



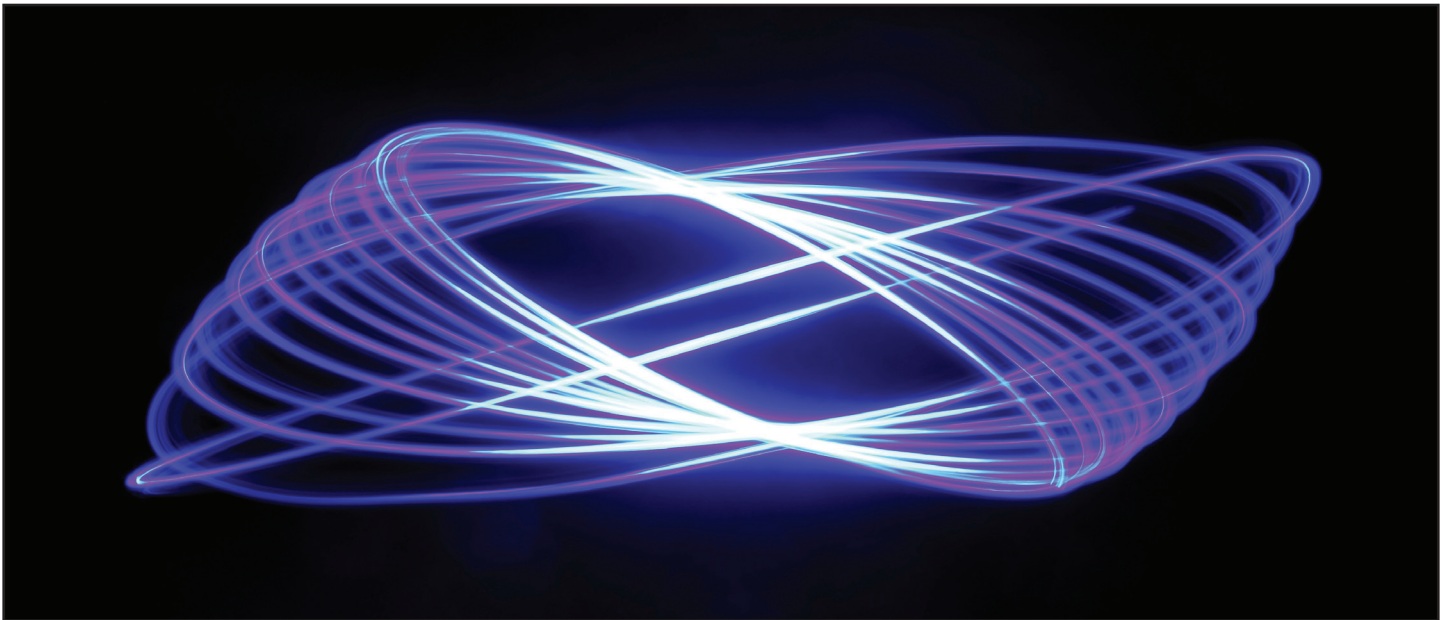
Neuberger Museum of Art

neuberger.org



Let's Create a Pendulum Painting

Use Science, Technology, Engineering, Art, and Math to create an abstract painting inspired by the work of artist Jackson Pollock.



Activity

Students will create abstract art by constructing a pendulum, experimenting with the scientific principles of inertia and motion, and using gravity and paints to make geometric patterns just like a Spirograph.

Materials

- Drop cloth, plastic tablecloth, or newspapers
- Heavy paper or paint canvas
- Acrylic or tempera paint (2 or 3 different colors)
- Foam, paper or plastic cup
- Heavy string or yarn
- Scissors
- Rubber bands or tape
- 6 long sticks of equal length *or*
2 chairs and a broom or long rod

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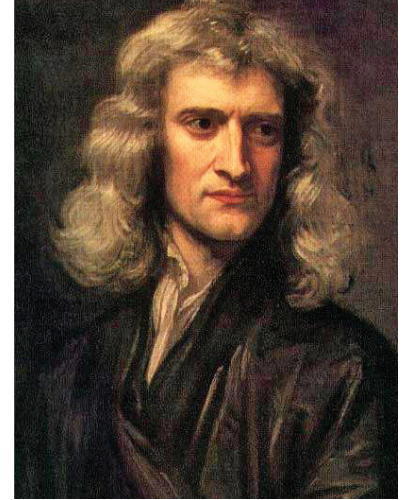
First, let's talk about the science behind this project ...

