Name _____ Period _____ Date _____

Chapter 1 Linear Motion

Speed, Velocity, and Acceleration

Pre-Test - Post-Test

1. What two measurements are necessary for calculating average speed?

A) acceleration and time.
B) velocity and time.
C) distance and time.
D) velocity and distance.

2. How is velocity different than speed?

A) speed and velocity are the same.
B) velocity has direction.
C) velocity uses displacement.
D) b and c are correct.

3. When you look at the speedometer in a moving car, you can see the car's

A) instantaneous speed.
B) average acceleration.
C) average speed.
D) average distance traveled.
E) instantaneous acceleration.

4. Acceleration is defined as the CHANGE in _____.

A) time it takes to move from one place to another place.
B) distance divided by the time interval.
C) time it takes to move from one speed to another speed.
D) velocity of an object.
E) velocity divided by the time interval.

5. Suppose you are in a car that is going around a curve. The speedometer reads a constant 30 miles per hour. Which of the following is NOT true?

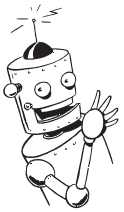
A) You and the car are accelerating.
B) Your velocity is constant.
C) Your speed is constant.
D) Your acceleration is constant.

6. An object travels 8 meters in the first second of travel, 8 meters again during the second-second of travel, and 8 meters again during the third second. Its acceleration is _____.

A) 8 m/s/s.
B) 16 m/s/s.
C) 32 m/s/s.
D) 0 m/s/s.
E) none of the above.

7. Ten seconds after starting from rest, a car is moving at 40 m/s. What is the car's average acceleration?

A) 10 m/s/s.
B) 40 m/s/s.
C) 25 m/s/s.
D) 0.25 m/s/s.
E) 4.0 m/s/s.



Name _____ Period _____ Date _____

Speed, Velocity, and Acceleration

History of Motion Overview

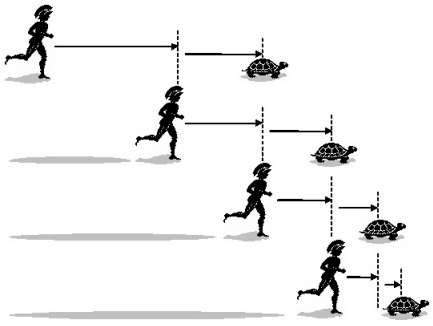
1. How do we determine if an object is in motion?

2. List the two types of motion as described by the Greek philosopher Aristotle.

3. Explain Natural Motion and give an example.

4. Explain Violent Motion and give an example.

5. Explain Zeno's paradox.



6. How do you solve Zeno's paradox?

7. In Aristotle's view of motion, why did an object stop moving?

8. What variable was missing in Aristotle's view of motion?

9. How did Galileo describe motion?

10. In Galileo's view of motion, why did an object stop moving?

11. Why did it take so long for the concept of time to be joined with our description of motion?

Speed

12. Define speed.

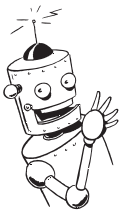
13. Lets suppose you travel 60 miles in one hour, what is your speed?

14. How is the slash symbol read in mi/h?

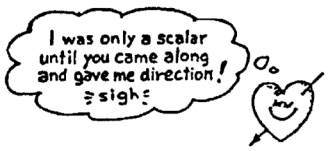
15. If you traveled 80 kilometers in 2-hours, what was your average speed?

