

I. NEWTON'S FIRST LAW OF MOTION

1. Newton's first law of motion is also known as the LAW OF Inertia.
Newton's first law says:

An object at rest stays at rest and an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force

2. What is inertia? a resistance to change
3. What property of an object determines how much inertia it has? mass
4. Which of the following has more inertia?
- a. Bowling ball or Tennis ball
- b. Hammer or Feather

II. NEWTON'S SECOND LAW OF MOTION

5. Newton's second law of motion is also known as the LAW OF Acceleration.

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.

6. The greater the force that is applied, the greater the acceleration.
7. The lesser the force that is applied, the lesser the acceleration.
8. If the same force is applied to an object with a large mass, it will have a smaller acceleration.
9. If the same force is applied to an object with a small mass, it will have a larger acceleration.
10. The equation that is used to solve second law problems is **$F = ma$** .

- a. What do each of the variables mean?

F = Force m = mass a = acceleration

- b. What unit of measurement must be used with each variable?

F = Newton m = kg a = m/s²

III. NEWTON'S THIRD LAW OF MOTION

11. Newton's third law of motion is also known as the LAW OF Action and Reaction.

For every action, there is an equal and opposite reaction.

12. Newton's third law states that forces must ALWAYS occur in pairs.

13. Listed below are ACTION forces. What is the REACTION force.

- a. Your bottom pushing on your desk seat:

desk pushing back on your bottom

- b. A bat hitting a baseball

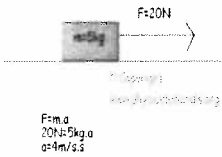
baseball hitting the bat

- c. Your finger pressing on your phone screen while texting

phone screen pushing back on your finger

IV. UNDERSTANDING.....

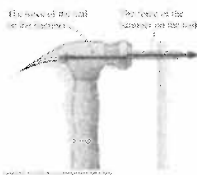
Label each of the following images/descriptions below as being examples of 1st, 2nd, or 3rd law. Then EXPLAIN your answer!



1st law 2nd law 3rd law

Explanation:

A 20N Force is being applied to a 5kg mass. The resulting acceleration can be calculated



1st law 2nd law 3rd law

Explanation:

Action/Reaction force
Hammer and Nail



1st law 2nd law 3rd law

Explanation:

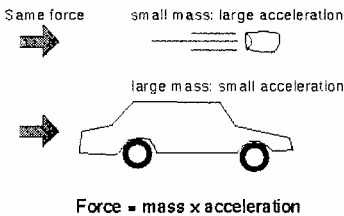
Person would continue forward if the unbalanced force of the seat belt didn't stop him



1st law 2nd law 3rd law

Explanation:

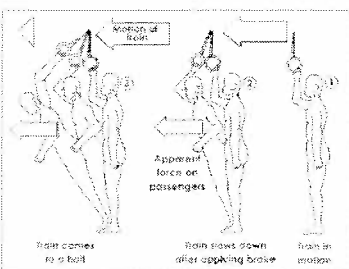
The action + reaction force between a cannonball and cannon



1st law 2nd law 3rd law

Explanation:

Shows relationship between mass and acceleration when an equal force is applied



1st law 2nd law 3rd law

Explanation:

Demonstrates inertia