When you come in follow the instructions listed to the right

- Pull out any notes you may have on Newton's Laws, Forces, and Motion
- Each person needs a Lined Piece of Paper, Ruler, and Calculator
- Reference Sheet
- Get ready for some Grudge Ball!!!

Grudge Ball

Force and Motion Test Review

- Using your ruler, draw vector arrows in the following order; 5 cm N, 4 cm W, 2 cm S, 7 cm E.
  - What is the total distance?
  - What is the displacement?

What is Newton's First Law?

- An object in motion (at rest) will continue in motion (at rest) unless acted on by an unbalanced force

Define Acceleration

A change in velocity divided by a change in time

Acceleration = $\dfrac{v_f - v_i}{t}$

What is Newton's 2nd Law?

- The force exerted by an object is equal to its mass multiplied by its acceleration

- Force = Mass x Acceleration

40 kg

If an unbalanced force of 600 N acts on a body to accelerate it at +15 m/s², what is the mass of the body?

Why should we wear seatbelts – use one of Newton's Laws in your answer?

- We should wear seatbelts so if we are in an accident our body doesn't keep moving at the same speed and in the same direction that the car was going. A new force would be introduced to our bodies (the seatbelt) in order to keep our bodies in place.

Define Velocity

The change in position over a change in time

$$\text{Velocity} = \frac{p_f - p_i}{t}$$

139 m

- If a car is traveling at 50 km/hr along a straight line, how many meters does it travel in 10 seconds?

If an objects is accelerating, what can we possibly conclude about what is happening to the object

- An unbalanced force is causing the object to
  - Speed up
  - Slow down
  - Change direction

49 N

A box resting on a table has a mass of 5.0 kg. What is its weight?

What happens according to Newton if you let an untied balloon go?

- 3 rd Law Air will rush out of the balloon forcing the balloon to move through the air in the opposite direction, but equal in force.

8 m/s²

- A box resting on a table has a mass of 5.0 kg. What will be its acceleration when an unbalanced horizontal force of 40 N acts on it?

What is Newton's 3rd Law?

- For every action (force) there is an equal and opposite reaction (force)
  - Forces come in pairs

- While driving down the road, a firefly strikes the windshield of a bus and makes a quite obvious mess in front of the face of the driver. Draw a force diagram showing the action/reaction pair of the accident.
  - Which of the two forces is greater: the force on the firefly or the force on the bus?
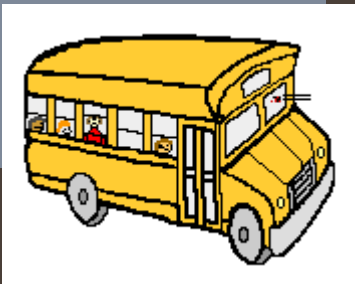
Explain how each of Newton's laws affects a game of Tug of War.

- First Law: The rope will stay in the same place until the tugging starts (a new force is introduced)

- Second Law: We could measure a team's force that they can pull the rope with based on their body masses and the acceleration that they are causing the rope to move at.

- Third: 1 team pulls the rope towards themselves with a certain amount of force and the opposing team is also putting force on the rope. The same amount of force is applied from the ground to the people as they are putting on the ground.

C

In the top picture Kent Budgett is pulling upon a rope that is attached to a wall. In the bottom picture, Kent is pulling upon a rope that is attached to an elephant. In each case, the force scale reads 500 Newton. Kent is pulling …
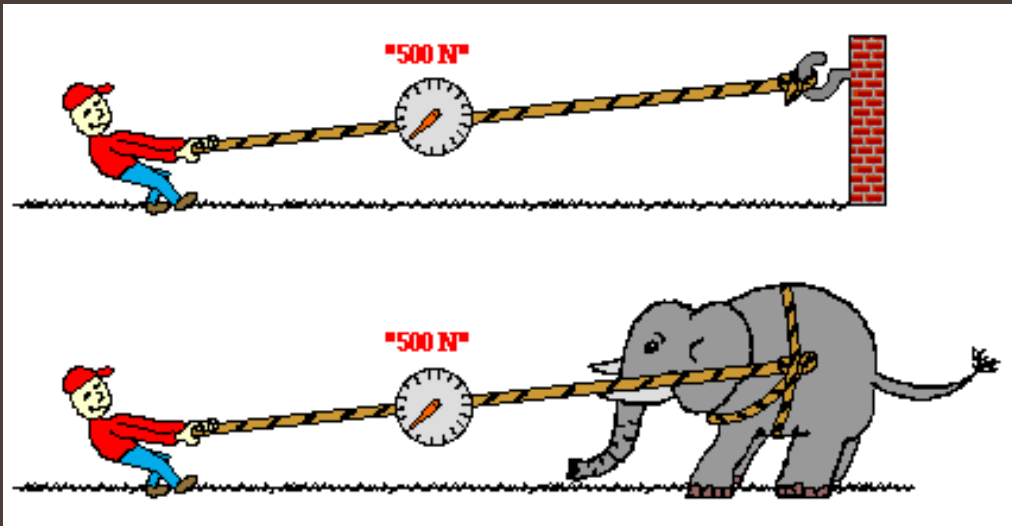
- a. with more force when the rope is attached to the wall.
- b. with more force when the rope is attached to the elephant.
- c. the same force in each case.

Explain your reasoning