

# Like To Move It: Physical Science for Kids - Newton's Laws of Motion

Have you ever wondered why objects fall to the ground when you drop them? Or why it's harder to push a heavy object than a light one? These are just two examples of how the laws of motion affect our everyday lives.



## I Like To Move It! Physical Science Book for Kids - Newton's Laws of Motion | Children's Physics Book

by Professor Beaver

★★★★☆ 4.3 out of 5

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The laws of motion were first proposed by Sir Isaac Newton in the 17th century. These laws help us understand how objects move and interact with each other, and they are the foundation of classical mechanics.

In this article, we will explore Newton's three laws of motion in detail, using examples and activities to illustrate their significance.

### Newton's First Law of Motion

Newton's first law of motion states that an object at rest will remain at rest, and an object in motion will remain in motion at a constant speed and in a straight line unless acted upon by an unbalanced force.

This law, also known as the law of inertia, tells us that objects have a tendency to resist changes in their state of motion. A stationary object will not start moving on its own, and a moving object will continue to move in the same direction at the same speed unless something pushes or pulls it.

Here is an example of Newton's first law of motion in action: If you place a ball on a flat surface, it will remain at rest. If you push the ball, it will start moving in the direction of your push. If you stop pushing the ball, it will continue to move in the same direction at a constant speed until it encounters friction or another force that slows it down.

## **Newton's Second Law of Motion**

Newton's second law of motion states that the acceleration of an object is directly proportional to the net force acting on the object and inversely proportional to the mass of the object.

This law can be expressed mathematically as follows:

$$F = ma$$

where  $F$  is the net force acting on the object,  $m$  is the mass of the object, and  $a$  is the acceleration of the object.

The second law of motion tells us that the more force you apply to an object, the greater its acceleration will be. Conversely, the greater the mass of an object, the less its acceleration will be for a given force.

Here is an example of Newton's second law of motion in action: If you push a heavy box with a certain amount of force, it will accelerate slowly. If you

push the same box with twice as much force, it will accelerate twice as quickly.

## **Newton's Third Law of Motion**

Newton's third law of motion states that for every action, there is an equal and opposite reaction.

This law tells us that when one object exerts a force on another object, the second object exerts an equal but opposite force on the first object.

Here is an example of Newton's third law of motion in action: When you walk, you push backward on the ground with your feet. In response, the ground pushes you forward with an equal but opposite force. This is what propels you forward.

## **Newton's Laws of Motion in Everyday Life**

Newton's laws of motion have a wide range of applications in everyday life. They are used to design everything from cars to airplanes to roller coasters.

Here are a few more examples of how Newton's laws of motion are used in everyday life:

- The seatbelt in your car protects you by preventing you from continuing to move forward in the event of a collision. This is because the seatbelt exerts a force on you that is equal and opposite to the force of the collision.
- The wings of an airplane generate lift by pushing air downward. In response, the air pushes the airplane upward with an equal but

opposite force. This is what keeps the airplane in the air.

- The wheels of a roller coaster provide friction that helps to keep the coaster on the track. This is because the wheels exert a force on the track that is equal and opposite to the force of the coaster's weight.

Newton's laws of motion are some of the most important laws in physics. They help us understand how objects move and interact with each other, and they have a wide range of applications in everyday life.

By understanding Newton's laws of motion, we can better understand the world around us and how things work.

## Activities

Here are a few activities that you can do to help you understand Newton's laws of motion:

- **Inertia experiment:** Place a ball on a flat surface and give it a push. Observe how the ball moves and how long it takes to stop. Repeat the experiment with a heavier ball. What do you notice?
- **Force and acceleration experiment:** Use a toy car and a ramp to investigate how the force applied to the car affects its acceleration. Measure the distance the car travels and the time it takes to travel that distance. Graph your results and see if you can find a relationship between force and acceleration.
- **Action-reaction experiment:** Tie two balloons together with a string. Blow up one of the balloons and let it go. Observe how the other balloon moves. What happens if you blow up both balloons and let them go at the same time?

These are just a few activities that you can do to help you understand Newton's laws of motion. There are many other activities and experiments that you can find online or in science books.

I hope this article has helped you learn more about Newton's laws of motion. If you have any questions, please feel free to leave a comment below.

Thanks for reading!



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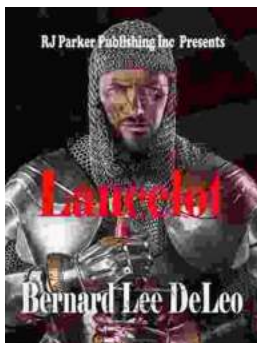
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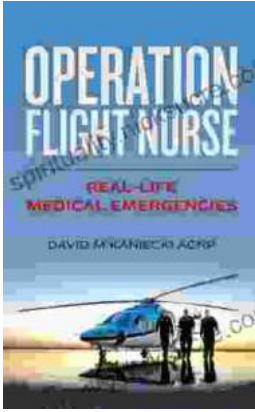
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