

Checkout Questions

Lab 9. Mass and Motion

How Do Changes in the Mass of an Object Affect Its Motion?

1. Describe a general relationship between the acceleration of two objects that are being pushed by the same-strength force, but one object is twice as heavy as the other.

2. Ashley is a race car driver and she wants her car to go faster. She is trying to decide between two plans to increase the acceleration of her car. Her car has a mass of 900 kg, and when she races it can accelerate at 20 m/s^2 . Ashley would like her car to accelerate at 25 m/s^2 . Her first plan is to make her car lighter by using some new materials; if she does that her car will have a mass of 675 kg. Her second plan is to get a stronger engine; the new engine would be 25% stronger than her current engine. But the new engine will make the car weigh 1,100 kg. Ashley only has enough money for one option. Which would you recommend?

Explain your answer. Why did you make that recommendation?

3. In science, observations and inferences are the same thing.

- a. I agree with this statement.
- b. I disagree with this statement.

Explain your answer, using an example from your investigation about mass and the motion of objects.

4. When discussing the results of an investigation, there is no need to differentiate between data and evidence—they are really the same thing.

- a. I agree with this statement.
- b. I disagree with this statement.

Explain your answer, using an example from your investigation about mass and the motion of objects.

5. Identifying patterns in nature is important to the work of many scientists. Explain how understanding patterns and their causes is helpful to scientists. Use an example from your investigation about mass and the motion of objects to help in your explanation.

6. It is important for scientist to make predictions about natural systems. Use an example from your investigation about mass and the motion of objects to explain why it is important to identify factors that cause changes in a system or cause the system to become unstable.