
Task #1

What is the maximum height a rock will reach that is thrown up with a velocity of 18 m/s?

Solution: 16.5 m

Extension: Time in the air? 3.67 s

Task #2

A car accelerates at a rate of 2.4 m/s^2 for 3.2 s, attaining a velocity of 17.5 m/s. How fast must it have been going before it began accelerating?

Solution: 9.82 m/s

Task #3

How long would it take a penny to reach the bottom of the Empire State Building (which is approximately 380 m to the observation deck)?

Solution: 8.81 s

Task #4

A diver jumps vertically upward with a velocity of 13 m/s from a diving board that is 1.5 m above the water. How long will it take her to reach the water?

Solution: 2.76 s ($v_f = -14.1 \text{ m/s}$)
