

The Science Behind: Pendulum Painting

A pendulum is an object hanging from a fixed point that swings freely due to gravity. The force of gravity accelerates the pendulum down toward the Earth. The momentum built up by the acceleration of gravity causes the mass to swing in the opposite direction to a height equal to the original position. This momentum can be explained by Newton's law of inertia, which states an object in motion will stay in motion unless acted on by an unbalanced force. Because energy can neither be created nor destroyed, potential energy and kinetic energy alternate as the pendulum swings. These components come together to create different paint patterns as your pendulum swings!

Fun Facts:

The first scientific experiments on pendulums were conducted around 1602 A.D. by famous scientist Galileo Galilei.

Until the 1900's, the pendulum was known as the world's most reliable timekeeping technology.

Instructions:

1. Rest your broomstick across the two benches and put your paper underneath.



2. Poke a hole in the bottom of your cup, using your pencil. Make sure it's nice and sharp.



3. Poke two more holes on either side of the top of the cup.



5. Tie each end of a piece of string to the two holes in the cup.



Instructions:

5. Hang the cup from the broomstick. It should be about 5 cm above the paper.



6. Tape over the hole in the bottom of the cup.



7. Pour paint into the cup. Mix it with some water first to make it extra runny.



8. Take off the tape and push your pendulum in a circular motion. And watch your pendulum paint!





REFLECT:

What pattern is the pendulum making with the paint?

What happens if you swing the pendulum gently or swing it more forcefully?

Why are the loops getting smaller?

What happens if we don't stop the pendulum?

What does the painting look like or remind you of?