

Name: _____

Class Period: _____

Honors Physics: Newton's Laws of Motion

Starting Forces HW

Conceptual Questions:

1. For a single force, Newton's second law states $F = ma$. If we increase the force exerted on an object – what changes (mass or acceleration) and how does it change?
2. A car ($m = 1850 \text{ kg}$) is moving to the right with a **constant velocity** of 1.44 m/s .
 - A. What is the net force on the car?
 - B. What would the net force be if the car was moving to the left with a **constant velocity** of 1.44 m/s ?

Newton's Second Law: Calculations with a single force:

3. What net force is needed to accelerate a 7.00 gram pellet from rest to 175 m/s over a distance of 0.700 m along the barrel of a rifle?
4. What acceleration do you give a 24.3 kg box if you push it horizontally with a force of 85.5 N ?

Newton's Second Law: Calculations with multiple forces:

5. A dog pulls on a pillow with a force of 5.00 N at an angle of 37.0° . The dog's owner pulls directly backwards with a force of 6.00 N .
 - A. Write a statement for ΣF_x and ΣF_y
 - B. Calculate ΣF_x and ΣF_y
6. Four forces act on a hot air balloon as shown from the side.
 - A. If the $\Sigma F_x = 430 \text{ N}$ to the right, what must be the value of F_1 ?
 - B. If the $\Sigma F_y = 1070 \text{ N}$ upward, what must be the value of F_2 ?

