1. A student drops a rock from a bridge to the water 12 m below. a) How many seconds does it take the rock to hit the water?   b) How fast is the rock moving when it hits the water?

2. A weather balloon is floating at a certain height above the earth when it releases a heavy pack of instruments. a) If the pack hits the ground with a speed of 73 m/s, how far up is the balloon?   b) How long does it take the instrument pack to reach the ground?

3. An engineer must design a runway that allows planes to reach a ground speed of 61 m/s before they can take off. If the planes accelerate at 2.4 m/s^2, what must be the minimum length of the runway?

4. A rock is thrown straight down, not dropped, from the roof of a building that is 61 m above the ground. If it takes 3.1 s to reach the ground, with what speed was it thrown?

5. A baseball is hit straight up into the air with a speed of 33 m/s.
    a) How high does it go? b) How long is it in the air?

6. An astronaut drops a feather from 1.25 m above the surface of the moon.
    The acceleration due to gravity on the moon is 1.62 m/s^2.
    a) How long does it take the feather to hit the ground?
    b) How long would it take a hammer to fall the same distance?

7. A tennis ball is dropped 1.2 m above the ground. With what velocity does it
    hit the ground (before the ground stops it)?