Uniform Acceleration Quiz 3.0H

1. A crossbow fires an arrow at 30 m/s when it is pulled back .45m. Assume constant acceleration and find "a".

2. A red wagon is traveling at 5.2 m/s when it rolls to a stop with uniform acceleration of magnitude, 3.5 m/s^2. (a) What is the wagon's stopping distance? (b) How much time did it take for the wagon to come to a stop?

3. A bowling ball is dropped from a 40 m high building. (a) How long is it in the air? (b) What is it's average velocity over the first second of its fall?

4. A VW bug is tossed upward at 7 m/s from a 15 m high roof top. (a) What is the VW's maximum height (above the ground)? (b) What is the VW's final speed just as it hits the ground?

5. Galileo rolls a ball up a ramp with an initial velocity of 6 m/s. It rolls 9 m up the ramp before rolling back down. (a) What is the acceleration of the ball? (b) What is the velocity of the ball when it is 5m from it's starting point?

6. How fast should a penny be thrown upward from a 25 m high cliff in order to take 4 seconds to land on the ground below the cliff?

7. Wile E. Coyote's jet-pack is helping him chase the Roadrunner. His position function is given by: $x(t) = 8t^2 - 6t + 1$ (m). (a) When is Wile E. to the right of the origin (the positive side)? (b) When is Wile E. moving to the right? (c) What is the direction of Wile E.'s acceleration?

8. Galileo has built a leaning tower on the moon. He jumps vertically and moves according to the following equation: $y = -0.8t^2 + 8t + 20$ (m). (a) What is Galileo's maximum height? (b) What is his acceleration at that height? (c) What is his velocity when y=20 m?

9. A centavo is tossed downward at 8 ft/s from a 60 ft tall building. (a) What is the centavo's velocity 1.5 seconds later? (b) How high off the ground is the centavo when its velocity is -24 ft/s? (Show you can use American units for this problem.)

10. Broom Hilda's broom breaks again. Her altitude function for $t \geq 0$ sec. is given by: $y = -4.9t^2 + 9.8t + 14.7$ (m). (a) When will Broom Hilda hit the concrete? (b) What will her velocity be? (c) What was her maximum height?