Chapter 11: Motion

Section 11.1 – Distance and Displacement

- To describe _____ accurately and completely, a _____ is necessary.
- A _____ is a system of objects that are _____ with respect to one another.
- _____ is movement in relation to a _____.
- _____ is the length of a _____ between two points.
- It is helpful to express _____ in units that are best suited to the _____ you are studying.

- What unit would you use to measure the length of someone's hair?

- What unit would you use to measure from McDonough to Atlanta?

- What unit would you use to measure the length of a room?

- _____ is the direction from the starting point and the length of a _____ from the starting point to the _____.
- _____ is a _____.
- A _____ is a quantity that has magnitude and _____.
- Add displacements using _____.
- When two _____, represented by two vectors, have the _____, you can _____ their magnitudes.
- If two _____ have _____, the magnitudes _____ from each other.

Section 11.1 Assessment

1. What is a frame of reference? How is it used to measure motion?

2. How are distance and displacement similar and different?

3. Would you measure the height of a building in meters? Why or why not?

Section 11.2 – Speed and Velocity

- _____ is the ratio of the _____ an object moves to the amount of _____ the object moves.
- The _____ of speed is _____.
- _____ is the _____ traveled (d) divided by the _____ (t) it takes to travel the distance.

- Average speed =

- While traveling on vacation, you measure the times and distances traveled. You travel 35km in 0.4hr, followed by 53km in 0.6hr. What is your average speed?

- A person jogs 4.0km in 32min, then 2.0km in 22min, and finally 1.0km in 16min. What is the jogger's average speed?

- A train travels 190km in 3.0hr, and then 120km in 2.0hr. What is its average speed?

- _____ is the rate at which an object if moving at a given _____ in time.
- For example, you can describe the _____ of a car by looking at the _____.
- The _____ of a line on a _____ graph is _____.

- The _____ the slope of the line, then _____ the speed.
- _____ represent constant _____.
- _____ is a description of both speed and _____. Velocity is a _____.
- A change in velocity can be a result of a _____.
- Two or more _____ add by _____.

Section 11.2 Assessment

1. What does velocity describe?

2. What shows the speed on a distance-time graph?
3. What is the difference between average speed and instantaneous speed?

4. How can two or more velocities by combined?

5. Does a car's speedometer show instantaneous speed, average speed, or velocity? Explain.

6. A plane's average speed between two cities is 600km/hr. If the trip takes 2.5hr, how far did the plane fly?

Section 11.3 – Acceleration

- The rate at which _____ changes is called _____.
- _____ can be described as changes in _____, changes in _____, or changes in _____.
- _____ can be either an _____ or a _____ in speed.
- _____ is an acceleration that _____ an object's speed.
- _____ is the movement of an object toward the Earth solely because of _____.

- Objects falling near _____ accelerate downward at a rate of _____.
- Although you may have a constant _____, a change in _____ means you are _____.
- _____ is a steady change in _____. That is, the _____ changes by the same amount each _____.
- You calculate _____ for straight-line motion by dividing the _____ by the _____.
- The _____ for acceleration is _____.

Acceleration =

- A ball rolls down a ramp, starting from rest. After 2 seconds, its velocity is 6m/s. What is the acceleration of the ball?

- A car traveling at 10m/s starts to decelerate steadily. It comes to a complete stop in 20s. What is its acceleration?

- An airplane travels down a runway for 4.0s with an acceleration of 9.0m/s². What is its change in velocity during this time?

- The _____ of a _____ graph is _____.
- _____ is represented by a _____.
- A _____ represents constant _____.
- If the _____ of a line is _____, then the object is _____.
- On a _____ graph, _____ is represented by a _____.
- _____ is how fast a velocity is changing at a _____.

Section 11.3 Assessment

1. Describe three types of changes in velocity.

2. What is the equation for acceleration?

3. What shows acceleration on a speed-time graph?

4. Define instantaneous acceleration.

5. How are deceleration and acceleration related?

6. A train moves from rest to a speed of 25m/s in 30.0s. What is the magnitude of its acceleration?

7. A car traveling at a speed of 25m/s increases its speed to 30m/s in 10s. What is its acceleration?