Physics **Newtonian Physics** **Mr. McMullen**

Name_____ Date _____ Period _____

Newtonian Physics – Review

Instructions: Problems 1-12 are based on Newton's second law, **F** = m**a**. As you do these problems, remember that F is the unbalanced or net external force, and the unit for **F** is the newton. Answer the following questions a separate sheet of paper. Show all work and circle your answer.

1. An object of mass 70.0 kg is accelerated by a force of 20.0 N. What is its acceleration?

2. What is the mass of an object that is accelerated at 25 m/s^2 by a force of 125 N?

3. A speedboat has a mass of 5.00 x 10^2 kg. It starts from rest and travels 2.00 x 10^2 m in 3.00 seconds. The boat undergoes uniform acceleration during the 3.00 seconds. What is the unbalanced force on the boat?

4. A ball acquires a speed of 12.0 m/s when a force is applied for a distance of 0.500m. If the ball has a mass of 1.00 kg, what is the force applied?

5. A 75.0 kg person travels at a constant velocity on ice skates experiences a force of -40 N. What is the person's acceleration?

6. A student has a mass of 88.0 kg. What is the student's weight?

7. A mass of 56.0 kg has a weight of 504 N on top of a mountain. What is the value of g?

8. A brick has a mass of 1.20 kg. A force of 5.40 N is needed to move the brick along the floor with a constant velocity. What is the coefficient of friction?

9. The coefficient of starting friction for wood on wood is 0.550. What is the force of friction of a wood block of mass 3.50 kg pulled on a wood floor?

10. A stone weighs 5.4 N. What force must be applied to make it accelerate upward at 3.00 m/s^2?

11. A boulder of mass 45.0 kg is pushed on a surface with a coefficient of sliding friction of 0.850. What force has to be applied to produce an acceleration of 0.20 m/s^2?

12. A bicyclist and his bicycle have a mass of 105 kg. What force is necessary to bring him to rest when he is traveling at 25.0 m/s and must stop to avoid a tree 4.00 m in front of him?

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