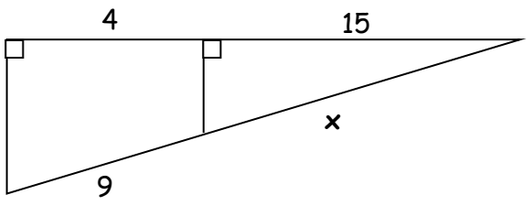
MPM 2D1

Name: _____

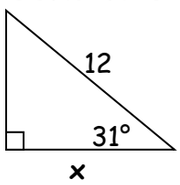
Sure Bets #3 – Trigonometry, Systems and Geometry

1. Use similar triangles to find the length of the indicated unknown side.

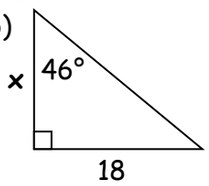


2. Use SOHCAHTOA to find the indicated value.

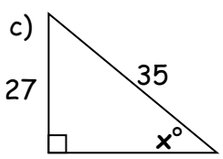
a)



b)

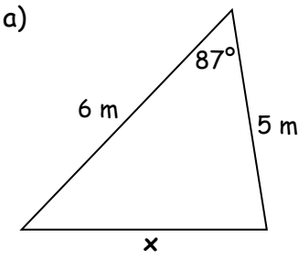


c)

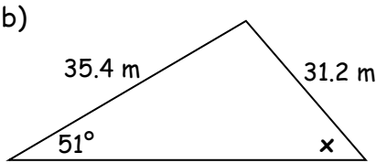


3. Use the **Sine Law** or **Cosine** Law to determine the following unknowns.

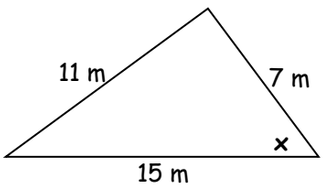
a)



b)



c)



4. A football player is attempting a field goal. The angle formed by the player's position on the field and a line of sight to each upright is 33°. If the distances to the uprights are 7.5 m and 19 m, calculate the width of the uprights.

5. From a window of one building, the angle of elevation to the top of a second building is 56°, and the angle of depression to the bottom of that same building is 60°. If the buildings are known to be 30 m apart, find the height of the second building.

6. Solve the following systems of equations:

a) $y = 4x - 5$
$y = 3x + 7$

b) $4x + 3y = 11$
$y = -2x + 5$

Remember to use let and therefore statements and show a proper algebraic solution.

7. Solve the following problems using a linear system.

   a) One number is 20 more than two times another. Find the two numbers if their sum is 110.

   b) Mrs. Campbell spent $10 on a candy mixture from the Bulk Barn for a class party. Some of the candy cost 50 cents a pound, and the rest cost 35 cents a pound. If she bought 25 pounds in all how much did she buy of each kind?

   c) Claire traveled a total of 315 miles by jet plane and bus to New York. The average speeds of the jet plane and bus were 400 mph and 30 mph respectively. If her total traveling time was $1\frac{1}{4}$ hours, how long did she travel by jet plane? How far did she travel by bus?

8. A triangle has vertices P(-1,2), Q(2,6) and R(-4,4). Classify the triangle.

9. A diameter of a circle has end points (-6,-2) and (6,2).
   a) Find the center of the circle.
   b) Determine the equation of the circle.
   c) Is the point (4,7) inside, outside or on the circle?

10. Classify the following shapes according to the data given for each quadrilateral ABCD.

	Slopes				Distances			
Quad #	AB	BC	CD	AD	AB	BC	CD	AD
1	4	-1/4	4	-1/4	2	2	2	2
2	3	2	3	2	5	5	5	5