**Level 4 #7: Mountain Climber Dropping Rocks**

A mountain climber stands at the top of a 50.0 m cliff hanging over a calm pool of water. The climber

throws two stones vertically 1.0 s apart and observes that they cause a single splash when they hit the

water. The first stone has an initial velocity of 2.0 m/s upwards.

1. How long after release of the first stone will the two stones hit the water?
2. What is the initial velocity of the second stone when it is thrown?
3. What will the velocity of each stone be at the instant both stones hit the water?

Level 4 #5 Free Fall

1. A ball is thrown upward from the ground with an initial speed of 25 m/s; at the same instant, a ball is dropped from rest from a building 15 m high. After how long will the balls be at the same height (vertical position)?
2. Two students are on a balcony 19.6 m above the street. One student throws a ball vertically downward at 14.7 m/s. At the same instant, the other student throws a ball vertically upward at the same speed. The second ball just misses the balcony on the way down.
3. What is the difference in the time the balls spend in the air?
4. What is the velocity of each ball as it strikes the ground?
5. How far apart are the balls 0.800 s after they are thrown?