

NAME \_\_\_\_\_ Date: \_\_\_\_\_ Pd: \_\_\_\_\_

**SHOW ALL WORK AND UNITS FOR THE FOLLOWING PROBLEMS.**

1. What net force is needed to accelerate a boxcar at  $2 \text{ m/s}^2$  if the boxcar weighs 10000 N and is already moving at a constant velocity?
2. A car weighing 5000 N is moving at a constant velocity of 20 km/hr. What net force is needed to accelerate this car to 40 km/hr in 10 s? What is the mass of the car?
3. A bike weighs 200 N. If it starts from rest and travels 100 m in 5 s undergoing constant acceleration, what net force is causing the acceleration?
4. A motorcycle has a mass of 1000 kg. The motorcycle is slowed from 50 km/hr to a stop in 5 s. What is the net force causing the deceleration?
5. A rocket that weighs 28000 N on earth is fired. The net force of propulsion is 75000 N. What is the mass of the rocket? What is the acceleration of the rocket? What is the velocity of the rocket after 30 s?
6. What net force is needed to accelerate a boat at  $8 \text{ m/s}^2$  if the boat weighs 1500000 N and is already moving at a constant velocity?