Sir Isaac Newton's 1st Law of Motion

The velocity of an object will remain constant unless acted upon by an unbalanced force.

Isaac Newton was a scientist, mathematician, and astronomer who was born in England in 1643. He is considered one of the most important scientists in history, even Albert Einstein said that Newton was the smartest person that ever lived.

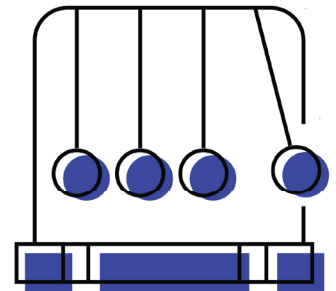
Newton's First Law of Motion (he came up with three) says that any object in motion will continue to move in the same direction and speed unless forces act on it. Simply, that means things cannot start, stop or change direction all by themselves. For example, if you kick a ball it will fly *forever* unless some sort of forces act on it! As strange as this may sound, it's true. But when you kick a ball, forces start to act on it immediately. These include resistance or friction from the air and gravity: gravity pulls the ball down to the ground and the air resistance slows it down.



Sir Isaac Newton (1642-1727)

What is Inertia?

Inertia is the tendency of a body to resist a change in motion or rest. For example, when a vehicle stops, you tend to jerk forward before coming to a complete stop. In the same way, you will jerk backwards when the vehicle begins to move. This phenomenon occurs because of Newton's First Law of Motion ... objects tend to "keep on doing what they're doing," unless disturbed.



What is a Pendulum?

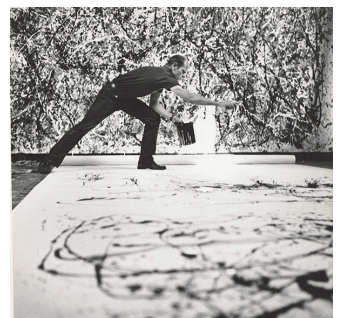
A pendulum is a fixed object, hung from a point so it can swing freely back and forth due to the force of gravity. When the object is at its highest point, or furthest from the ground, it has maximum potential energy. When the object oscillates (swings) back and forth, it repeatedly converts its energy in motion due to the gravity on the swing. (This also demonstrates the physics of potential and kinetic energy.)

A pendulum works by converting energy back and forth, a bit like a roller coaster ride.

If there were no friction or drag (air resistance), a pendulum would keep moving forever.

Now let's talk about the art of Pendulum Painting!

By adding paint to the pendulum in this project, we can demonstrate the science behind the Laws of Motion and inertia while making dramatic works of art. Though Jackson Pollock may never have used a pendulum to create his famous paintings, he did use the motion of his whole body to cover his large canvases with paint. Observe the similarities and differences between the artworks you create and the paintings of Jackson Pollock.



neu Let's Create a Pendulum Painting

Step 1: Prepare your workspace

This project will get a little messy. If you can, work outside. If you are going to paint indoors, prepare your workspace by covering the floor with a drop cloth, plastic table cloth, or old newspapers.

Step 2: Prepare the pendulum

Prepare the pendulum by poking a hole in the bottom of the cup at the center. This is where the paint will stream from when the pendulum is in motion. Add two additional holes, one on each side of the cup just underneath the rim. With a long piece of string, thread through the two holes located at the top of the cup and center.

