

## Newton's Laws of Motion Project

Sir Isaac Newton lived during the 1600s. Like all scientists, he made observations about the world around him. Some of his observations were about motion. His observations have been supported by more data over time; and we now call these Newton's Laws of Motion. His laws of motion explain rest, constant motion, accelerated motion, and describe how balanced and unbalanced forces act to cause these states of motion.

### Review the three laws of motion:

- Newton's **first law of motion** says that an object in motion will stay in motion and an object at rest will stay at rest unless acted on by an unbalanced force.
  - An object will not change its motion unless a force acts on it.
  - An object that is not moving remains at rest until something pushes or pulls it.
  - An object that is moving remains moving until something pushes or pulls it.
  - All objects resist having their motion changed.
  - This tendency to resist a change in motion is called inertia.
  - The more mass an object has, the greater its inertia.
- The **second law of motion** states that the force of an object is equal to its mass times its acceleration.
  - A change in motion occurs only if a net force is exerted on an object.
  - A net force changes the velocity of the object, and causes it to accelerate.
  - If an object is acted upon by a net force, the change in velocity will be in the direction of the net force.
  - The acceleration of an object depends on its mass.
  - The more mass an object has or the more inertia it has, the harder it is to accelerate.
  - More mass means less acceleration if the force acting on the objects is the same.
- Newton's **third law of motion** states that for every action there is an equal and opposite reaction.
  - When one object exerts a force on a second object, the second object exerts an equal force in the opposite direction on the first object.
  - The force exerted by the first object is the action force.
  - The force exerted by the second object is the reaction force.

**Date Assigned:**

**Date Due:**

**This project is worth \_\_\_\_\_ points**

**What to do:**

1. **Illustrate an example** of each of the three laws of motion.
2. Use one **poster board ; 3 illustrations**
3. You may draw or use images from magazines or the Internet.
4. **Include an explanation** of how the illustration **demonstrates or describes the law of motion**. Put the explanation **next to** the illustration.
5. Make sure your **illustrations are colorful and neat**.

**How you will be evaluated:**

Your illustration will be checked for these things:

- Accuracy & completion (90% of grade). An incomplete illustration or explanation will not be completely accurate.
- Visual Appeal (10 % of grade). ***This includes neatness.***

Content/ Accuracy	40 All written information is accurate *Illustration is accurate * No errors in illustration or explanation * Written information is complete * Illustration is complete	34 All written information is accurate *Illustration is accurate *No major errors in illustration or explanation *Written information is mostly complete *Illustration is mostly complete	28 All written information is partly accurate *Illustration is partly accurate *Noticeable errors in illustration or explanation * Written information is mostly complete * Illustration is mostly complete	22 Written information is inaccurate * Illustration is inaccurate * Major errors in illustration or explanation * Written information is incomplete * Illustration is incomplete
Visual Appeal	10 *Colorful *Eye-appealing * No obvious erasure marks, White-Out	8 *Colorful *Eye-appealing *Small erasure marks, *No White-Out	6 *Colorful *Obvious erasure marks, * Used White-Out	4 *Large amounts of erasure marks, White-Out * Paper torn or dirty