UNIT 1: Linear Motion Test REVIEW

1. An airplane accelerates down a runway at 3.20 m/s^2 for 32.8 s until is finally lifts off the ground. Determine the distance traveled before takeoff.

2. Upton Chuck is riding the Giant Drop at Great America. If Upton free falls for 2.60 seconds, what will be his final velocity and how far will he fall?

3. When we discuss the motion of something, its motion is described relative to something else. (True or False)

4. A bike accelerates uniformly from rest to a speed of 7.10 m/s over a distance of 35.4 m. Determine the acceleration of the bike.

5. A car traveling at 22.4 m/s skids to a stop in 2.55 s. Determine the skidding distance of the car (assume uniform acceleration).

6. The observation deck of tall skyscraper 370 m above the street. Determine the time required for a penny to free fall from the deck to the street below.

UNIT 1: Linear Motion Test REVIEW

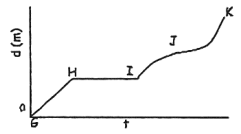
7. A dragster accelerates to a speed of 112 m/s over a distance of 398 m. Determine the acceleration (assume uniform) of the dragster.

8. A car driving in a circle at 40 mi/h does not change _____ (speed, velocity) but does change _____ (speed, velocity).

9. Acceleration due to gravity, represented by the letter _____ is about _____ on Earth.

10. If an object has uniform velocity, its acceleration = _____.

11. What is shown on the graph below? Describe the motion in each section. (Not moving, constant, speed up, slow down)



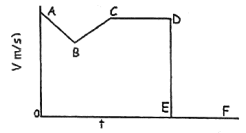
From G-H _____

From H-I _____

From I-J _____

From J-K _____

12. What is shown on the graph below? Describe the motion in each section. (Not moving, constant, speed up, slow down)



From A-B _____

From B-C _____

From C-D _____

From E-F _____

13. The Road Runner steps off a ledge and drops to the ground in 0.50 s. What is Road Runner's velocity the instant it hits? How high is the ledge off the ground?

UNIT 1: Linear Motion Test REVIEW

14. In 5.8 s, a car increases its velocity from 20 m/s to 45 m/s. What is the acceleration of the car?

15. How long will it take to stop a car if its driver starts braking at a velocity of 32m/s and decelerates the car at 5.0 m/s^2? How far will the car travel before it stops?

16. A man is driving a car at a constant velocity of 55 mi/h. If he looks down at the radio for 2.2 s, how far has the car moved?

17. The SI unit for distances is inches. (True of False)

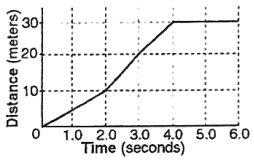
18. How does the speed of an object thrown straight up compare to the speed at the same elevation on its way back down?

19. A ball is thrown upward with an initial speed of 80 ft./sec. a) How high does it go? b) What is its speed at the end of 3.0 seconds? c) How high is it at that time?

UNIT 1: Linear Motion Test REVIEW

20. What is the speed of an object at rest?

21. The distance-time graph below represents the position of an object moving in a straight line.



22. What is the speed of the object during the time interval t = 0.0 seconds to t = 2.0 seconds?

23. According to the graph above, during which interval is the object at rest?

24. According to the graph above, the object has the fastest speed during which interval?

25. Average speed is defined as the time it takes for a trip divided by the distance. (True or False)

26. When a car's velocity is positive and its acceleration is negative, what is happening to the car's motion?

27. What is free fall?

28. Calculate the vertical distance an object dropped from rest would cover in 27 seconds if it fell freely without air resistance.

29. An apple drops from a tree and hits the ground in 2.55 seconds. Calculate how far it falls.

UNIT 1: Linear Motion Test REVIEW

30. A car accelerates at 4.3 m/s^2. Assuming the car starts from rest, how much time does it need to accelerate to a speed of 34.2 m/s?

31. Suppose a car is moving in a straight line and steadily increases its speed. It moves from 35 km/h to 40 km/h the first second and from 40 km/h to 45 km/h the next second. What is the car's acceleration?

32. What does the slope of a "velocity vs time" graph tell us?

33. How many meters before a stop sign must you begin braking if you are traveling at 20.0 m/s and NEED to come to a complete stop in 3.0 s.

34. What does the slope of a "distance vs time" graph tell us?

Does turning your car affect...(yes or no)

35. Your speed?

36. Your velocity?

37. Your acceleration?

38. The rate at which velocity changes with time is called acceleration. (True or False)

39. The SI unit of acceleration is meters per second. (True of False)

40. What is the SI unit for time?

UNIT 1: Linear Motion Test REVIEW

41. Which graph best represents the motion of an object initially at rest and accelerating uniformly?

a. 

b. 

c. 

d. 

42. Suppose a jumper claims a hang time of 2.8 seconds. Then that jumper must be able to jump a vertical distance of...?

43. Explain the difference between a scalar and a vector quantity.

44. What is the meaning of slope on a distance-time graph?

45. The unit of acceleration is meters per second. (True or False)

46. Convert 923 cm = _____ hm
47. Convert 5650 mg = _____ kg
48. Convert 0.0014 L = _____ mL

49. As a ball falls freely, the distance it falls each second is the same. (True or False)