GSE PreCalculus Name _____

WS 6.2 –Law of Sines Date _____ Day _____

Solve each Triangle:

1. $\triangle ABC$

$A = 52^\circ$ $a = 8cm$

$B = 31^\circ$ $b =$ _____

$C =$ _____ $c =$ _____

2. $\triangle PQR$

$P = 13^\circ$ $p =$ _____

$Q = 133^\circ$ $q = 9in$

$R =$ _____ $r =$ _____

3. $\triangle AHS$

$A = 27^\circ$ $a = 120yd$

$H = 109^\circ$ $h =$ _____

$S =$ _____ $s =$ _____

4. $\triangle BIG$

$B = 2^\circ$ $b = 20km$

$I = 79^\circ$ $i =$ _____

$G =$ _____ $g =$ _____

5. $\triangle PAF$

$P = 28^\circ$ $p =$ _____

$A = 117^\circ$ $a =$ _____

$F =$ _____ $f = 6m$

6. $\triangle JAW$

$J = 48^\circ$ $j =$ _____

$A =$ _____ $a = 5\,ft$

$W = 73^\circ$ $w =$ _____

7. $\triangle ALP$

$A = 85^\circ$ $a =$ _____

$L = 87^\circ$ $l =$ _____

$P =$ _____ $p = 30\,ft$

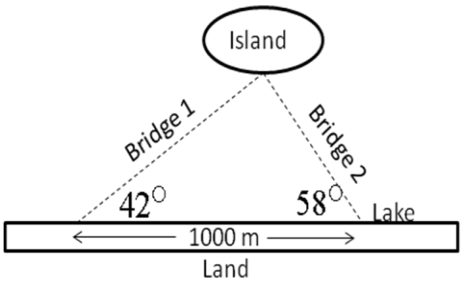
8. $\triangle JAW$

$J = 48^\circ$ $j =$ _____

$A =$ _____ $a = 5\,ft$

$W = 73^\circ$ $w =$ _____

9. Island Bridge Problem: Suppose that you work for a construction company that is planning to build a bridge from the land to a point on an island in a lake. The only two places on the land to start the bridge are point X and point Y, 1000 m apart. Point X has better access to the lake but is farther from the island than point Y. To help decide between X and Y, you need the precise lengths of the two possible bridges. From point X you measure a 42° angle to the point on the island, and from point Y you measure 58°.

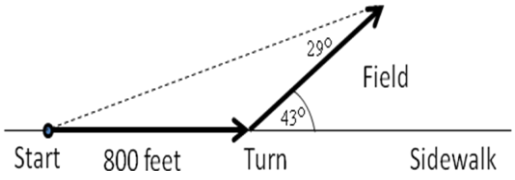


A. How long would the bridge be?

B. If constructing the bridge costs $370 per meter, how much could be saved by constructing the shorter bridge?

C. How much could be saved by construction the shortest bridge possible?

10. Walking Problem: Ivy walks 800 feet along the sidewalk next to a field. The she turns at an angle of 43° to the sidewalk and heads across the field. When she stops, she looks back at the starting point, finding a 29° angle between her path across the field and the direct route back to the starting point.

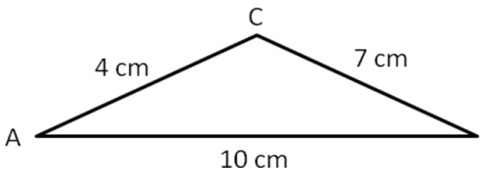


A. How far across the field did Ivy walk?

B. How far does she have to walk to go directly back to the starting point?

C. Ivy walks 5ft/s on the sidewalk but only 3ft/s across the field. Which way is quicker for her to return to the starting point –by going directly across the field or by retracing the original route?

11. Law of Sines for Angles Problem: You can use the law of sines to find an unknown angle measure, but the technique is risky. Suppose that $\triangle ABC$ has sides 4cm, 7cm, and 10cm, as shown.



A. Use law of cosines to find the measure of angle A.

B. Use the answer to part a (don't round off) and the law of sines to find the measure of angle C.

C. Find the measure of angle C again using law of cosines?

D. Do the answers agree? Why?