

Name: _____

Class: _____

Due Date: _____

Physics Topic 10 – Newton's First and Second Law of Motion

Answer the following questions. The solutions to this worksheet can be found on the YouTube channel Go Physics Go.

1. C: What is the meaning and equation of *directly proportional*? *Inversely proportional*? Give an example of each.

2. C: What is *mass*? What are its units? Is it a scalar or vector?

3. C: What is a *force*? What are its units? Is it a scalar or vector? How many objects are needed for a *force*?

4. C: What is the meaning of *inertia*? What is *inertia* directly proportional to?

5. C: State the name of *Newton's first law of motion*. State the definition/meaning of *Newton's first law of motion*.
6. C: Why is it not safe to stand up when a bus, plane, or subway is moving?
7. C: State the name of *Newton's second law of motion*. Give the equation for *Newton's second law of motion*.
8. C: True or false:
- a. According to Newton's second law of motion $\sum \vec{F}$ and \vec{a} will always point in the same direction.
 - b. According to Newton's second law of motion $\sum \vec{F}$ and \vec{v} will always point in the same direction. In other words, there must be a net force in the same direction as the motion of the object.
 - c. According to Newton's second law of motion \vec{v} and \vec{a} will always point in the same direction.

9. C: Give an example of an object when its net force (or acceleration) and velocity point in opposite directions.

10.C: What is the meaning of *static equilibrium*? What is the meaning of *translational/dynamic equilibrium*?