

Name: _____ Section: _____

Force Practice Problems

Directions: Use the force formula below to derive two additional formulas, one for calculating mass and one for calculating acceleration. You can approach this as if you were solving for an unknown in math class. Once you have all three formulas, use them to solve questions 1-6.

You must show all work!

Mass =

$$\text{Force} = \text{Mass} \cdot \text{Acceleration}$$

Acceleration =

- 1) What force is needed to accelerate a 55 kg shopping cart 2.0 m/s^2 ?
- 2) A 200 kg object accelerates at a rate of 5.5 m/s^2 . Calculate the force required to produce this acceleration.
- 3) A student applies a force of 85 N to the back of a classmate who is sitting in the teacher's rolling chair. What is the acceleration of the student and chair if their mass is 75 kg?
- 4) What is the mass of an object if a force of 45 N causes it to accelerate at a rate of 0.75 m/s^2 ?
- 5) What is the acceleration of a 0.145 kg baseball hit with a force of 20 N?
- 6) Suppose a high flying jumbo jet with a mass of 45,000 kg cruises at constant velocity when the thrust of its engine is a constant 80,000 N. What is the acceleration of the jet?