Newton's 2nd Law WS 2

Name _____

- 1. A car with a mass of 525kg is being pushed west (left) by a force of 375N from its engine. The coefficient of friction felt by the car is .0420.
 - A) Calculate the force weight of the car.
 - B) Calculate the force friction acting on the car.
 - C) What is the *net force* acting on this car?
 - D) Calculate the acceleration of the car.
- 2. A fully loaded Saturn V rocket has a mass of 2.92x10⁶kg. Its engines have a continual upward thrust of 3.34x10⁷N.
 - A) Calculate the downward force, caused by gravity, on the rocket at blastoff.
 - B) What is the net force acting on the rocket at blastoff?
 - C) Calculate the acceleration of the rocket as it leaves the launch pad.
 - D) As the rocket travels upwards, the engine thrust remains constant, but the *mass* of the rocket decreases. Why?
 - E) Does the acceleration of the rocket increase, decrease, or remain the same as the engines continue to fire? Explain your answer using Newton's laws.

3. A 438kg car is accelerating east at 2.55m/s². If the coefficient of friction felt by the car is 0.500; what is the *total force* acting east on the car? (Hint: four calculations needed!)