24$$

$$- 62.59$$

$$87.49 - 62.59$$

$$c^2 = 24.9 \quad 4.99 \text{ m}$$

b- What is the angle between the route from the dock to the lighthouse and the route from the light house to the marina?

$$\frac{\sin 32^\circ}{4.99} = \frac{\sin ?}{8.2}$$

$$\frac{.53}{4.99}$$

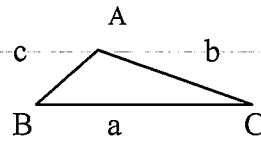
$$.1 = \frac{\sin ?}{8.2}$$

$$.87 = \sin ?$$

$$60.55^\circ$$

Part 2- Area

Find the area of each triangle-



7. $a=14.8$ $c=23.5$ $LB=148.5^\circ$

$$K = \frac{1}{2}(14.8)(23.5)\sin 148.5 = 90.86 \text{ units}^2$$

.52

8. $a=16$ $LB=61.6^\circ$ $LA=32.5^\circ$

$$K = \frac{1}{2} a^2 \frac{\sin 61.6 \sin 85.9}{\sin 32.5} = \frac{1}{2}(16)^2 \frac{(.88)(.997)}{(.537)} = 209 \text{ units}^2$$

9. We're trying to build a sledding jump on the Compass hill. We found two braces in the basement that have a top side of 20 inches long then a corner of 115° . The second leg is 23.8 inches. If we want to cover the sides with ply wood what is the area we need to cover?



$$K = \frac{1}{2} (20)(23.8)(\sin 115)$$

(.9)

$$K = 215.7 \text{ in}^2$$

