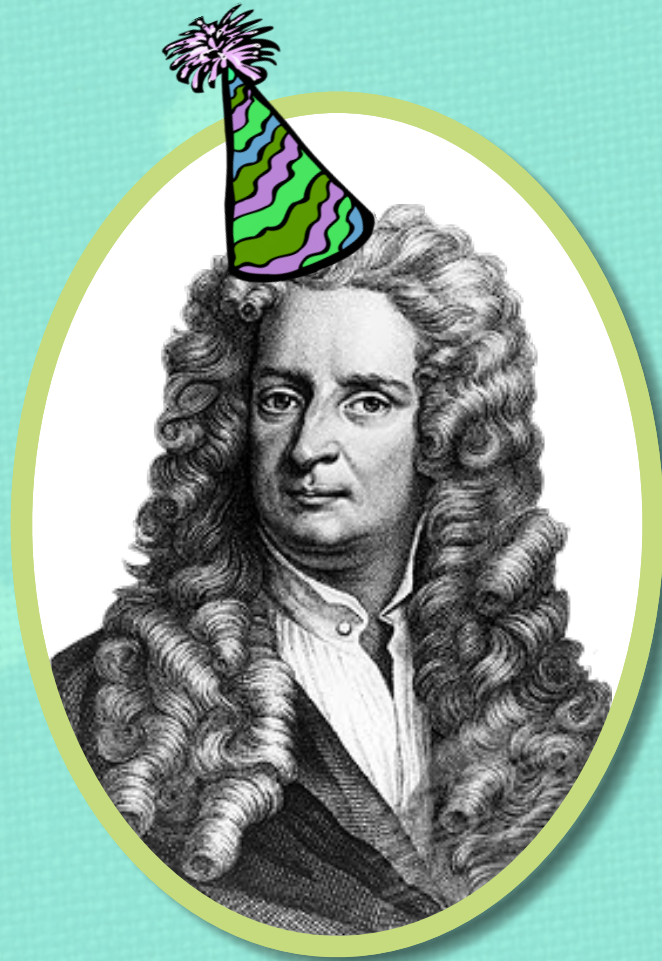


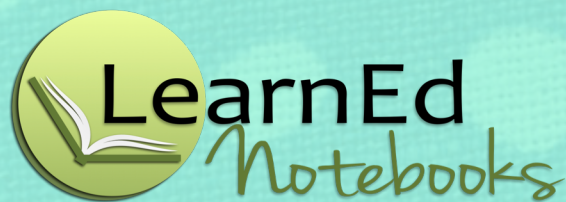
Happy Birthday,

Sir Isaac Newton



January 4, 1643 (N.S.)

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Newton's Laws of Motion

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Sir Isaac Newton was an English mathematician and physicist who had a profound impact on the field of science. He changed the way we think about the movement of objects when he published his three laws of motion in 1687. They are still in place today. Complete the activities below to observe each of his laws.

Newton's First Law: An object remains at rest or continues to move at a constant velocity unless acted upon by another force.

Materials: Small rolling cart or car, small stuffed animal or light object

Prediction: What will happen to the motion of the stuffed animal when the moving cart is suddenly stopped? Why? _____

Procedure: Place the stuffed animal on the rolling cart. Roll the cart into a stationary object or wall. Note: Start by using a small amount of force when pushing the cart. Repeat and gently increase the amount of force each time.

1. How is the motion of the stuffed animal impacted when the force used to push the cart increases? _____

Newton's Second Law: The force a moving object exerts is equal to its mass x acceleration.

Materials: Golf ball, ping pong ball, small tub of all-purpose flour

Prediction: What will occur when the golf ball and ping pong ball are dropped into the flour? Why? _____

Procedure: Drop the golf ball and ping pong balls into the tub of flour side by side. Observe the force of impact by measuring the indentations in the flour.

1. Is acceleration due to gravity the same for each object? _____

2. How does mass impact the force at which each ball hits the flour? _____

Newton's Third Law: When one object exerts a force on a second object, the second object exerts a force equal in magnitude and opposite in direction on the first object.

Materials: Straw, balloon, tape, string, two chairs

Prediction: What will cause an inflated balloon to move forward as the air escapes? _____

Procedure: Place the string through the straw and stretch it tightly between two chairs (several meters apart). Tie the string tightly to each chair. Blow up the balloon and hold it so that the air does not escape. Tape the balloon to the straw, let it go and observe its motion.

1. How might the experiment be impacted if the amount of air in the balloon is changed? _____

2. How does the escaping air impact the forward motion of the balloon? _____