

Physics Grade 3 Lab Practical

Teacher's Answer Key

This is your chance to see how well your students have picked up on important key concepts, and if there are any holes. Your students also will be working on their homework assignment as you do this test individually with the students.

Materials:

- A ball

Lab Practical: Ask the student *Note: Answers given in italics!*

- Students will demonstrate Newton's Three Laws of Motion. Hand the student a ball and ask them to teach you the three laws of motion.

Here they are for your reference:

- Newton's First Law of Motion states that objects in motion will tend to stay in motion unless they are acted upon by an external force. A force is a push or a pull, like pulling a wagon or pushing a car. Gravity is also a force, but it's a one-way force that attracts things to each another. *Student throws the ball, showing that the ball will go in a straight line until gravity pulls it down to the ground.*
- Newton's Second Law of Motion is for objects experiencing unbalanced forces. The first law, usually called the law of inertia, says that if all the forces acting on an object are balanced then the object is in equilibrium and does not accelerate. The object can either be at rest or in motion, but not accelerating (the object can be at a constant speed and traveling in a straight line). Objects not in equilibrium experience unbalanced forces, which causes them to accelerate. Acceleration is a change in speed, direction, or both. *Students throw the ball, demonstrating that the force of the throw (F) can be calculated by knowing the ball's mass (m) and how fast the ball's velocity is changing (acceleration, or a).*
- Newton's Third Law of Motion states that for every action, there is an equal and opposite reaction. This means that for every interaction, there's a pair of forces acting on the objects, which are equal in size and opposite in direction. *Students place a ball on the desk and point out how the weight of the ball is balanced by the desk pushing up on the ball. If the ball were massive enough, when you tossed it out of a canoe, the canoe would travel in the opposite direction.*

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Student Worksheet

This is your chance to show how much you have picked up on important key concepts, and if there are any holes. You also will be working on a homework assignment as you do this test individually with a teacher.

Materials:

- A ball

Lab Practical:

- Demonstrate Newton's Three Laws of Motion using the ball provided. You'll need to explain what you're up to as you perform your experiments. (Extra credit if you can design an experiment that demonstrates all three laws at the same time!)