**Newton’s Second Law**

**F = ma a = F/m m = F/a**

1. What net force is required to accelerate a car at a rate of 2 m/s2 if the car has a mass of 3,000 kg?

2. What is the mass of a truck if it produces a force of 14,000 N while accelerating at a rate of 5 m/s2 ?

3. What is the mass of a falling rock if it produces a force of 147 N?

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

5. Sally has a car that accelerates at 5 m/s2. If the car has a mass of 2000 kg, how much force does the car produce?

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

7. A 50 kg sheep is running into the wind. The sheep produces a force 30N East and the wind is pushing against the sheep at 20N West. How fast is the sheep accelerating and in which direction?

8. Thomas is pulling his 100 kg wagon by the handle with a force of 67N due North. The handle is connected to the wagon at a 60 degree from the horizon. What is the acceleration of the wagon North?