AP Physics – Unit 1 - Kinematics
Wkst – Review Linear and Free Fall

Show your work, units, and box the answer. All answers must follow significant digits rules.

1. Wile E Coyote, super genius, constructs a crude glider that is launched from a cliff. In 55.0 s the glider reaches its top velocity. If the glider undergoes a constant acceleration of $4.35 m/s^2$, what is the gliders speed? Assume the glider is initially at rest.

2. A tennis ball is hit straight up at 20.0 m/s from the edge of a sheer cliff. Sometimes later the ball passes the original height from which it was hit. Ignore the effects of air resistance.

   a. How fast is the ball moving at this time?
   b. If the cliff is 30.0 m high, how long will it take the ball to reach the ground?
   c. What is the total distance the ball travel?

3. Suppose Nemo is swimming at speed of 1.25×10^1 km/h. Suppose it takes 28.0 seconds for the Nemo to accelerate from 1.25×10^1 km/h to 1.98×10^1 km/h. What is his acceleration? What is the displacement of the Nemo after he speeds up?

4. The Hulk hits Thor, and the crater left by the decelerating Thor was 2.65 km long. If the Thor's acceleration was $-5.60 m/s^2$, what was his initial velocity?

5. Wile E. Coyote, super genius, throws a hand grenade straight down off a cliff that is 255 m tall, at the road runner. If the grenade reaches the ground in 12.0 seconds, what is the grenade's initial velocity?