Free Fall (Assignment 4)

1. An object falls from a high building. Ignoring air resistance, what will its velocity be after 6 seconds of falling?

2. An object falls from a high building and hits the ground in 9.0 seconds. Ignoring air resistance, what is the distance that it fell?

3. During a tornado in 2008 the Peachtree Plaza Westin Hotel in downtown Atlanta suffered damage. Suppose a piece of glass dropped near the top of the hotel falling 630 feet.

a) Ignoring air resistance, how long would it take the piece of glass to hit the ground?

b) Ignoring air resistance, what will the velocity of the piece of glass be when it strikes the ground?

4. A camera is dropped from the Golden Gate Bridge and takes 3 seconds to hit the water.

a) What is the camera's velocity when it plunges into the water?

b) How high above the water is the bridge?

c) What is the camera's acceleration at the 2nd second?

d) How far had the camera fallen after 2 seconds?

5. A penny is dropped from the top of the Eiffel Tower, which is 986 feet tall.

a) How long does it take the penny 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 long would it take the same penny to fall if the Eiffel Tower was built on the moon ($g = 5.35\ ft/s^2$)?