Name: _____ Date: _____ Period: __|__

Directions: Give the equation used for each problem and show all work. Round your answers to the nearest tenth.

1. What net force is required to accelerate a car at a rate of 2 m/s^2 if the car has a mass of 3,000 kg?

Formula		
Substitution		
Final Answer with Units		

2. A 10 kg bowling ball would require what force to accelerate down an alleyway at a rate of 3 m/s^2?

Formula		
Substitution		
Final Answer with Units		

3. Sally has a car that accelerates at 5 m/s^2. If the car has a mass of 1000 kg, how much force does the car produce?

Formula		
Substitution		
Final Answer with Units		

4. What is the mass of a falling rock that accelerates at $9.8 m/s^2$ and produces a force of 147 N?

Formula	
Substitution	
Final Answer with Units	

5. What is the mass of a truck if it produces a force of 14,000 N while accelerating at a rate of $5 m/s^2$?

Formula	
Substitution	
Final Answer with Units	

6. What is the acceleration of softball if it has a mass of 0.5 kg and hits the catcher's glove with a force of 25 N?

Formula	
Substitution	
Final Answer with Units	

7. Your own car has a mass of 2000 kg. If your car produces a force of 5000 N, how fast will it accelerate?

Formula	
Substitution	
Final Answer with Units	

8. Sally wants to accelerate even faster than in problem #3, so she removes 500 kg of mass from her car. How fast will her 500 kg car accelerate if it produces 5000 N of force?

Formula	
Substitution	
Final Answer with Units	

9. Sally challenges you to a race. On the first turn you run off the course and your car strikes a large bale of hay. Your car still produces 5000 N of force, but now it accelerates at only 2 m/s². What is the mass of your car now that the bale of hay is stuck to it?

Formula	
Substitution	
Final Answer with Units	

10. Even though she is way ahead of you, Sally switches her car to run on nitrous oxide fuel. The nitrous oxide allows her car to develop 10,000 N of force. What is Sally's acceleration if her car has a mass of 500 kg?

Formula	
Substitution	
Final Answer with Units	