

Motion and Forces Study Guide

Answers

Test date: Tuesday, March 20th

1. What is an unbalanced force? *All forces acting on an object result in a change of motion of the object. If it was at rest, it begins to move. If it is moving, it changes speed or changes direction.*
2. What are balanced forces? Give an example. *All forces acting on an object result in the object staying at rest or moving at a constant speed in the same direction. Ex. A book resting on a table.*
3. Friction is a force in the opposite direction as the motion. It can be created by two or more things rubbing against each other.
4. What is the least amount of trials you should perform when conducting an investigation? **3**
5. **True** or false: An object sitting on the ground has balanced forces acting on it.
6. What is Newton's First Law?
An object at rest will stay at rest unless acted on by an unbalanced force. An object in motion in a straight line tends to remain in motion in a straight line unless acted upon by an unbalanced force.
7. List three **non-contact** forces. *Gravity, magnetic field, electric field*
8. List three **contact** forces. *Friction and push & pull*
9. According to Newton's 2nd law, does a steel ball with more mass or a wooden ball with less mass move faster across a flat track when pushed with equal force? *Less mass*
10. If two marbles with the same mass were pushed across a track, which one would go faster, the one with more force applied or less force applied? *More force*
11. What force slows the marble down when traveling down a ramp?
friction
12. What force pulls the marble down the ramp? *gravity*
13. How do you calculate speed? *Distance divided by time*

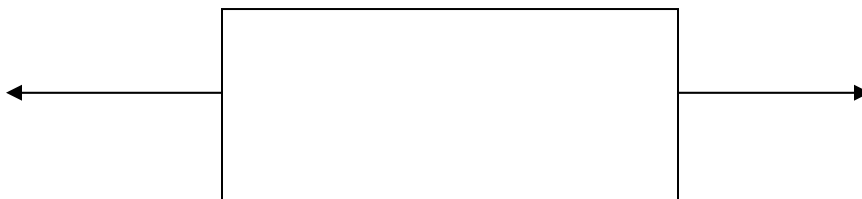
14. What is the speed of a marble traveling a distance of 10 meters in 5 seconds? *2 m/second*

16. What is gravity? *One object pulls on another object. Because of the gravity of the Earth, we are pulled toward the Earth*

17. Which of the following would cause a sled to increase its speed when going back up a hill: gravity, a non-contact force, someone pushing down on the sled, or *someone pulling on the sled?*

18. Arrows are used to represent the amount of force in a given direction. Look at the pictures below and tell which direction the box would be moving:

Which direction is the first box moving? *right* _____ the second? *left* _____



19. How do we know that an object is in motion based on the point of reference? *An object changes position*

20. Force is measured in Newtons. If Player A uses 100 Newtons to throw a baseball and Player B uses 60 Newtons and both started at the same spot, which player threw the ball farther? *Player A*