Physics Unit 2 Review Name:

1. Compare and Contrast Speed and Velocity
2. Compare and Contrast Velocity and Acceleration
3. Compare and Contrast Average and Instantaneous Velocity
4. Compare and Contrast Average and Instantaneous Acceleration

A

B

C

D

E

Velocity

m/s

Time (s)

**Use the above graph to answer the following questions.**

5. What does the slope of the above graph represent?

**­­**6. During which segment did the object not move?

7. During which segment was the object moving with positive acceleration the entire time?

**­­8.** During which segment did the velocity reach the maximum level?

**9.** During which segment did the object slow down the entire time?

10. What is the instantaneous acceleration of the object at the very top point of segment B?

Time

A

B

C

Displacement

11. Which segment shows changing velocity?

12. Which segment represents an object at rest the entire time?

13. In with segment does the motion reach its greatest displacement from the reference point?

14. What was the overall displacement for the entire motion?

15. What is the instantaneous velocity at the top of point of segment C?

16. What is the SI unit for acceleration?

17. Draw a velocity diagram for the motion of a car that is accelerating in the same direction that it is moving.

18. Draw a velocity diagram for the motion of a car that is accelerating in the opposite direction that it is moving.

19. Describe the motion of an object in FREE FALL

20. How does the motion of a light object compare to the motion of a heavy object in free fall?

21. Draw a velocity diagram for a ball that is dropped off the top of a tower.

22. Compare the displacements of two objects with different masses after equal intervals of time.

23. List the 3 different ways an object can accelerate.

**Problems- Show all work and give units**

24. A motorized scooter starts from rest and accelerates for 5 s at 1.5 m/s. What is the scooter’s final velocity?

25. A hiker travels south along a straight path for 3h with an average speed of 4km/h North. What is the hiker’s displacement for the total trip?

26. A shopping cart is given an initial velocity of 2 m/s and undergoes a constant acceleration of 3m/s. What is the magnitude of the cart’s displacement after the first 1.5 s of its motion?

27. A soccer ball is moving horizontally at a speed of 4 m/s. It then undergoes a constant acceleration. After 4.0 s, the ball is moving at 20 m/s. What is the ball’s displacement?

28. A rock is dropped from the top of a cliff, assume the rock is at rest when dropped. If the rock hits the ground after 3 s, what is the height of the cliff? (Disregard air resistance. *a* = *g* = 9.8 m/s.)

29. A rock is thrown straight upward with an initial velocity of 39.2 m/s where the acceleration due to gravity has a magnitude of 9.8 m/s. At what time will the rock have a velocity of 0 m/s?

30. A coin released at rest from the top of a tower hits the ground after falling 5 s. What is the speed of the coin as it hits the ground? (Disregard air resistance. *a* = *g* = 9.8 m/s.)