

Checkout Questions

Lab 12. Unbalanced Forces

How Does Surface Area Influence Friction and the Motion of an Object?

1. Jared knows that trucks and cars driving down the road normally have good traction between the rubber tires and the asphalt of the road. But he is unsure why trucks and cars begin to slide if they hit a patch of ice. Using what you know about balanced and unbalanced forces, explain to Jared why truck and car wheels slide on ice rather than roll like they do on normal roads.

2. A student in physical science class was conducting an investigation by sliding different blocks across her wooden lab table. Each block was launched by a rubber band with the same force. She measured how far the block traveled and obtained the following results:

| Surface of block | Distance traveled | | |
|------------------|-------------------|---------|---------|
| | Trial 1 | Trial 2 | Trial 3 |
| Wood | 57 cm | 66 cm | 52 cm |
| Aluminum foil | 64 cm | 71 cm | 69 cm |
| Carpet | 32 cm | 40 cm | 45 cm |

Use what you know about balanced and unbalanced forces to generate an argument (including a claim, evidence, and justification) that explains the results the student obtained.

3. When scientists make observations, they are more certain than when they make inferences.
- a. I agree with this statement.
 - b. I disagree with this statement.

Explain your answer, using an example from your investigation on unbalanced forces.

4. When several scientists are investigating the same thing, they all use the same methods so that they get the same answer.
- a. I agree with this statement.
 - b. I disagree with this statement.

Explain your answer, using an example from your investigation on unbalanced forces.

5. Scientists often look for patterns in nature or within the data that they collect during an investigation. Using an example from your investigation about unbalanced forces, explain why it is important to understand patterns and their causes within science.

6. In physics, there are times when scientists study many variables to learn how a system works. Using an example from your investigation on unbalanced forces, explain why it is important for scientists to understand what causes systems to be stable or change.