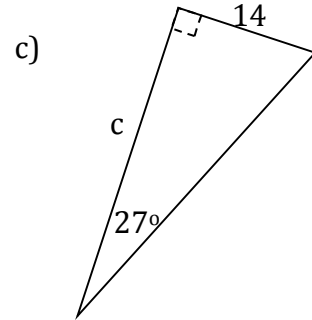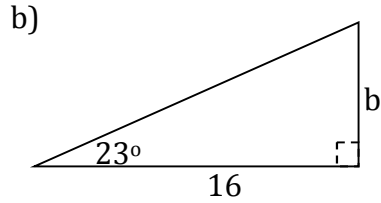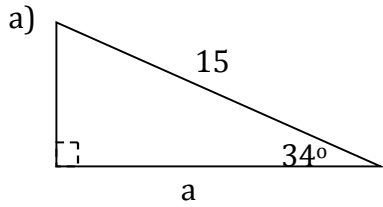Name:_____

Using Trigonometric Ratios to Find Sides Assignment
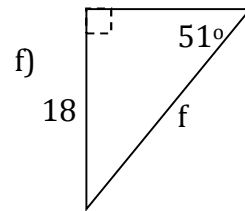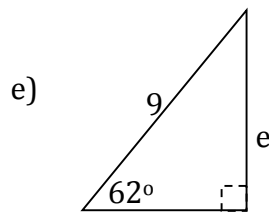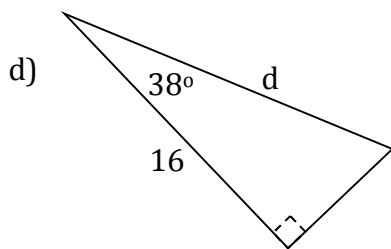
1. Find each indicated side. Round answers to 2 decimal places where appropriate.

a)

15

34º

a

b)

23º

16

b

c)

14

c

27º

a)_____

b)_____

c)_____

d)

38º

d

16

e)

9

62º

e

f)

51º

18

f

d)_____

e)_____

f)_____

2. Complete the following problems on a separate piece of paper.

    i) Sketch a <u>GOOD</u> diagram which has all information labelled on it (including missing side).

    ii) Write the trigonometric ratio you will use.

    iii) Solve for the indicated side. Show your work.

    iv) Round to 2 decimal places where appropriate.

    v) Include units in your answer.

a) How tall is a tree if its shadow is 36 m long, and the angle that the shadow makes with the ground is 43°?

b) On a sunny day, the sun's rays strike the ground at an angle of 53°. A tree 18 m in height casts a shadow. How long is that shadow?

c) A ladder is resting against a wall and makes an angle of 61° with the ground. If the base of the ladder is 2.3 m from the wall, how long is the ladder?

d) A wire supporting the top of a hydro tower meets the ground at an angle of 59°. The wire is secured 22 m from the base of the tower. How long is the wire?

e) From a point 132 m above the ground in a control tower, the angle of depression to a truck on the ground is 38°. How far is the truck away from the observer in the tower?

f) An observation tower is 98 m tall. The angle of depression from the top of the tower to an historical marker is 23°. How far from the base of the tower is the marker?

g) A pilot in a plane 3 km above the ground estimates the angle of depression to a runway as being 51°. How far is the pilot from the runway?

h) The firing angle of a missile is 28°. About how high is it after it has traveled 450 m?

i) The top of a lighthouse is 110 m above the level of the water. The angle of depression from the top of the lighthouse to a fishing boat is 18°. How far from the base of the lighthouse is the fishing boat?