January 21st 2014

Important equations:

v=v0+at

x-x0=v0t+1/2at2

v2=v02+2a(x-x0)

1. You throw a ball directly upwards with an initial velocity of 58 m/s. How high does the ball go, and how long does it take the ball to hit the ground?
2. A tourist being chased by an angry bear is running in a straight line toward his car at a speed of 3.5 m/s. The car is a distance d away. The bear is 30 m behind the tourist and running at 5.5 m/s. The tourist reaches the car safely. What is the maximum possible value for d?
3. A cannonball leaves a cannon at 250 m/s. The cannon is pointed 28 degrees east to north. How far does the cannonball travel horizontally, and what is the maximum height achieved by the cannonball?