



# Animation

## Family Friday Project

### Thaumatrope

Cardstock or cardboard

Scissors

String and punch or stick and glue

Pencil or pen

Printer or cup

### Flip-Book

Post-it note pad or stapled paper

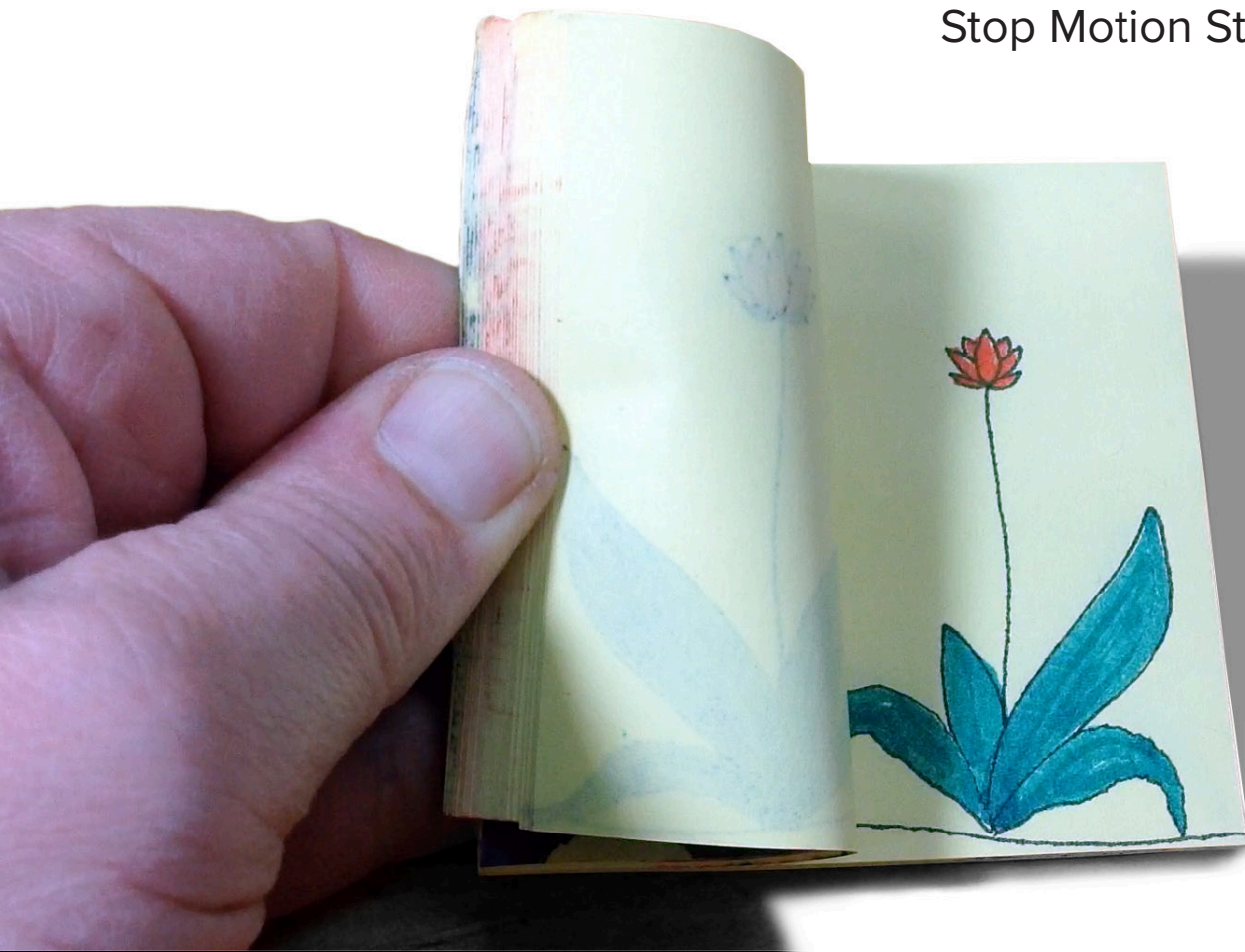
Pencil or pen

Colored pencils or markers (optional)

