Name: _____

Class: _____

Due Date: _____

Physics Topic 8 – Types of Forces in Newtonian Mechanics

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 *force of gravity*? This is also called *weight*. In which direction does it point?

5. C: What are the equations for the *force of gravity*

   a. if we are near the surface of a planet?

   b. in general (this is called *Newton's Law of Gravitation*)?

6. C: What are some differences between *mass* and *weight*?

7. C: What is the *normal force*? In which direction does it point? Draw an image.

8. C: What is the *force of friction*? In which direction does it point? Draw an image.

9. C: What is the equation for *surface friction*? Define each variable.

10. C: What is the meaning of *dynamic/kinetic*? *Static*? Which is greater: *kinetic friction* or *static friction*?

11. C: What is the meaning of a *rough surface*? A *smooth surface*?

12. C: For which object do we observe the *force of tension*? Draw an image.

13. C: What is the equation for the *spring force*? Define each variable. What is the name and what are the units of k in the spring force equation?

14.C: Draw a *force vs. displacement* graph for a mass on a spring. What does the slope of a *force vs. displacement* graph tell us? What does the area under a *force vs. displacement* graph tell us?

15.C: What is the *buoyant force*? State its equation and define each variable. Draw an image.

16.C: State the equation for the viscous drag force acting on a small sphere opposing its motion through a fluid. Define each variable. Draw an image.