NAME __Key__ DATE _____ Pd __

9.4 – 9.6 Trigonometry DAY THREE CYU II: Angle of Elevation and Depression
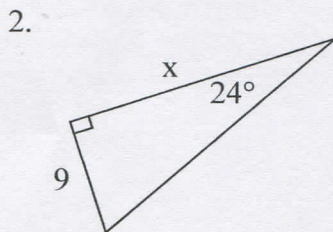
CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Solving Right Triangles	1 - 3	4, 5	
Real-World Application			6 - 12
Rounding answers	1 - 12		
Creating diagrams		6, 7, 10, 11, 12	
Appropriate units		6 - 12	

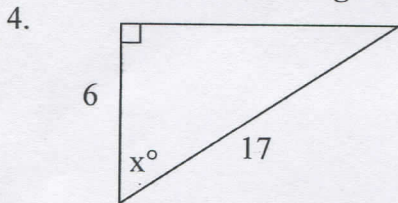### I. Solve for x to the nearest hundredth. Show set up to earn full credit.

1.

x ≈ __16.56__

2.

x ≈ __20.21__

3.
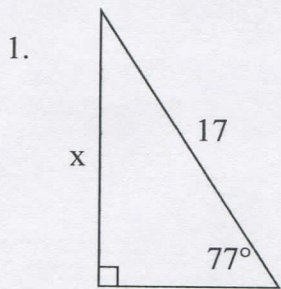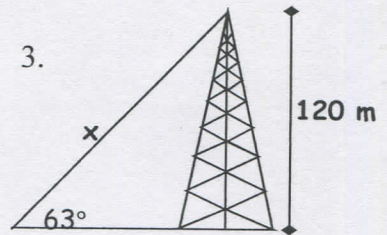
x ≈ __134.68__

II. Find x to the nearest degree. Show set up to earn full credit.

4.

x ≈ __69°__

5.
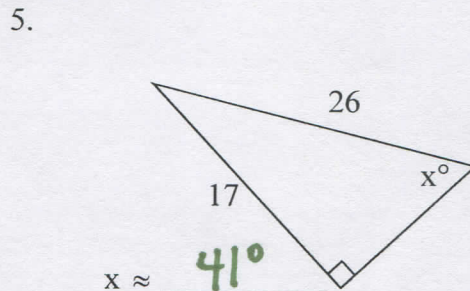
x ≈ __41°__

III. For each of the following, draw a picture if not given, write the trig ratio, round to the nearest whole number, and include the appropriate units.

6. A surveyor stands 70 feet away from Lancaster High School. If the angle of elevation to the top of the building is 53 degrees, how tall is the building?
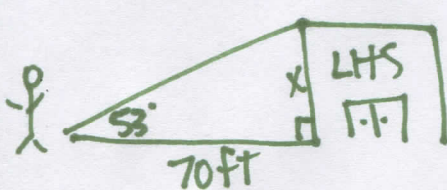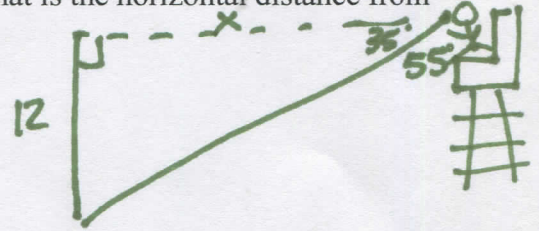

$$\tan 53 = \frac{x}{70}$$

__93 ft__

7. A life guard at the pool looking out from his station can see a person in trouble at a 35 degree angle of depression. The life guard's position is 12 feet above the pool. What is the horizontal distance from the life guard's station to the person in need?
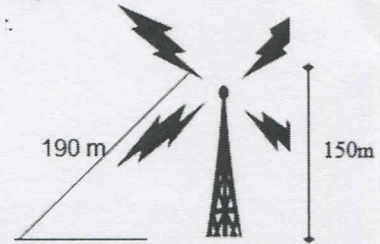
$$\tan 35 = \frac{12}{x}$$

$$\boxed{17 \text{ ft}}$$

8. A support wire is attached to the top of a 150 m radio tower. The wire is 190 m long. What is the angle, to the nearest degree, that the wire makes with the ground?
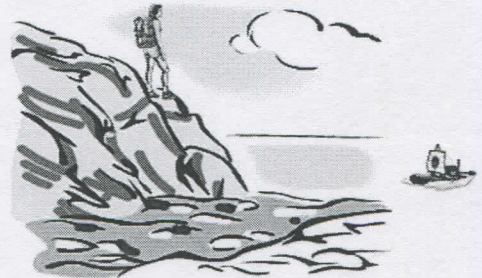
$$x = \sin^{-1}\left(\frac{150}{190}\right)$$

$$\boxed{52°}$$

190 m   150m

9. A woman standing on a cliff at the edge of the ocean spots a raft. Her eye level is 18 m above sea level and the angle of depression is 7°. Complete the sketch showing the appropriate distances. To the nearest 10 m, find the distance of the raft from the base of the cliff.

$$\tan 7 = \frac{18}{x}$$

$$\boxed{150 \text{ m}}$$

10. A 15 m ladder is leaning against a wall. The foot of the ladder is 10 m from the wall. Find the angle the ladder makes with the ground.
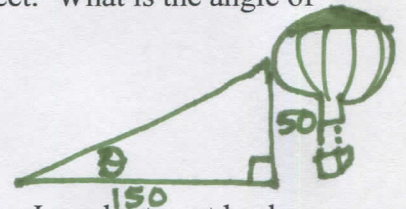
15m   θ   10m
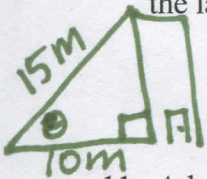
$$\cos \theta = \frac{10}{15}$$

$$\boxed{48°}$$

11. A hot air balloon rises vertically 50 feet over a horizontal distance of 150 feet. What is the angle of elevation that Blake watches the balloon?
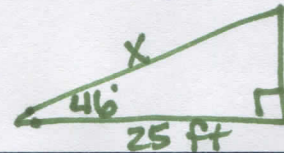
$$\tan \theta = \frac{50}{150}$$

$$\boxed{18°}$$

θ   50   150

12. Noah, the stud high school golfer, has just hit his golf ball into the sand trap. In order to get back on the green he has to hit the ball at an angle of elevation of 46 degrees. If Noah's horizontal distance is 25 feet away from the base of the green, how far must his golf ball travel to get onto the green

$$\cos 46 = \frac{25}{x}$$

$$\boxed{36 \text{ ft}}$$

x   46°   25 ft