

## Kinematics 1-D : W.S.-9

Using the equations of kinematics, answer the following questions.

1) A rock falls off of a 170m high cliff.

- a) The velocity at  $t = 3.0$  s is \_\_\_\_\_ .
- b) The change in displacement is \_\_\_\_\_ .
- c) The time it takes for the rock to hit the ground is \_\_\_\_\_

2) A ball is thrown upward at  $t = 0.0$  s with a velocity of 27 m/s.

- a) The velocity at  $t = 1.5$  s is \_\_\_\_\_ .
- b) The height at  $t = 1.5$  s is \_\_\_\_\_ .
- c) The time the ball reaches the maximum height is \_\_\_\_\_ .
- d) The maximum height is \_\_\_\_\_ .
- e) The velocity at  $t = 4.5$  s is \_\_\_\_\_ .
- f) The time the ball hits the ground is \_\_\_\_\_ .

3) A car accelerates from 4.3 m/s to 10.9 m/s in 1.8 s.

- a) The average velocity is \_\_\_\_\_ .
- b) The distance traveled during this time is \_\_\_\_\_ .
- c) The acceleration is \_\_\_\_\_ .

4) A truck travels with a velocity of 12 m/s. The driver then brakes and accelerates at  $-2.4$  m/s<sup>2</sup>.

- a) Find the velocity 3.6 s later. \_\_\_\_\_ .
- b) Find the time it takes for the truck to come to a stop. \_\_\_\_\_

c) Find the distance traveled as the truck comes to a stop.

\_\_\_\_\_ .

5) A high-jumper leaps vertically. His initial vertical velocity is 6.5 m/s. Find the maximum height that he can jump. \_\_\_\_\_ .

Answers: 1)a) -29 m/s, b) -44m, c) 5.9s, 2)a) 12m/s, b) 29m, c) 2.8s, d) 37m, e) -17m/s, f) 5.5s, 3)a) 7.6m/s, b) 14m, c) 3.7m/s<sup>2</sup>, 4)a) 3.4m/s, b) 5.0s, c) 30.m, 5) 2.2m.