16. What are the SI units for speed?

17. You traveling at an average speed of 60 km/hr, how far will you travel in 2-hours?



Name _____ Period _____ Date _____



18. What is the difference between instantaneous and average speed?

19. Doc Fizzix takes 5-hours to drive from New Orleans, LA to Round Rock, TX. What was his average speed?

20. Does the speedometer in a car read instantaneous speed or average speed?

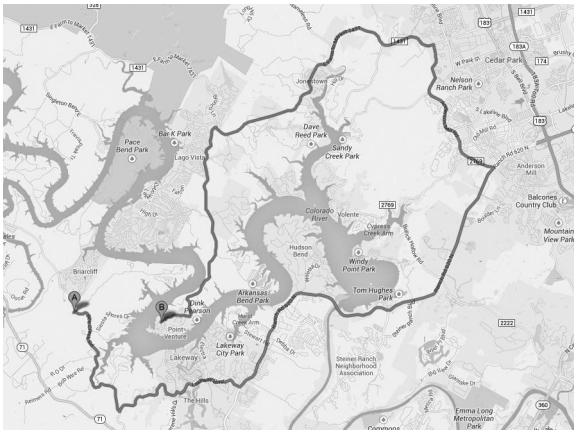
Displacement

21. Define scalar.

22. Define vector.

23. Define displacement.

24. The picture below shows the route in getting from point A to point B, identify the displacement on the map.



Velocity

25. Define velocity.

26. What was Doc Fizzix's average velocity on his drive home from New Orleans, LA to Round Rock, TX?

27. How is velocity different from speed?

28. What are the SI units for velocity?

29. Does the speedometer in your car give you speed or velocity?

30. Why do the police give you a speeding ticket and not a velocity ticket?

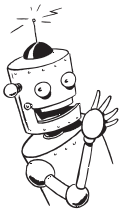
Motion is Relative

31. How fast are you moving in your chair at this moment in time?

32. Unless stated otherwise, how will we describe the motion of an object?

Acceleration

33. Define constant velocity.

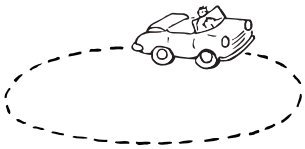


Name _____ Period _____ Date _____

Chapter 1 Linear Motion

34. Define changing velocity.

35. If a car moves with a constant speed, can you also say that it moves with a constant velocity?



36. Does the fastest car always win the drag race? Explain

37. Define acceleration.

38. What is the most important question to ask when buying a car?

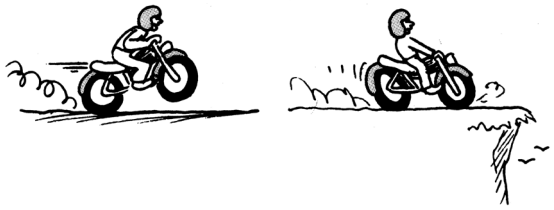
39. Suppose a car that will go from 0-60 mi/hr in 10 seconds.

a) What is the car's acceleration?

b) Complete the table below.

Time		Velocity
1 sec	=	mi/hr
2 sec	=	mi/hr
3 sec	=	mi/hr
5 sec	=	mi/hr
100 sec	=	mi/hr

40. How do you know when you are accelerating?



41. Which is more fun, speed or acceleration?

42. How do amusement parks make their money?

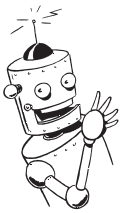
43. List three ways to control the acceleration of a car?

44. Is acceleration a scaler or a vector?

45. What is the SI unit of acceleration?

46. In what situation are a car's velocity and acceleration in opposite directions?

47. How do we describe the motion of an object that is not accelerating?

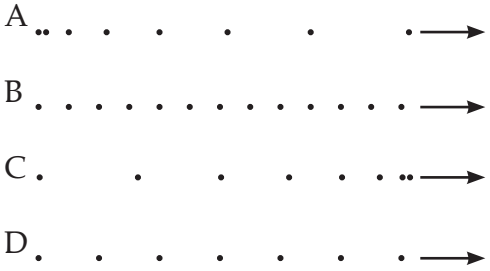


Chapter 1 Linear Motion

48. Why do we feel motion when we are in a car but not when we are sitting on a chair in a room? Explain

49. Describe an experiment or a simple test that will prove that you are moving at a constant velocity.

50. In the image below, each objects position is plotted every second.



a) Which object(s) are traveling at constant velocity?

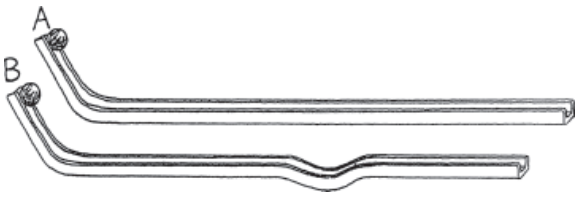
b) Which object(s) are accelerating?

c) Which object(s) are speeding up?

d) Which object(s) are slowing down?

e) Of the objects that are traveling at constant velocity, which object is traveling the fastest?

51. Tracks A and B are made from pieces of channel iron of the same length. They are bent identically except for the small dip in the middle of Track B. When the balls are simultaneously released on both tracks as indicated, the ball that makes it to the end of the track first is:



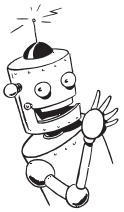
a) Track A

b) Track B

c) ...both reach the end at the same time.

Approximate speed in different units

20 km/hr	=	12.4 mph	=	5.6 m/s
40 km/hr	=	25 mph	=	11 m/s
60 km/hr	=	37 mph	=	17 m/s
80 km/hr	=	50 mph	=	22 m/s
88 km/hr	=	55 mph	=	24 m/s
100 km/hr	=	62 mph	=	28 m/s
120 km/hr	=	75 mph	=	33 m/s



Chapter 1 Linear Motion