

1. Why does the acceleration due to gravity have a negative value?
2. With your lab partner, calculate your reaction time using only a ruler. Have your lab partner hold the ruler vertically with the “0” of the ruler even with the top of your hand. Your thumb should be stretched away from the rest of your fingers. Then, your partner should unexpectedly drop the ruler. When/If you catch it, note how far the ruler has fallen and calculate your reaction time. Each partner should do this calculation for him/herself.
3. For fun, try this with a crisp, straight dollar bill and see if you can catch it before it falls. What is the reaction time needed in order to catch a dollar bill?
4. An object is thrown straight up into the air. If the object travels 20 m just before it starts to come back down, what was the initial velocity of the object?
5. A tennis ball is thrown straight up and caught. If the total time of flight is 2.6 s, what was the ball’s initial velocity?

6. A ball is dropped from a helicopter and falls for 12 seconds before hitting the ground. Please tell (a) v at 1 s (b) v at 2 s... and each successive second thereafter, including the 12th second (no need to show calculations once you see the pattern) (c) height of the helicopter.

(a)

(b)

(c)

Time (s)	Velocity (m/s)
0	0
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

7. A marble dropped from a bridge strikes the water in 5 s. Calculate (a) the speed with which it strikes and (b) the height of the bridge.

(a)

(b)