



Science Virtual Learning

6th Grade Science:

Forces & Newton's Laws Review

April 24, 2020



6th Grade Science

Lesson: April 24, 2020

Objective/Learning Target:

- Students will review forces and Newton's Three Laws of Motion.

Essential Question:

- How can we describe an object's motion?



Warm-Up:

Q: If you are pedaling a bicycle down the street, and stop pedaling eventually the friction between the tires and the ground will make the bike stop. Which of the Three Laws of Motion explain this? Why?



Warm-Up: **Answer**

Q: If you are pedaling a bicycle down the street, and stop pedaling eventually the friction between the tires and the ground will make the bike stop. Which of the Three Laws of Motion explain this? Why?

A: The First Law. *The first law states that an object in motion remains in motion unless acted upon by an unbalanced force. Friction from the ground is an unbalanced force.*



Key Terms:

acceleration- how quickly an object increases its speed.

force- a push or a pull. The strength of a force is measured in Newtons (N).

inertia- the tendency of an object to resist a change in its motion.

mass- the amount of matter in an object

momentum- a measurement of the amount of motion an object has.

$$\text{momentum} = \text{mass} \times \text{velocity} \quad (p = mv)$$

velocity- speed in a certain direction

Forces Review: What is a Force?

- A *force* is a **push** or a **pull**.
- Similarly, we can see that forces either **repel** or **attract**.
- *Repel* means to push apart and *attract* means to pull towards.
- There are some basic forces such as **gravity** and **electromagnetism**.

Basic (Fundamental) Forces:

- Gravity
- Electromagnetism*

*(sometimes referred to separately as *electrical force* and *magnetic force*)

Other Forces:

- Applied Force
- Friction
- Air Resistance (Fluid Friction)
- Tension Force
- Spring Force

Review: Laws of Motion

NEWTON'S FIRST LAW OF MOTION



An object at rest will remain at rest



Unless acted on by an unbalanced force



An object in motion will continue with constant speed and direction unless acted on by unbalance force



NEWTON'S SECOND LAW OF MOTION

The acceleration of an object depends on the mass of the object and the amount of force applied

FORCE



ACCELERATION



NEWTON'S THIRD LAW OF MOTION

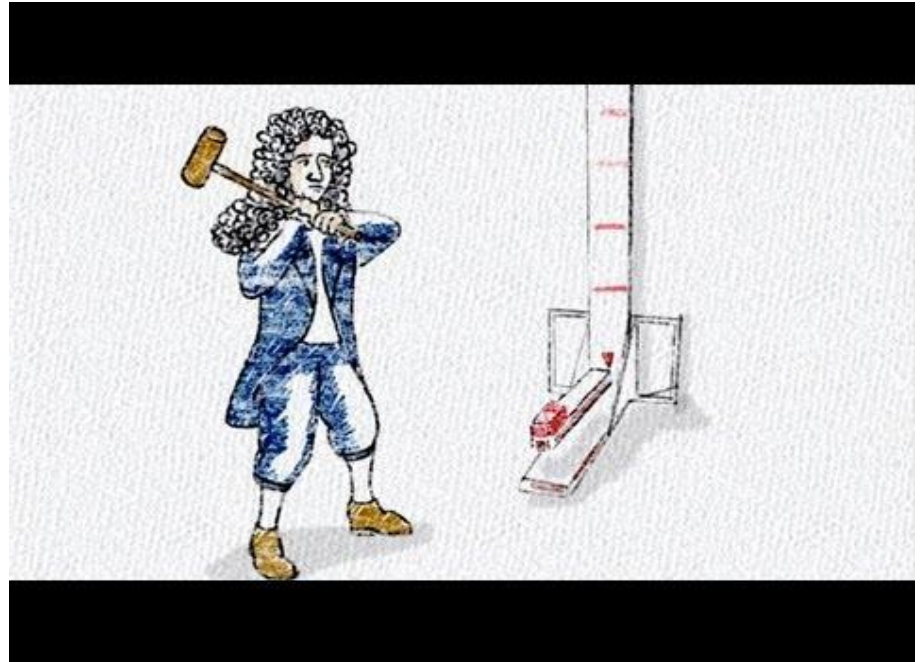
For every action force, there is a reaction force equal in strength and opposite in direction



- Watch the [video](#) reviewing Newton's Laws of Motion.