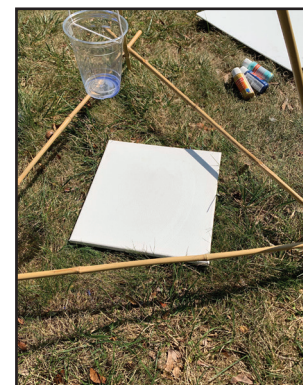
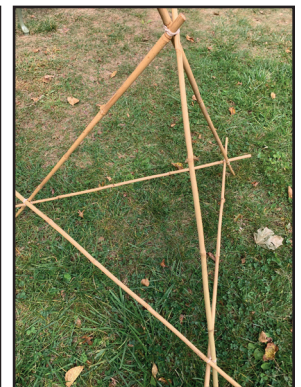
Step 3: Prepare the frame

OPTION 1: Connect three long sticks together by wrapping one end with rubber bands or tape. Once secured, open up the sticks to create a three-legged frame. Use the three remaining sticks to connect the upright legs to each other as stabilizing crosspieces; secure these with rubber bands or tape as well. This secure base will support your frame so that it does not slide or unfold when in use.

OPTION 2: Another option is to create a frame using two chairs that have been positioned back-to-back. Place a broom handle or long rod horizontally across the top or threaded between the backs of the two chairs. Be sure the pole is placed at a high enough point to suspend the pendulum. Once set, secure the pole to the chairs.

Step 4: Attach the pendulum to the frame

Fasten the ends of the strings attached to your paint cup to the center point of the frame. If using the tripod, thread the string to the center point highest above the ground. If using the chairs, fasten the string to the center of the horizontal rod. Suspend the cup about half way between its top anchor and the ground or floor where you have placed your paper or canvas. Try to leave at least a three inch (3") gap between the bottom of the cup and your paper or canvas.



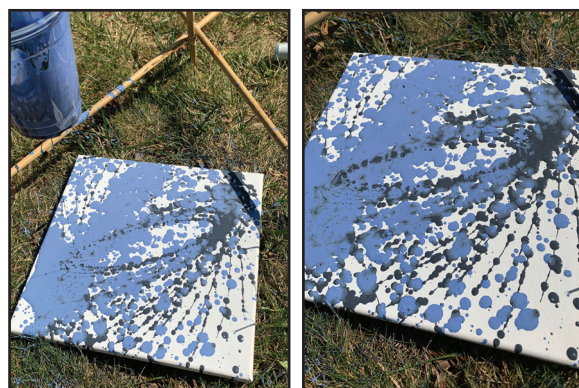
Step 5: Do a test

Before adding paint to the cup, test your pendulum with water. This will allow you to experiment with swinging the cup while also testing the flow of liquid from the hole in its base. Remember, paint will be much denser than water so the flow will likely be different when you are ready to get started.



Step 6: Prepare the paint

Thin your paint by mixing two parts paint and one part water. This will allow proper flow. When using the pendulum, if the paint seems to stick in cup or only drips slowly, add more water or make the hole in the bottom of the cup larger by increasing the size a little bit at a time.



Step 7: Get ready to launch

Once you have centered your canvas or paper below the pendulum, place a piece of tape or your finger over the hole at the bottom of the cup before adding the thinned paint. Raise the cup at an angle to the canvas while maintaining tension on the string, then remove the tape and simply release the cup. Try not to throw or force the cup because that could create squiggly lines in your artwork.



Step 8: Alternate colors

Once the pendulum is released, the force of its inertia will cause it to flow back and forth across the canvas creating a natural spiral. As the paint is released and the weight of the pendulum changes, the spirals will become smaller and smaller. When the paint is gone or the spirals stop, try again with another color.



Step 9: Dry

Be sure to allow paint to dry fully before displaying!

Step 10: Share

After you have made lots of examples of pendulum art, choose your favorite ones to share with us on social media at [#NEUtoDoKids](https://www.instagram.com/NEUtoDoKids).



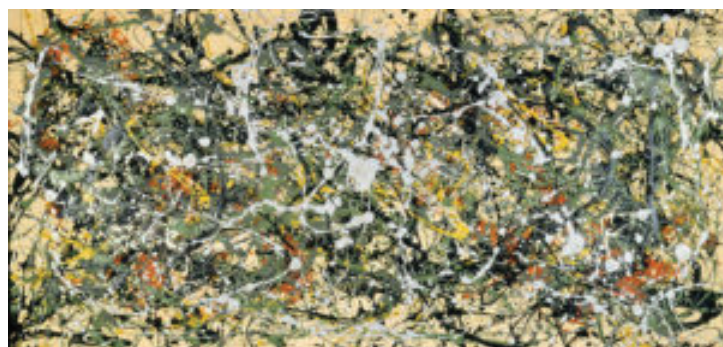
Jackson Pollock (January 28, 1912 – August 11, 1956)

was an American painter and a major figure in the abstract expressionist movement

Born in Cody, Wyoming, Pollock was the youngest of five sons. His father was a farmer and later a land surveyor; his mother was a dressmaker. As an infant, he moved with his mother and brothers to San Diego and subsequently grew up between California and Arizona. As a young boy, Pollock would explore Native American culture and Mexican muralist works while on surveying trips with his father. This exposure played a major role in his earliest art influences.

