Review 1 – accelerated motion & graphs of accelerated motion

**accelerated motion**

For questions 1-4: A person walks 200 meters due east and then 400 meters due north. This walk takes the person 10 minutes to complete.

 1. What distance did the person walk?

 2. What was the magnitude of the displacement of the person for the walk?

 3. What was the average speed of the person during the walk?

 4. What was the magnitude of the average velocity of the person during the walk?

 5. In 4.0 seconds an airplane went from 120 m/s to 180 m/s in the same direction. What was its acceleration?

 6. An object is at the +2 m mark on the X-axis. The object moves in the positive X direction at a constant 3 m/s. Where on the X-axis is the object after 6 seconds?

 7. An object is at rest at the +2 m mark on the X-axis. The object accelerates in the negative X direction at 3 m/s2. Where on the X-axis is the object after 6 seconds?

 8. An object starts from rest and reaches a speed of 6 m/s after moving a distance of 12 m. What was the magnitude of the acceleration of the object?

For questions 9-10: An object falls from rest to the ground in 1.4 seconds.

 9. What was the speed of the object when it reached the ground?

10. From what height did the object fall?

For questions 11-13: An object is projected straight upward at a speed of 19.6 m/s.

11. What is the maximum height the object reaches?

12. How much time does the object take to reach its maximum height?

13. What is the speed and direction of the object after 3 seconds of flight?

**graphs of accelerated motion**

Questions 14-24 refer to the graph of the velocity of an object with time.

0

18

36

-18

-36

velocity in m/s

0

2

4

6

8

10

time in seconds

12

14. What is the velocity of the object at *t = 2 s*?

15. What is the acceleration of the object at *t = 2 s*?

16. What is the velocity of the object at *t = 10 s*?

17. What is the acceleration of the object at *t = 10 s*?

18. What is the initial velocity of the object?

19. What was the initial acceleration of the object?

20. What was the average velocity of the object

from *t = 0 s* to *t = 6 s*?

21. What was the displacement of the object

from *t = 0 s* to *t = 6 s*?

22. What was the average velocity of the object from *t = 0 s* to *t = 10 s*?

23. At what time is the velocity of the object zero?

24. Which statement correctly describes the motion of the object?

 A The object moves only in the positive direction at constant speed.

 B The object moves only in the negative direction at constant speed.

 C The object moves only in the positive direction and slows.

 D The object moves in the positive direction, slows to a stop, then moves in the negative direction

 and speeds up.

Questions 25-33 refer to the graph of the

displacement of an object with time.

4 s

10 s

20 s

20 m

0 m

displacement

time

Answer choices:

 I from *t = 0 s* to *t = 4 s*

 II from *t = 4 s* to *t = 10 s*

III from *t = 10 s* to *t =20 s*

A I only C III only E I & III only G I, II, & III

B II only D I & II only F II & III only H none of these

25. During which time interval is the object NOT moving?

26. During which time interval is the object accelerating?

27. During which time interval is the object moving at constant speed?

28. During which time interval is the object moving in the positive direction?

29. During which time interval is the object moving in the negative direction?

30. During which time interval is the object speeding up?

31. During which time interval is the object slowing?

32. During which time interval does the object have positive acceleration?

33. During which time interval does the object have negative acceleration?