|  |
| --- |
| **1.1 An Object in Motion Changes Position** |
| **Question** | **Answer** |
| 1. Why do you need to discuss two locations to describe the position of an object?
 | You need to compare the location of the object with the location of another object or place |
| 1. What would you call a location with which other locations can be compared?
 | A reference point |
| 1. Compare and contrast the two ways of describing the location of Santiago as show in the two maps found on page D10.
 | The left-handed map uses a distance and a direction from Brasilia to describe Santiago’s location. The right-hand map uses the number of degrees from the equator and the prime meridian to describe Santiago’s location |
| 1. List two ways to measure distance.
 | 1. Measure a straight line distance between two positions
2. Measure the total length of a path between two positions
 |
| 1. How does the picture on page D11 of the jumper show time passing?
 | It shows the jumper in a number of different positions between the start and finish of her long jump.  |
| 1. How is the picture on page D11 of the jumper different from a snapshot?
 | A snapshot freezes a single moment in time.  |
| 1. What determines how quickly or slowly a moving object changes position?
 | The speed of an object |
| 1. One observer may see a motion differently than another observer. What idea does this statement express? (pg D13)
 | Relative motion |
| 1. Describe the motion of an object on a moving bus to both a person on the pus and a person on the sidewalk. (pg D13)
 | To an observer on the bus, an object on the bus appears to be still. The same object will appear to be traveling at the same speed as the bus to an observer on the sidewalk. |
| 1. How does your observation of motion depend on your own motion?
 | You observe motion relative to your own position. If you are on a train, for example, you see the ground outside the train moving past you.  |
| 1. What information do you need to describe an object’s location?
 | A reference point |
| 1. If you sit on a moving bus and toss a coin straight up into the air, where will it land?
 | It should land back in your hand (or directly beneath where you threw it.) |
| **1.2 Speed Measures how fast position changes.** |
| 1. How are speed and position related?
 | They are related by time: speed is a measure of how quickly an object changes position.  |
| 1. What two measurements do you need to calculate speed?
 | Distance and time |
| 1. Looking at the picture found on page D17, how far will each rider travel in five seconds?
 | The faster rider will travel 20 meters; the slower rider will travel 10 meters.  |
| 1. What is the formula used to calculate speed?
 | Speed = $\frac{distance}{time}$ or S=$\frac{d}{t}$ |
| 1. What is the standard unit for speed?
 | Meters per second |
| 1. If two runners cover the same distance in different amounts of time, how do their speeds compare?
 | The runner with the shortest time ran the fastest |
| 1. What is instantaneous speed?
 | Moment-by-moment speed |
| 1. How can you calculate average speed?
 | Divide the total distance by the total time |
| 1. What kind of graph shows how both distances and speed change with time?
 | A distance-time-graph |
| 1. What is the slope of a line?
 |  Its steepness |
| 1. Using the graph and picture found on page D21, how do the distances change over each 10-second time interval?
 | Increases, increases, stays the same, stays the same, increases sharply, increases sharply |
| 1. What is velocity? Give an example of velocity.
 | Velocity is speed in a specific direction.  |
| 1. What does velocity have that speed does not have?
 | A specific direction |
| 1. A vector has a direction. What else does it have?
 | size |
| 1. Carlos lives 100m away from his friend’s home. What is his average speed if he reaches his friend’s home in 50 s?
 | S=$\frac{d}{t}$ , S=$\frac{100 m }{50 s}$ = 2 m/s |
| **1.3 Acceleration measures how fast velocity changes** |
| 1. What is the relationship between velocity and acceleration?
 | Acceleration is the change in velocity over time.  |
| 1. Does acceleration mean “speeding up” or does it refer to any possible change in velocity?
 | Any change in velocity  |
| 1. How does acceleration affect velocity?
 | When an object accelerates, velocity can increase, decrease, or change direction |
| 1. Which two things do you have to know to measure acceleration?
 | The change in velocity and how long the change took |
| 1. What is the formula used to measure acceleration?
 | Acceleration = $\frac{final velocity-initial velocity}{time}$ |
| 1. What would be true of the values for initial velocity and final velocity if the acceleration were zero?
 | The values for initial velocity and final velocity would be the same.  |
| 1. What happens if an object positively accelerates a little over a long time?
 | After time has passed, the object will be going very fast |
| 1. What does a flat line on a velocity-time graph represent?
 | A flat line on a velocity – time graph represents an interval of no acceleration |
| 1. A car goes from 20m/s to 30m/s in 10 seconds. What is its acceleration?
 | Acceleration = $\frac{final velocity-initial velocity}{time}$ = $\frac{30 -20}{10}$ = 10 m/s2 |