Our mission at LEGO® Education is to inspire and develop the builders of tomorrow, enabling every student to succeed.

CHAIN Reactions!

The Problem:

How can a force on one object create a series of other events?

Chain reactions are lots of fun! These series of events often include everyday items such as a rolling ball, falling blocks and LEGO® bricks. Chain reactions are a fun way to examine Newton's Laws of Motion in action! Each chain reaction begins with the force of one object colliding with an object next to it, causing it to collide with another object and so on.

What do you think is going to happen when the gears are turned and the ball begins to roll?

Think

How can I explore Newton's Laws by creating a chain reaction?

Activity

Using LEGO® bricks or other parent approved materials, create your own chain reaction to investigate Newton's Laws of Motion!

Think about these questions when you design your chain reaction!

- What materials will you use in your chain reaction?
- What will be the initial force to start your chain reaction?
- How will your chain reaction end?

Let's Examine Each Law of Motion

Newton's First Law

What did Newton say?

A stationary object at rest will remain at rest until there is an unbalanced force acting on it.

A moving object will change direction or speed only if there is an unbalanced force acting upon it.

Newton's Second Law

What did Newton say?

Force is directly proportional to mass and acceleration. You might notice that heavier objects require more force to move than a lighter object.

Newton's Third Law

What did Newton say?

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

Think about your chain reaction to answer these questions:

When creating a chain reaction, what objects are at rest?

How does an unbalanced force effect an an object at rest?

Find a heavy object in your chain reaction? What are some things you needed to do to make that object move?

Compare how objects with different weight or mass affected a specific object in your chain reaction.

Closely observe the trigger event for your chain reaction. When it collided with the next object, what happened? Did it move backwards, slow down or stop?

When you changed the space between objects, how did that affect the objects movement?