

Megafun Kinematics Worksheet

(adapted from: www.farraguttn.com/science/milligan/physics/KineRev.htm)

- You are standing on a street corner. An egg falls past and splats on the street. Being an expert in egg disintegration you estimate it was traveling 22 m/s when it hit. You assume the egg was dropped.
 - What amount of time did the egg fall?
 - From what height was it dropped?
- Wyle E. Coyote is chasing the Roadrunner with velocity 15.0 m/s when he unwittingly runs into the Acme Giant Rubber Band that he previously had stretched across the road. The rubber band causes him to accelerate uniformly at -3.50 m/s^2 until he is thrown back in the opposite direction.
 - What amount of time will he be in contact with the rubber band?
 - What velocity will he have as he leaves the rubber band?
 - What is the maximum amount the rubber band is stretched?
- A motorcyclist traveling 35.0 m/s realizes suddenly that he is headed straight for the edge of the Grand Canyon 50.0 m away. He immediately begins to brake, decreasing his speed 7.00 m/s^2 . With what velocity will he fly off into the canyon?
- Starting from rest, Mr. M's bus achieves a velocity of -25 m/s in a distance of 1.0 km. Calculate the time and the acceleration.
- A disgusted physics student wads up her homework and throws it downward into a trash can. If the wadded up paper takes 0.30 seconds to travel the 1.5 m from her hand to the bottom of the waste can, with what speed was the homework hurled?
- Suppose this dude wants to be able to touch the rim of a basketball goal. The rim is 3.048 m above the ground. The dude can reach up 2.45 m with his feet on the ground.
 - If the dude can achieve a liftoff speed of 2.80 m/s, what is his maximum upward displacement?
 - What is the closest to the rim his fingertips will get?
 - What would be the minimum liftoff speed necessary for this dude to touch the rim?

Numerical Answers

- (a) 2.2 s (b) 24 m
- (a) 8.57 s (b) -15.0 m/s (c) 32.1 m
- 22.9 m/s
- $t = 80 \text{ s}$, $a = -0.31 \text{ m/s}^2$
- -3.53 m/s
- (a) 0.400 m (b) 0.198 m (c) 3.42 m/s