Projectile Motion Worksheet

Answer the following questions on a separate piece of paper. In all problems, ignore the affects of air resistance and use $g = 9.8\ m/s^2$.

1. A stone is thrown horizontally at 15 m/s from the top of a cliff 44 meters high. How far from the base does the stone hit the ground?

2. A steel ball rolls with constant velocity across a tabletop 0.950 m high. It rolls off and hits the ground 0.352 meters from the edge of the table. How fast was the ball rolling when it left the table?

3. A football player kicks a football from ground level with an initial velocity of 27.0 m/s, 30° above the horizontal.
    a. What is the maximum height the ball attained?
    b. How long did it take the ball to return to the launching height?
    c. How far away did it land?

4. A ball is launched with an initial velocity of 4.47 m/s at an angle of 66° above the horizontal.
    a. What is the maximum height the ball attained?
    b. How long did it take the ball to return to the launching height?
    c. How far away did it land?

5. A physics book slides off a horizontal table top with a speed of 1.10 m/s. It strikes the floor in 0.350 s. Find:
    a. The height of the table above the floor.
    b. The horizontal distance from the edge of the table to the point where the book strikes the floor.

6. A pistol that fires a signal flare gives the flare an initial speed of 120 m/s. If the flare is fired at an angle of 55° above the horizontal on the level salt flats of Utah, how far away will it land?
    a. If the flare is fired on the moon, where $g = 1.6\ m/s^2$, how far away will it land?