Name:_____

Assignment:
Newton's Second Law Online Lab

Part 1: Net Forces

1. What happens to the cart when there is one figure of the same size on each side of the cart? Why?

2. What do the arrows above the cart represent? How do they compare to each other? What does that tell you about the net force?

3. What force does each figure pull with?

4. What is the net force when the cart is pulled on by figures of the same size?

5. What happens to the rightward force when the next largest figure is added to the rope? Predict what will happen to the cart.

6. What is the net force on the cart? (Be sure to include direction since force is a vector.) Describe how the net force is calculated. Who won the tug of war?

7. What happened to the speed of the cart during the tug of war? Was the force balanced or unbalanced? How do you know?

8. What would the blue team need to do to win the tug of war?

9. Predict what will happen with one large, one medium, and one small figure on the red side and one large and one medium figure on the left side. Explain why you made this prediction.

10. What is the net force on the cart, and which direction is it moving? What is happening to the speed of the cart?

11. What happened to the speed when you added one small figure on the left? What is the net force? Does the cart come to a stop? Use Newton's First Law to explain this?

12. What can you do to make the blue team win? What is the net force when the blue team wins?

13. Write a conclusion that shows the relationship between net force and the motion of the cart.

Part 2: Mass and Acceleration

14. Record the net force, mass, and acceleration when a force of 50 N is used to push different objects.

Net Force (N)	Mass (kg)	Acceleration (m/s^2)

15. What is the relationship between the mass and the acceleration when the force is kept the same?

Part 3: Force and Acceleration

16. Record the net force, mass, and acceleration when a 50 kg object is pushed with various amounts of force.

Net Force (N)	Mass (kg)	Acceleration (m/s²)

17. What is the relationship between force and acceleration?

18. Using the relationships between mass and acceleration and force and acceleration, write the equation that relates force, mass, and acceleration.