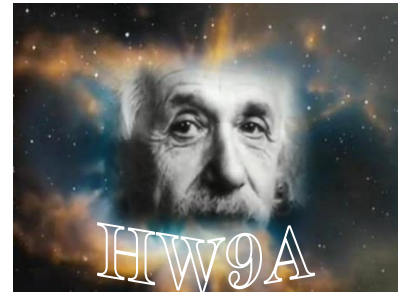Solve the given triangle (find all missing angles and sides). Give angle measures to nearest tenth of a degree and lengths to three significant digits.
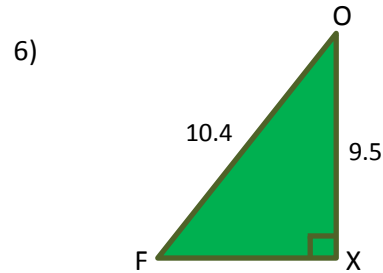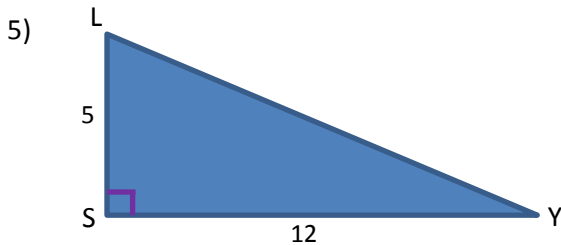
1) In ΔABC, ∠A = 90°, ∠B = 25° and a = 18.

2) In ΔPQR, ∠P = 90°, ∠Q = 64° and p = 27.

3) In ΔDEF, ∠D = 90°, ∠E = 12° and e = 9.   4) In ΔXYZ, ∠X = 90°, ∠Y = 37° and z = 25.

5)

L

5

S ⌐   Y
      12

6)

O

10.4

9.5

F   ⌐ X

7) Use the diagram in #5 to find the following.
   a) sin Y   b) cos L   c) tan Y   d) cot L   e) sec Y   f) csc L

For the following problems, make sure to make a diagram to represent the information given.

8) An airplane is at an elevation of 35,000 ft. when it begins its approach to the airport. Its angle of descent is 6°.
   a) What is the distance between the airport and the point on the ground directly below the plane?

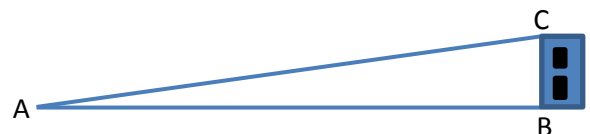   b) What is the approximate air distance between the plane and the airport?

9) A lighthouse keeper observes that there is a 3° angle of depression between the horizontal and the line of sight to a ship. If the keeper is 19m above the water, how far is the ship from the lighthouse?

10) A student looks out a second-story window and sees the top of the school flagpole at an angle of elevation of 22°. The student is 18ft above ground, and 50ft from the flagpole. How tall is the flagpole?

11) For an observer at point A, 250m from a building, the angle of elevation to the top of the building is 5°.

   a) Use the arc length formula s = rθ to approximate BC.
   b) Use right triangle trigonometry to find BC more accurately.

C

A

B

1) $\angle C = 65°$	3) $\angle F = 78°$	5) s = 13	7a) 5/13	8a) ≈ 333,003ft
b = 7.61	d = 43.3	$\angle L = 67.4°$	b) 5/13	b) ≈ 334,837ft
c = 16.3	f = 42.3	$\angle Y = 22.6°$	c) 5/12	9) ≈ 363m
2) $\angle R = 26°$	4) $\angle Z = 53°$	6) o = 4.23	d) 5/12	10) ≈ 38.2ft
q = 24.3	x = 31.3	$\angle F = 66°$	e) 13/12	11a) ≈ 21.8m
r = 11.8	y = 18.8	$\angle O = 24°$	f) 13/12	b) ≈ 21.9m