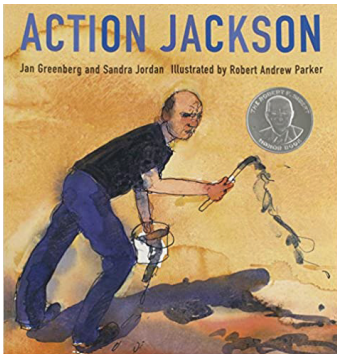
When he turned 18, Pollock moved to New York City to study art with his older brother Charles. During these studies, he adopted his rhythmic style of painting.

Pollock was widely praised for his '**action painting**' – a technique that used the force of his entire body to pour, splash, and fling liquid paint onto a horizontal surface. Hardened brushes, sticks, and even basting syringes were used as paint applicators. Unlike traditional upright paintings, Pollock's paint literally flowed from his chosen tool onto the canvas. With the ability to apply paint from all directions, he added new dimensions of movement to his works ... which is why they were often described as unpredictable and undisciplined.



Jackson Pollock, *Number 8*, 1949, 1949,
Oil, enamel, and aluminum paint on canvas, 34 x 71 1/2 in (86.4 x 181.6 cm),
Signed lower right: Jackson Pollock,
Collection: Neuberger Museum of Art, Purchase College, SUNY,
Gift of Roy R. Neuberger, 1971.02.11.

Pollock's most famous paintings were made during his "drip period" between 1947 and 1950. *Number 8*, 1949 is an example of these works; the painting was a gift of Roy R. Neuberger to the Neuberger Museum of Art in 1971,



Action Jackson

by Jan Greenberg and Sandra Jordan (Authors), Robert Andrew Parker (Illustrator)

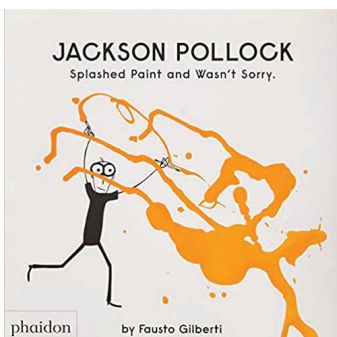
One late spring morning the American artist Jackson Pollock began work on the canvas that would ultimately come to be known as *Number 1, 1950 (Lavender Mist)*.

This moment is the departure point for a unique picture book about a great painter and the way in which he worked. The lyrical text, drawn from Pollock's own comments and those made by members of his immediate circle, is perfectly complemented by vibrant watercolor illustrations that honor his spirit of the artist without imitating his paintings.

A photographic reproduction of the finished painting, a short biography of the artist, a bibliography, and a detailed list of notes and sources that are fascinating reading in their own right make this an authoritative as well as beautiful book for readers of all ages.

Age Range: 6 - 10 years | Grade Level: 1-2

Available on Amazon



Jackson Pollock Splashed Paint And Wasn't Sorry.

by Fausto Gilberti (Author and Illustrator)

A clever, charmingly quirky portrayal of painter Jackson Pollock – and the first in a series of picture-book biographies of contemporary artists

Jackson Pollock was unlike any other painter. Instead of sitting in front of an easel with brushes, he poured paint over canvases rolled-out across the floor, moving, splashing, and making the vivid liquid run with energy and rhythm. Pollock's story is told here with wit and eccentricity, perfectly paired with black-line illustrations – and splatters galore. The author and illustrator brings movement, life, and whimsy to the true life story of one of the most important contemporary artists of our time.

Age Range: 4 - 7 years | Grade Level: Preschool - 2

Available on Amazon