

Information on Newton's Second Law of Motion

The acceleration of an object as produced by a net force is directly proportional to the magnitude of the net force, in the same direction as the net force, and inversely proportional to the mass of the object.

Another way to write this would be to use the equation

Force = Mass x Acceleration of $F=MA$

Video Clips

<https://www.youtube.com/watch?v=nO7XeYPi2FU> – intro video

Talks about needing more force to make an object move if it has more mass

Force=Mass x acceleration

http://www.physics4kids.com/files/motion_laws.html -

Great clip at bottom of page where they show Newton's Laws in Space

https://www.youtube.com/watch?v=KvPF0cQUW7s&feature=player_embedded – Newton's Laws in space at the end

Possible Demonstration Ideas

Chair Push

Swing Push

I am going to Use the Mad Science Station Labs: (I have attached a copy)

All the links work

Materials are:

- copy the stuff for the centres
- Rubber balls same size as ping pong balls and ping pong balls
- Straws
- Pens
- Flour

Only one I will not do is the last one on **organize it** until the end – as you need to know all three Laws first.

Changing the Reading Comprehension Portion to the following:

Newton's Second Law – Law of Acceleration

Newton's second law is the following: Only an unbalanced force causes acceleration.

$$\text{Force} = \text{Mass} \times \text{Acceleration or } F=MA$$

The acceleration of an object depends upon the force acting on the object. The more force the greater the acceleration. If two objects of the same mass have different forces, the one with the greater force will accelerate faster. It also depends on the mass of an object. The more mass the slower it accelerates. If two objects have the same force acting upon them, but different masses the object with the greater mass will not accelerate as quickly as the object with the smaller mass.

For Example, one soccer player could kick a 400g soccer ball, but it accelerates at 5 m/s^2 . His Force would be 200N.

Another soccer player could kick the same 400g soccer ball, but it accelerates at 10 m/s^2 . His Force would be 400N.

The ball traveled much faster in the second scenario because the second soccer player applied a much greater force to the soccer ball, which had the same mass.