Free fall 1

1. A ball is thrown vertically upward with a velocity of 11.5 m/s. ( a ) To what height will it rise? (b) How long will it take for the ball to fall back to earth?
2. A physics student throws a ball vertically into the air. A fellow student determines with a stopwatch that the ball is in the air for a total of 3.0 s. (a) With what velocity was the ball thrown? (b) How high did it rise?
3. A penny dropped from a roof takes 6.3 s to reach the ground. How high is the roof? What is the velocity of the penny just before it strikes the ground?
4. A flower pot falls from a windowsill 25.0m above the sidewalk. (a) How fast is the flower pot moving when it strikes the ground? (b) How much time elapses before the flower pot hits the ground?
5. A student drops a rock from a bridge to the water 12.0 m below. How many seconds does it take the rock to hit the water? How fast is the rock moving when it hits the water?
6. A weather balloon is floating at a certain height above the earth when it releases a heavy pack of instruments. If the pack hits the ground with a speed of 73.5 m/s, what is the altitude of the balloon? How long does it take the instruments to hit the ground?
7. Coach Pfaff stands at the edge of the bleachers that are 7.5 m above the flat ground below. He tosses a tennis ball vertically up into the air with a velocity of 20 m/s. What is the max height of the ball? How long does the ball take to reach this maximum height? What is the velocity of the ball when he catches it on the way down? If the ball is just out of reach when it comes back down, and falls to the ground below, how long is the ball in the air before it hits the ground? What is the velocity of the ball as it strikes the ground?