

Name _____ Date _____ Pd _____

Newton's 2nd Law Lab

Hypothesis:

1. If we increase the force acting on an object then acceleration will
2. If we increase the mass acting on an object then acceleration will

Procedure:

1. Vary the amount of net force acting on the system, each time measuring the acceleration. Maintain the mass of the system constant as you complete this step. Use at least 5 different force combinations.
2. Vary the mass of the system, each time measuring the acceleration. Maintain the net force at a constant value as you complete this step. Use at least 5 different mass combinations.

To find the acceleration we will use these equations. First determine the final velocity using:

$$v_f = \frac{2d}{t}$$

Then find acceleration using:

$$a = \frac{(v_f - v_i)}{t}$$

Data:

Constant Mass

d (m)	t (s)	v _i (m/s)	v _f (m/s) $v_f = \frac{2d}{t}$	F (N)	a (m/s ²) $a = \frac{(v_f - v_i)}{t}$

Constant Force

d (m)	t (s)	v _i (m/s)	v _f (m/s)	m (kg)	a (m/s ²)

Analysis:

1. Construct a graph of acceleration versus force for step 1.
2. Construct a graph of acceleration versus mass for step 2.

Conclusion: