

Kinematic Word Problems Worksheet #2

1. A ball falling from rest is located 45 m below its starting point 3.0 s later. Assuming that its acceleration is uniform, what is its value?
2. A rocket is moving forward at 120.0 m/s. When its rockets are fired it experiences an acceleration of 8.00 m/s^2 . If these rockets are fired for 20.0 s, determine:
 - a) the final velocity of the rocket.
 - b) the displacement of the rocket.
3. A car accelerates from rest to 8.8 m/s in 3.0 s in first gear, then changes to second gear. After 8.0 s from the start of the trip, the car reaches 22.0 m/s and is shifted into third gear. After 7.0 s in third gear, it reaches 41.8 m/s. Calculate the average acceleration in each gear.
4. Draw the velocity-time graph of the motion of a bus that accelerates from rest at 1.0 m/s^2 for 6.0 s, then continues at a constant speed for 7.0 s, then accelerates at -2.0 m/s^2 for 3.0 s.
5. Two runners accelerate uniformly at 1.40 m/s^2 from rest for 8.00 s.
 - a) What is their final velocity?
 - b) What is their average velocity?
 - c) How far do they travel?
6. A motorcycle moving at 12.0 m/s [W] accelerates at 6.0 m/s^2 [W]. How long will it take to experience a displacement of 63 m [W]?
7. A baseball player catches a ball moving at 24 m/s. Upon striking the player's glove, the ball moves 12 cm as it comes to rest. Assume uniform acceleration in answering these questions:
 - a) How long did it take the ball to come to rest after striking the glove?
 - b) What was the ball's acceleration as it came to rest?
8. An astronaut on the moon throws a wrench straight up at 4.0 m/s. Three seconds later it falls downwards at a velocity of 0.8 m/s.
 - a) What was the acceleration of the wrench after it left the astronaut's hand?
 - b) How high above the point from which it was released was the wrench at 3.0 s?
 - c) How long would it take the wrench to return to the position from which it was thrown.
9. A helicopter hovering above a forest fire dumps a large bucket of water. How far does the water fall...
 - a) in the first 3.0 s?
 - b) during the third second?

