

SHOW ALL WORK

I. Multiple Choice

\_\_\_\_\_ 1. Given  $\triangle ABC$  with  $m\angle A = 90^\circ$ ,  $m\angle B = 34^\circ$ , and side  $c = 14.7$  yards. Determine the length of side  $b$ .

- A) 8.81 yards      B) 22.14 yards      C) 17.7 yards  
 D) 9.92 yards      E) 16.6 yards

\_\_\_\_\_ 2. Given  $\triangle ABC$  with side  $a = 91.6$  inches, side  $c = 24.19$  inches, and  $m\angle B = 37^\circ$ , Determine the area of the triangle.

- A) 1107.9 square inches      B) 1333.5 square inches  
 C) 1769.6 square inches      D) 666.8 square inches  
 E) None of these

\_\_\_\_\_ 3. Given  $\triangle QED$ ,  $\sin \angle Q =$

- A)  $\frac{qe}{\sin \angle E}$       B)  $\frac{q}{e \sin \angle E}$       C)  $\frac{q \sin \angle E}{e}$   
 D)  $\frac{e \sin \angle E}{q}$       e) None of these

\_\_\_\_\_ 4. Given  $\triangle ABC$  with  $m\angle C = 72^\circ$ ,  $m\angle A = 15^\circ$ , and side  $b = 342.6$  yards. Determine the length of side  $a$ .

- A) 326.28 yd      B) 1258.92 yd      C) 88.79 yd  
 D) 6323 yd      E) None of these

## II. Free Response

5. Given  $\triangle ABC$  with  $m\angle A = 45^\circ$ , side  $c = 28$  feet, and  $m\angle B = 53^\circ$ , Determine the area of the triangle
6. Given  $\triangle ABC$  with  $m\angle A = 36^\circ$ ,  $m\angle B = 87^\circ$ , and side  $a = 39$  yards. Determine the length of side  $b$ .
7. Write out the Law of Sines for  $\triangle PAM$ .
8. Determine the area of  $\triangle NED$ , given that  $n = 8.4$  ft,  $e = 7.8$  ft, and  $m\angle D = 51^\circ$ .
9. Given  $\triangle ABC$  with  $m\angle A = 62^\circ$ ,  $m\angle B = 56^\circ$ , and side  $c = 46$  miles. Determine  $m\angle C$ , the length of side  $b$ , and the length of side  $a$ .
10. The cross country race starts at a point H, and proceeds in the direction S  $53^\circ$  W to point A. Then the runners proceed in the direction S  $38^\circ$  E to point D. Then they go due North and end up back at point H. If the distance from D to H is 1.2 miles, what is the total distance of the course?

Extra Credit:

11. Given  $\triangle ABC$  with  $m\angle A = 34^\circ$ ,  $m\angle B = 77^\circ$ , and side  $a = 23$  yards and side  $c = 35$  yards. Determine the length of side  $b$ . Explain your answer.