

Name

Understanding Motion in a Straight Line

Total questions: 15

Worksheet time: 8mins

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Class

Date

1. What is uniform motion?

- a) Motion that varies in speed and direction.
- b) Motion that involves acceleration and deceleration.
- c) Uniform motion is motion at a constant speed in a straight line.
- d) Motion in a circular path at varying speeds.

2. How does acceleration differ from deceleration?

- a) Acceleration increases speed, while deceleration decreases speed.
- b) Acceleration is the same as deceleration.
- c) Deceleration increases speed, while acceleration decreases speed.
- d) Acceleration and deceleration are both terms for slowing down.

3. What does a velocity-time graph represent?

- a) A velocity-time graph shows how velocity changes over time.
- b) A velocity-time graph represents acceleration as a constant value.
- c) A velocity-time graph shows the distance traveled over time.
- d) A velocity-time graph indicates the speed of an object at a specific moment.

4. Write the equation of motion for an object under uniform acceleration.

- a) $s = ut^2 + 0.5a$
- b) $s = 0.5u + at^2$
- c) $s = ut + 0.5at^2$
- d) $s = ut + at$

5. Explain relative motion with an example.
- a) Relative motion refers to the distance between two stationary objects.
- b) Relative motion is the speed of an object in a vacuum.
- c) Relative motion is the calculation of the motion of an object in relation to another object.
- d) Relative motion is the change in position of an object over time.
6. What is the acceleration due to gravity near the Earth's surface?
- a) 10.5 m/s^2
- b) 9.81 m/s^2
- c) 8.0 m/s^2
- d) 9.00 m/s^2
7. How do you calculate the distance traveled in uniform motion?
- a) Distance = Speed + Time
- b) Distance = Time \div Speed
- c) Distance = Speed - Time
- d) Distance = Speed \times Time
8. What is the significance of the slope in a distance-time graph?
- a) The slope indicates the time taken for the journey.
- b) The slope indicates the speed of the object.
- c) The slope represents the distance traveled.
- d) The slope shows the direction of the object.
9. Define instantaneous velocity.
- a) Instantaneous velocity is the velocity of an object at a specific instant in time.
- b) Instantaneous velocity is the total distance traveled divided by total time.
- c) Instantaneous velocity is the average velocity over a time interval.
- d) Instantaneous velocity is the speed of an object regardless of direction.
10. What are the three equations of motion?
- a) $s = ut - 0.5at^2$
- b) $v = u - at$
- c) $s = vt + 0.5at^2$
- d) 1. $v = u + at$; 2. $s = ut + 0.5at^2$; 3. $v^2 = u^2 + 2as$.

11. How does air resistance affect motion under gravity?
- a) Air resistance increases the speed of falling objects indefinitely.
 - b) Air resistance reduces the acceleration of falling objects and can lead to terminal velocity.
 - c) Air resistance only affects objects moving horizontally, not vertically.
 - d) Air resistance has no effect on the motion of objects in free fall.
12. What is the difference between scalar and vector quantities in motion?
- a) The difference is that scalars have only magnitude, while vectors have both magnitude and direction.
 - b) Scalars have both magnitude and direction, while vectors have only magnitude.
 - c) Scalars are used to describe motion, while vectors are used for static quantities.
 - d) Vectors can only be positive values, while scalars can be negative.
13. How can you determine the average speed of an object?
- a) Average speed is calculated by multiplying total distance by total time.
 - b) Average speed is the same as instantaneous speed.
 - c) Average speed is calculated by dividing total distance by total time.
 - d) Average speed can be determined by measuring the object's weight.
14. What is free fall?
- a) Free fall is the motion of an object influenced by air resistance.
 - b) Free fall is the motion of an object solely under the influence of gravity.
 - c) Free fall occurs when an object is in a vacuum with no gravity.
 - d) Free fall is when an object is thrown upwards.
15. Explain the concept of terminal velocity.
- a) Terminal velocity is the speed an object reaches when it is thrown horizontally.
 - b) Terminal velocity is the maximum speed an object reaches when the force of gravity is balanced by drag force.
 - c) Terminal velocity is the speed at which an object begins to fall upwards.
 - d) Terminal velocity is the speed at which an object stops accelerating due to gravity.

Answer Keys

1. c) Uniform motion is motion at a constant speed in a straight line.
2. a) Acceleration increases speed, while deceleration decreases speed.
3. a) A velocity-time graph shows how velocity changes over time.
4. c) $s = ut + 0.5at^2$
5. c) Relative motion is the calculation of the motion of an object in relation to another object.
6. b) 9.81 m/s^2
7. d) Distance = Speed \times Time
8. b) The slope indicates the speed of the object.
9. a) Instantaneous velocity is the velocity of an object at a specific instant in time.
10. d) 1. $v = u + at$; 2. $s = ut + 0.5at^2$; 3. $v^2 = u^2 + 2as$.
11. b) Air resistance reduces the acceleration of falling objects and can lead to terminal velocity.
12. a) The difference is that scalars have only magnitude, while vectors have both magnitude and direction.
13. c) Average speed is calculated by dividing total distance by total time.
14. b) Free fall is the motion of an object solely under the influence of gravity.
15. b) Terminal velocity is the maximum speed an object reaches when the force of gravity is balanced by drag force.

