**Physics Day 7**

Remember Newton’s First Law? Remember Newton’s Second Law?

**Newton’s 3rd Law:**

Push on the Wall: Jump up:

Elevator revisited:

**Experiment: Balloon Rocket:** First you will blow up a balloon and let it go.

What do you think will happen?

Now do the experiment and record the results.

Now you will blow up the balloon and attach it to a straw on string before letting it go.

What do you think will happen?

What happened?

What if you only blow up balloon half as full?

**Demonstration: Test Tube Gun** What happened?

**Demonstration: Jump across the line:** How far can my volunteer jump?

How far can my volunteer jump from skateboard?

Why?

**#1 Experiment: Car traction:** You will start the car while it is on cardstock which is on colored pencils. What do you think will happen?

What happened?

**#2 Experiment: Crash Carts:** You will send the carts toward each other. Try to give the same force to each. What do you think will happen?

What happened?

Now load up one cart with weight (batteries). How will this change the results?

What happened?

What happens if one is stationary and one is moving?

**#3 Experiment: Newton’s Cradle:** You will lift one ball 2-3” from the others and release. What do you think will happen?

What happened?

How about when you lift 2 or 3 or 4 balls?

Try it now and tell what happened?

**Demonstration: Bowling ball vs Lighter Ball**

**Momentum:**

**Conservation of Momentum:**

If a 5-kg bowling ball is projected upward with a velocity of 2.0 m/s, then what is the recoil velocity of the Earth (mass = 6.0 x 1024 kg).

A 120 kg lineman moving west at 2 m/s tackles an 80 kg football fullback moving east at 8 m/s. After the collision, both players move together west. What is the final speed of the two players together?