Name _____ Period _____ Date _____

Chapter 1 Linear Motion

Review: Free Fall, Going-Up

1. In the absence of air resistance which object will hit the floor first, a heavy object, a light object, or it makes no difference. What if air resistance was a factor?

2. Describe what happens to the velocity and acceleration of an object in free fall.

3. What value do we use for the acceleration of gravity on earth?

4. A freely falling object is equipped with a speedometer and odometer, record what will happen to the objects velocity and distance each second of travel as the it falls?

$v_1=$ $v_2=$ $v_3=$ $v_4=$ $v_5=$

$d_1=$ $d_2=$ $d_3=$ $d_4=$ $d_5=$

5. A freely falling object is equipped with a speedometer and released on a planet where the acceleration due to gravity is 5 m/s2, what would the reading on the speedometer change by each second of fall?

$v_1=$ $v_2=$ $v_3=$ $v_4=$ $v_5=$

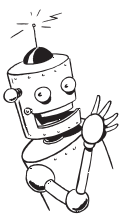
6. For an object in free fall, sketch a graph for each of the following: distance vs. time, velocity vs time, and acceleration vs. time.

7. On the side of your paper, draw the path of an object being thrown upward into the air at 30 m/s and label it's velocity and acceleration every second of it flight all the way up, at the top, and on it's way back down to the ground.

8. A student walks 100 m in 90 s. The student stops for 15 s and then walks turns and walks 30 m farther in 45 s. What is the average speed of the entire walk?

9. The average velocity of a plane is 500 km/h, how long will it take to travel 100 km?

10. An object travels 7 meters in the first second of travel, 7 meters again during the second second of travel, and 7 meters again during the third second. What is the objects acceleration?



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11. A ball is dropped from rest and takes 4.7 seconds to hit the ground. How far did the ball fall and how fast was it moving as it hits the ground?

12. A ball is thrown straight downward with a speed of 2.0 meter per second. What is the speed of the ball 1.3 second after it is released? [Neglect air resistance.]

13. A ball is thrown vertically upward and then returns. The total time the ball is in the air is 8 seconds, what was the velocity of the ball when it was released and what is the velocity of the ball when it gets back to it's release point? [Make up negative]

14. A ball is dropped from rest and hits the ground with a speed of 40 meters per second. How long was the ball in the air and how fast was it moving when it hits the ground?

15. When dropped from rest, what is the speed of an object after it has fallen a distance of 21 meters? [Neglect air resistance.]

16. A car traveling at 12 m/s accelerates at a rate of 3.5 m/s^2 for 5 seconds. What is the distance the motorcycle traveled during the 5 seconds?

17. A rock falls from rest a vertical distance of 0.72 meter to the surface of a planet in 0.63 second. What is the magnitude of the acceleration due to gravity on this planet?

18. A bullet is fired vertically upward with an initial velocity of 60 m/s.

A) How long is the object in the air?

B) How long before the object reaches its maximum height?

C) What height does the projectile reach?

D) What is the total displacement of the projectile from the time it left the ground until it returned to the ground?