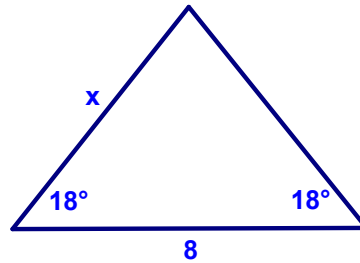
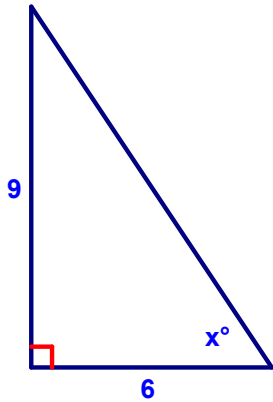


## 4.8 – Word Problems again!!

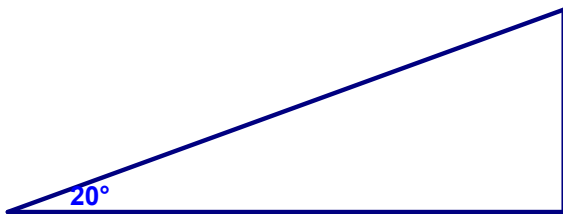
### Review of Solving a Triangle

1) Solve for the side or angle:

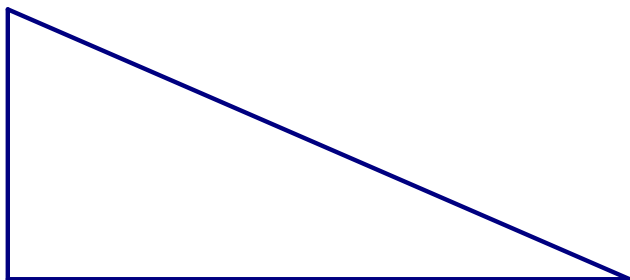


### Review of Right Triangle Word Problems

2) The sun is  $20^\circ$  above the horizon. Find the **length of a shadow** cast by a building that is 600 feet tall.



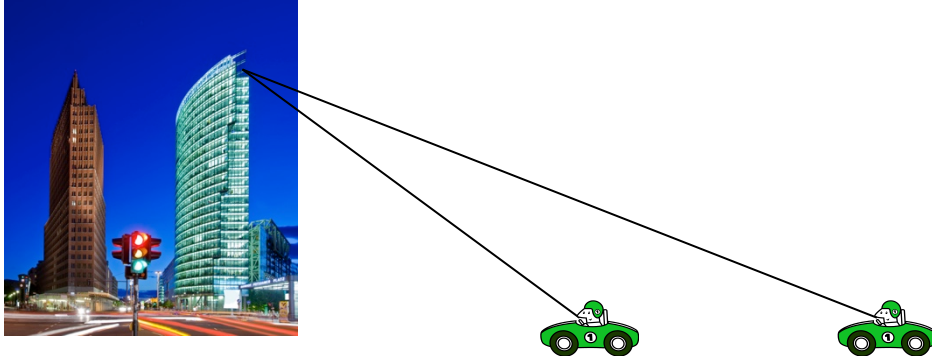
3) A cellular telephone tower that is 150ft tall is placed on top of a mountain that is 1200ft above sea level. **What is the angle of depression** from the top of the tower to a cell phone user who is 5 horizontal miles away and 400 feet above sea level?



## 4.8 – Word Problems again!!

### Slightly more complex

- 4) From the top of a 100 foot building a man observes a car moving toward the building. If the angle of depression of the car changes from  $22^\circ$  to  $46^\circ$  during the period of observation, how far does the car travel?



- 5) A plane is observed approaching your home and you assume that its speed is 550 miles per hour. The angle of elevation of the plane is  $16^\circ$  right now and  $57^\circ$  one minute later. Approximate the altitude of the plane.

## 4.8 – Word Problems again!!

**Course and Bearing:** The biggest thing to know is that NORTH is degree 0 (instead of east, like it normally is on the x-axis)

6) The Coast Guard Cutter travels at 30 knots (nautical miles) from its home port of Corpus Christi on a course of  $95^\circ$  for 2 hours, and then changes to a course of  $185^\circ$  for 2 hours. Find the **distance** and **bearing** from the Corpus Christi port to the boat.

7) A jet leaves Reno, Nevada and is headed toward Miami, Florida at a bearing of  $100^\circ$ . The distance between the two cities is approximately 2472 miles.

a) How far north and how far west is Reno relative to Miami?

b) If the jet is to return directly to Reno from Miami, at what bearing should it travel?

## 4.8 – Word Problems again!!

### Harmonic Motion:

A point that moves on a coordinate line is said to be in simple harmonic motion if its distance  $d$  from the origin at time  $t$  is given by either

$$d = a \sin \omega t \quad \text{or} \quad d = a \cos \omega t$$

Where  $a$  and  $\omega$  are real numbers such that  $\omega > 0$ .

The motion has amplitude  $|a|$ , period  $\frac{2\pi}{\omega}$  and frequency  $\frac{\omega}{2\pi}$

8) A ball is bobbing up and down on the end of a spring. You know that 10 cm is the maximum distance the ball moves vertically upward or downward from its equilibrium (at rest) position. It takes the ball 4 seconds to complete one full cycle of traveling between its max and min.

a) Write an equation for simple harmonic motion of the ball.

b) What is the frequency of this harmonic motion?

HW: 4.8 p.359-361 #3,8,17,21,26,31,34,37,40, 60 (slightly different than the online assignment)