**Eureka Episodes Forces and Energy Notes**

**Episode 1 Inertia**

**Inertia** = laziness

**Newton’s First Law**

* Things like to keep on doing what they are already doing.
* At rest = not moving
* Constant speed = speed stays the same
* To start or stop requires a force F (N) be applied
* A force is a push or a pull

**Episode 2 Mass**

* Inertia = laziness = mass
* Cube of Pb vs Styrofoam
* Massive = masses and masses of stuff = matter
* Measure mass on a balance = match up the number of 1 kg cylinders

 **Episode 3 Speed**

* Red 2 kg ball vs blue 1 kg ball
* Double the mass = double the force to start or stop the object
* Double the mass = double the force needed to get the red ball up to the same

speed as the blue ball

* Double the change of speed = double the force required

Sketch the graph of F vs mass for the same speed of an object

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**Newton’s Second Law**

* Force varies with the mass and the **rate of** change of speed
* The greater the rate of change of speed wanted the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Stopping = change of speed of an object to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Starting = change of speed of an object from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Episode 4 Acceleration Part 1**

* Light racing bike = less mass = easier to change the speed = less time required to change the speed
* Think acceleration times for my Golf vs a Jag!!!
* There is a time component when you change the speed
* Rate of change of speed = “acceleration”
* Baseball pitchers are really baseball “accelerators”
* The baseball starts at zero speed and reaches its final speed as it leaves the pitcher’s hand