Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_ Newton’s Laws Project Due Date \_\_\_\_\_\_

Newton’s Laws of Motion Project Information and Rubric

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.

**Newton’s 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.

***Newton's Laws Project***

    - Create a poster explaining Newton’s Three Laws

    - Should have drawings and captions to visually explain all three laws.

    - Must include an explanation of why it’s important to understand these laws.

    - Illustrations must be creative and original.

**Rubric**

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| --- | --- | --- | --- | --- |
|  | **Unsatisfactory**  **0 points** | **Needs Improvement**  **10 point** | **Satisfactory**  **15 points** | **Exemplary**  **20 points** |
| **Explanation of Newton’s First Law** | This section is absent. | This section is incomplete or does not correctly address the prompt. No examples are provided. | Newton’s First Law is explained correctly. At least one example is included to support the student’s explanation. The argument is clear and coherent. | Newton’s First Law is explained correctly. At least two examples are included to support the student’s explanation. The argument is clear, concise, and coherent. It is evident that the student has gained mastery of the subject. |
| **Explanation of Newton’s Second Law** | This section is absent. | This section is incomplete or does not correctly address the prompt. No examples are provided. | Newton’s Second Law is explained correctly. At least one example is included to support the student’s explanation. The argument is clear and coherent. | Newton’s Second Law is explained correctly. At least two examples are included to support the student’s explanation. The argument is clear, concise, and coherent. It is evident that the student has gained mastery of the subject. |
| **Explanation of Newton’s Third Law** | This section is absent. | This section is incomplete or does not correctly address the prompt. No examples are provided. | Newton’s Third Law is explained correctly. At least one example is included to support the student’s explanation. The argument is clear and coherent. | Newton’s Third Law is explained correctly. At least two examples are included to support the student’s explanation. The argument is clear, concise, and coherent. It is evident that the student has gained mastery of the subject. |
| **Explanation of why Newton’s Laws are Important** | This section is absent. | This section is incomplete or does not correctly address the prompt. | The point is correctly addressed. The argument is clear and coherent. | The point is correctly addressed. The argument is clear, concise, and coherent and uses evidence the student has gathered as support. It is evident that the student has mastered the topic. |
| **Overall Quality** | Little to no effort, missing key information | Missing some information, a little unorganized, little creativity | Visually organized, all information is presented in professional manner, fulfills expectations | Easy to read, visually pleasing, powerful  images, logical  sequencing, appropriate  for audience, exhibits  originality, no technical problems |
| **Total** |  |  |  |  |