District Perf. Task Review

ⓘ This is a preview of the published version of the quiz

Started: Oct 15 at 2:11pm

Quiz Instructions

Scenario:

A toy car is released from rest at the top of a ramp.

Question 1 — 1 pts

A toy car is released from rest at the top of a very long ramp. The car experiences a constant acceleration as it travels. After rolling down the ramp for a distance of 96 meters the car reaches a final speed of 64 m/s. How much time passed?

Hint: Find the average velocity.

Question 2 — 1 pts

Choose the hypothesis that matches the following procedure:

A toy car is released from rest at the top of a ramp. Collect distance and time data using a meter stick and stopwatch. Square the times. Create a distance-time squared graph with distance on the y-axis and time squared on the x-axis. If the shape of the scatter plot has a linear pattern, this hypothesis is supported.

- Distance traveled is directly proportional to time^2.
- The slope of the velocity-time graph is acceleration.
- The slope of the distance-time graph is velocity.
- The area under the velocity-time is equivalent to displacement.
- None of these

Question 3

1 pts

Choose the hypothesis that matches the following procedure:

A toy car is released from rest at the top of a ramp. Collect distance and time data using a meter stick and stopwatch. Determine the acceleration of the car using a kinematic equation. Then using a 'speed detector' measure the instantaneous velocity of the car at specific times. Create a velocity-time graph. Find the slope of the velocity-time graph and compare it to the acceleration you calculated previously. If the slope of the velocity-time graph is the same as the acceleration, this hypothesis is supported.

- None of these
- The slope of the velocity-time graph is acceleration.
- The slope of the position-time graph is velocity.

- The area under the velocity-time is equivalent to displacement.
- Distance traveled is directly proportional to time^2.

Question 4

1 pts

A toy car is released from rest at the top of a ramp. Which of the following variables should you control (i.e. not vary) when collecting data?

- distance
- ramp incline angle
- velocity
- time

Question 5

1 pts

A toy car is released from rest at the top of a ramp. Which of the following variables should you control (i.e. not vary) when collecting data?

- initial velocity
- distance

- time
- instantaneous velocity

Question 6

1 pts

A physics word that means two numeric variables create a straight line relationship when graphed with one another.

- linear
- proportional
- inversely proportional
- acceleration
- instantaneous
- concurrent

Question 7

1 pts

For an object rolling down an inclined plane, acceleration is _____.

- decreasing
- increasing

- constant

Question 8

1 pts

For an object rolling down an inclined plane, velocity is _____.

- increasing
- decreasing
- constant

Question 9

1 pts

For an object rolling down an inclined plane, the slope of the velocity-time graph is _____.

- acceleration
- none of these
- displacement
- distance
- inertia

Question 10

1 pts

For an object rolling down an inclined plane, the slope of the position-time graph is _____.

- acceleration
- inertia
- mass
- velocity
- net force

Question 11

1 pts

Which item would NOT be useful when creating a procedure to test the following hypothesis for a toy car released from rest at the top of a ramp?

Hypothesis: Distance traveled is directly proportional to time squared.

- ramp
- car
- spring

- meter stick
- stopwatch

Question 12

1 pts

Which item would NOT be useful when creating a procedure to test the following hypothesis for a toy car released from rest at the top of a ramp?

Hypothesis: The slope of the position-time graph is velocity.

- speed detector device
- car
- elevator
- meter stick
- stopwatch
- ramp

Question 13

1 pts

The District Performance Task will count as 10% of you semester grade.

- True
- False

Question 14

1 pts

You may retake the District Performance Task if you do poorly.

- True
- False

Question 15

1 pts

The District Performance Task will require you to write a hypothesis about an object rolling down a ramp and then to describe a procedure with which to test that hypothesis.

- True
- False

Question 16

1 pts

Choose the hypothesis that matches the following procedural steps:

1. Prepare the ramp. With a meter stick measure and mark several distances on the ramp. Find the time required to reach those distances with a stopwatch. Organize your data in a table.
2. Create a position-time graph with the data from the table.
3. Find the slope of the position-time graph at 1, 2, 3, and 4 seconds. The slope of a tangent line touching the curved position-time graph at the specific times will provide the slopes of the position-time graph. The slope should be increasing as time increases.
4. Using a ‘speed detector device’ measure the instantaneous velocities of the car at times 1, 2, 3, and 4 seconds.
5. Compare the slopes from the position-time graph with the velocities you measured with the 'speed detector'. If the velocities from the speed detector are the same as the slopes from the position-time graph, the hypothesis is supported.

- ○ The slope of the velocity-time graph is acceleration.
- ○ The slope of the position-time graph is velocity.
- ○ The area under the velocity-time is equivalent to displacement.
- ○ Distance traveled is directly proportional to time squared.

Question 17

1 pts

If you write a number as an answer on the District Performance Task, you must include a unit or you will lose points.

For example, when providing the acceleration write '3 cm/s/s' instead of just '3'.

- ○ True

- False

Question 18

1 pts

cm/s and m/s are both units of velocity.

- True
- False

Question 19

1 pts

30 cm/s = 3 m/s

- True
- False

Question 20

1 pts

When the position-time graph shows an increasing rate, there is an acceleration.

- True
- False

Question 21 1 pts

If the position-time graph shows an increasing rate, you can claim that a corresponding velocity-time graph will be flat with zero slope.

- True
- False

Question 22 1 pts

It is appropriate to list ‘human error’ as a source of potential error during an experiment.

- True
- False

Question 23 1 pts

A source of error during the Hot Wheels Kinematics Lab is not accurately measuring the time traveled by the car for each distance.

- True
- False

Question 24

1 pts

If the position-time graph shows an increasing rate, you can claim that a corresponding velocity-time graph will be a diagonal, non-zero slope line.

- True
- False

Question 25

1 pts

A source of error during a kinematics lab may be not accurately measuring velocity of the car accurately after it has traveled a specific distance.

- True
- False

No new data to save. Last checked at 2:12pm Submit Quiz