Write one of the following from the video:

- a fact
- a question
- a drawing
- a vocabulary term



- Watch the [video](#) reviewing Newton's Laws of Motion.

Sample Answers:

- **1st Law = Inertia**
- **What would happen if everyone on Earth pedaled a bike in the same direction at once?**
- **a drawing: answers will vary**
- **Momentum is the amount of motion**


Practice 1:

- Read the review of [Newton's First and Second Law of Motion](#).
- Answer the questions below the article, then click “Submit Answers” to check your answers.

Newton's Laws of Motion and Projectiles

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Newton's First and Second Law of Motion



An object on which no net force is acting is not necessarily at rest; the object could be moving with a constant velocity. Newton's first law states that an object at rest or in motion will remain unless the object experiences a net external force. Inertia is the tendency of an object to maintain its current state of the tendency not to accelerate.

A baseball accelerates more than a softball if the same force is applied to both. Thus, it requires less force to accelerate a low mass object than it does to accelerate a high mass object. Newton's second law of motion relates force, mass, and acceleration. It states that the acceleration of an object is directly proportional to the net force acting on the object and inversely proportional to the object's mass.

[CLICK HERE](#) to learn about Newton's First and Second Law of Motion. Download and print the Newton's First and Second Law of Motion note taking guides from the sidebar on this page to fill in the note taking guides. The video is approximately 30 minutes long. Pause the tape if you need more time to take notes on the information contained in the video.

Click on the video script in the sidebar if you would like to see the information in the video in print form.

After you have completed the note taking guides go through the practice activities below to see what you have learned from the video.

Newton's First and Second Law of Motion Practice

Quiz Group

Listen to the page
Listen

Handouts

- Newton's First and Second Law of Motion Note Taking Guide
- Newton's First and Second Law of Motion Video Script

More Resources

- Newton's First Law Inertia and Mass

Practice 2:

- Read the [slides](#) of Newton's Third Law of Motion.
- Do the five practice problems. You may use scratch paper. The answer key is on each slide after the problem.

12.3 Newton's Third Law of Motion and Momentum Physical Science

Newton's Third Law

- What is Newton's third law of motion?
- According to Newton's third law of motion, whenever one object exerts a force on a second object, the second object exerts an equal and opposite force on the first object.

12.3 Newton's Third Law of Motion and Momentum Physical Science

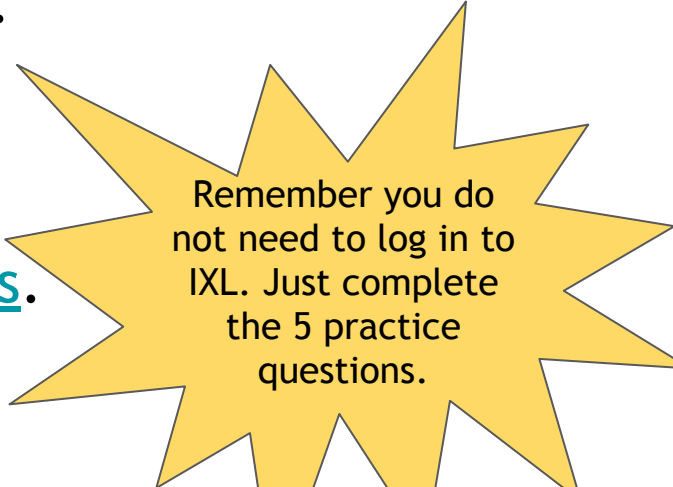


Summary:

- A force is a push or a pull.
- Newton's Laws of Motion are three laws that describe the movement of objects.
- Each law describes an object's motion in regards to other objects, force or kinetic energy.
- Each law can describe an object's motion using math (i.e. quantitatively).

Additional Practice:

- [Forces Quizizz](#)
- [Physics for Kids Review](#) of Newton's Laws.
- [Practice quiz](#) on Newton's Laws.
- IXL problems on the [First and Second Laws](#).
- IXL problems on the [Third Law](#).



Remember you do not need to log in to IXL. Just complete the 5 practice questions.