

# Newton #3

## Try It Out

This device is called a Newton's Cradle. Pull a marble on one of the ends out, keeping the string taut, and let it fall. What happens? Now try pulling two marbles out and up. Can you try three?

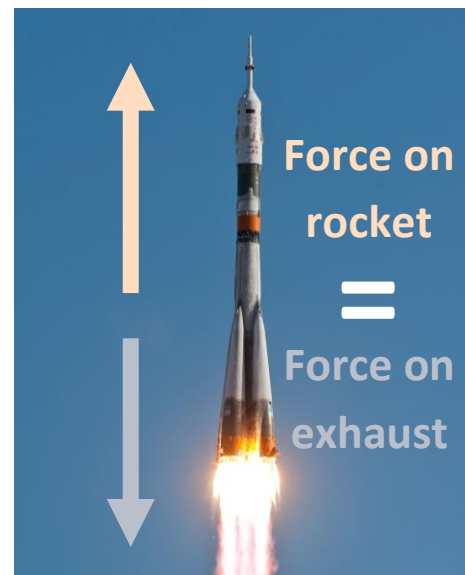
## What's Going On?

This month rounds out our three-month series on Newton's Laws of Motion. His **third law of motion** states that for every action, there is an equal and opposite reaction. Forces come in pairs. In the case of the Newton's Cradle, each marble is exactly the same size and mass. The force that it takes to stop the falling marble is exactly the same as the force it takes to make the marble on the other end fly up.

## Why Does It Matter?

This law comes into play whenever *any* two objects interact with each other. If you accidentally run into someone, even if they're not moving, their body hits you with the same force that your body hits them. You are both equally likely to be hurt. Another example is our rocket from last month. The force of the

combustion pushing the rocket up is the same as the force the rocket must exert on the combustion to direct it downward.



*Soyuz rocket headed for the Intl. Space Station  
(Image: NASA)*

## Wonder While You Walk...

Look around you for equal and opposite forces that you usually only think of as one-sided. How about the wind? It pushes tree branches just as the tree branches push back on the air. What else?