Physics
Falling Bodies Worksheet

1. Wil-E-Coyote drops a bowling ball off a cliff to try to catch the Roadrunner. The cliff is 132m high.

    a) How long does it take the ball to fall to the ground?

    b) What is its impact velocity?

    c) How far does it fall in the first 3.0 seconds?

    d) How fast is it going at the end of 3.0 seconds?

    e) How far does it travel between a velocity of 12 m/s and 21 m/s?

    f) How long would it take the same ball to fall if the cliff was on the moon (g = 1.63 m/s²)?

    g) If the Roadrunner is approaching the cliff bottom at a constant speed of 65 km/h and is 75m away, what downward velocity should Wil-E give to the ball so that it hits the Roadrunner? (Challenging)
2. A pop-fly ball is hit by Chase Utley (my man). A nerdy fan times the ball’s flight at 6.7 seconds.

a) How high did the ball get?

b) What was the velocity of the ball when it left the bat?

c) What was the ball’s velocity when it hit the ground (ignore the difference in height between the bat and the ground)?

d) What is the ball’s velocity at 4.5 seconds after leaving the bat?

3. You are exploring a newly discovered cave in the Andes in South America. Peering over the edge of a cliff in the cave, you can’t see the bottom. Wondering if you have enough rope to rappel to the ground, you drop a rock off the top, and hear the sound of it hitting the bottom 4.2 seconds later.

a) Find the height of the cliff ignoring the time that the sound takes to travel back to you from the bottom.

b) Find the real height taking into account the speed of sound (340 m/s). (Challenging)