Beverly Hills High School -- FST Trig -- Test #3 -- Unit 3 -- 90 points
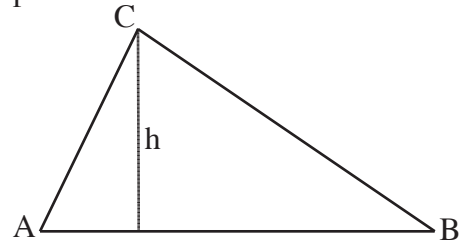
Show all your work. Calculators okay this page only. When you are finished, turn it in to get page two.

1) Derive the law of sines using the diagram at the right. Show all the steps
   for full credit. Ten points.

2) A pilot approaching a 15,000 foot runway finds that the angles of depression to the ends of the runway are
    6.8° and 11.2°. How high is the plane AND how far is the plane from the nearer end of the runway?
    Ten points.

3) From a point 230 m from a building, the angles of elevation to the top and bottom of a statue on top of the
    building are 38.7° and 35.0°. How tall is the statue AND how tall is the building? Ten points.

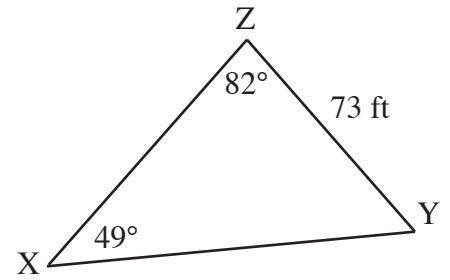4) Solve the triangle at the right. Five points.

5) Find AB.

B

A

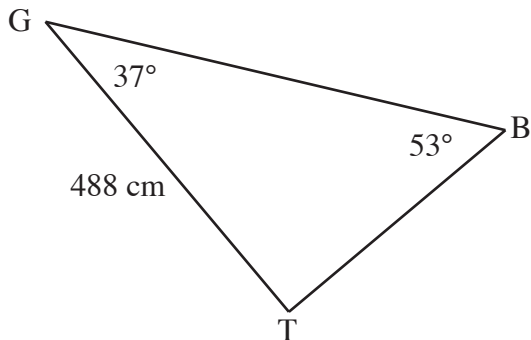109°

15.6

51°

C

6) Find XY.

Z

82°

73 ft

49°
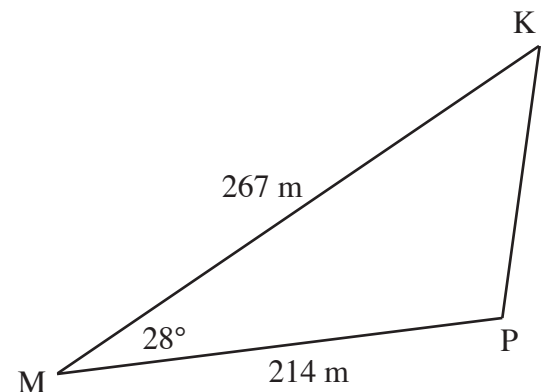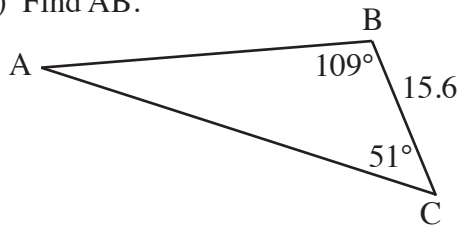
X

Y

7) Triangle EFG has sides of 16 m, 19 m, and 28 m. What are the three angles of the triangle?

8) For five points, state the number of triangles that can be formed using the given measurements. (If you just state the answer and get it wrong, no partial credit.)

m<B = 29° , a = 14 , b = 19

9) Solve the triangle below.

G

37°

B

53°

488 cm

T

No calculators on this page. Be sure to write your name on this page too.

10) Give the COMPLETE solution to this equation: 11) Give the COMPLETE solution to this equation:

$$\cos\theta = \frac{-1}{2}$$

$$\tan^2\theta = \frac{1}{3}$$

Solve each of the following equations for all thetas where $0° \leq \theta < 360°$ to the nearest degree.

12) $\sin 2x = \frac{\sqrt{3}}{2}$

13) $5\cos\theta - \sqrt{3} = 3\cos\theta$

14) $\cot 3x = 1$

15) $2\cos^2 2\theta = 1 - \cos 2\theta$