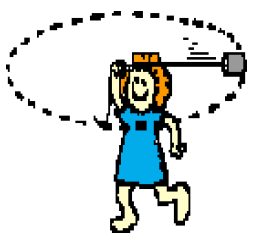
Newton's First Law Activity



EQ: How can one plus one not equal two?
EQ: What makes objects move the way they do?
EQ: How can we describe forces without words and numbers?
EQ: What is the most important force?

Enduring Understandings
- No force is required to explain constant velocity.

Learning Targets
- Express quantities in appropriate units and convert quantities to SI units when necessary.
- Solve for a vector resultant.
- Identify & describe motion from different frames of reference.
- Define inertia and mass as related to Newton's Laws
- Identify and apply Newton's Laws of Motion to a variety of qualitative and quantitative problems.
- Apply Newton's Laws of Motion to a variety of problems.

Newton's First Law of Motion Activity

Materials - 5 coins and a ruler

Procedure

1. Collect 5 coins and stack them to make a tower.
2. Describe the motion of the tower.

Not moving

3. Is the tower moving? Explain.
   - relative to your lab table? – no motion
   - relative to the earth? – no motion
   - relative to the sun? – motion! Earth is moving
4. What's required to change the motion of an object (i.e. the tower)?

apply force

5. Are there any unbalanced forces acting on the tower?

no unbalanced forces

6. What type of motion occurs if there are no unbalanced forces acting on an object?

constant motion (sitting still or constant speed)

Newton's First Law of Motion

An object will remain in a state of constant motion unless acted upon by an UNBALANCED force. Newton's First Law is also referred to as the **Law of Inertia.**

Definition: Inertia – A measure of an object's resistance to change. Mass is also a measure of an object's resistance to change.

7. Lay the ruler flat on the lab table and quickly hit the bottom coin with the ruler.
8. Explain your results.

Coin moves
rest of tower stays constant