### Stop-Motion Video

i-Pad, i-Phone, or Android

Stop Motion Studio app



# Animation

## How It Works

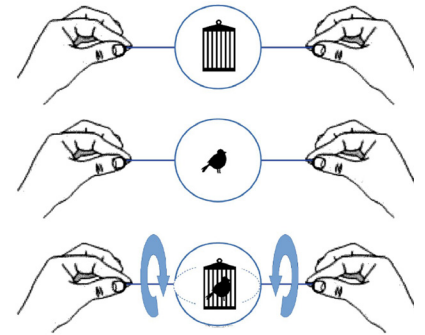
When you see a movie in a theater, the screen is really only lit half the time. The projector flashes a new still image, or *frame*, about 24 times each second, with no light between the flashes. This flickering light is why movies are sometimes called flicks (and how Netflix got its name). We perceive a constantly lit screen with a moving image because of a phenomenon called the persistence of vision. Our eyes and brain keep an image for about 1/30 of a second, even after it disappears. If we see a new image within that time, our brain combines them, creating the illusion of a continuous image.

Find directions for an experiment of the phenomenon at [exploratorium.edu/snacks/persistence-of-vision](http://exploratorium.edu/snacks/persistence-of-vision)

## History

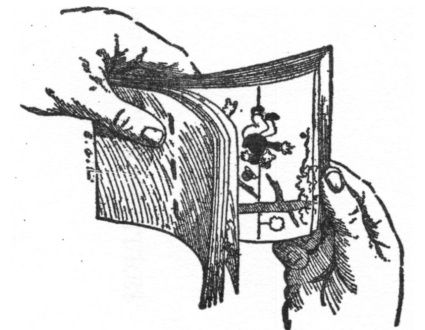
### Thaumatrope, 1894

The thaumatrope was the first device that used the persistence of vision. This toy was a disc with a different image on each face. When twirled using attached strings, the images appeared together.



### Flip-Book, 1868

Also called kineographs, flip books inspired early animators more than any other machine of the 1800's.



### Stop-Motion, 1906

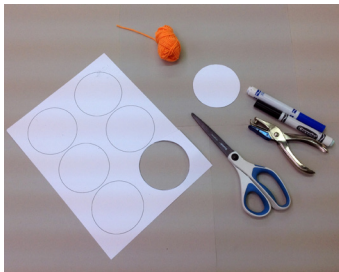
The first animated film was [Humorous Phases of Funny Faces](#). The creators used photographs of cut-outs and chalkboard drawings to create the stop-motion animation.

Find out about other milestones in animation at [history-of-animation.webflow.io/](http://history-of-animation.webflow.io/)



# Thaumatrope

(using strings or sticks)



Gather materials: cardstock, scissors, hole punch or nail, string, and markers.



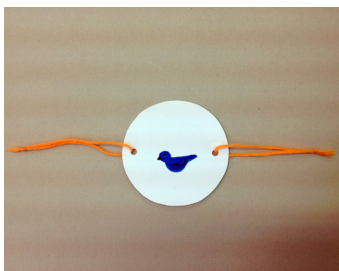
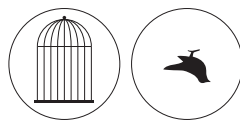
Cut out a circle and either punch or poke holes as shown.



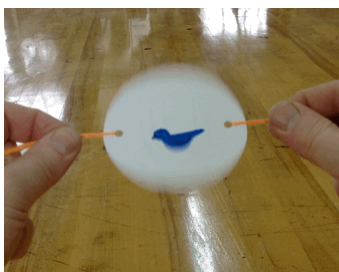
Draw one part of the picture on the first side.



Flip the circle vertically and draw on the second side.



Cut two 8-inch pieces of string and tie them through the holes.



Twist the strings to view your image.



Gather materials: cardboard, scissors, pencil or skewer, cup, and markers.



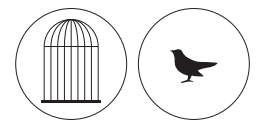
Trace your circle on the cardboard and cut it out.



Draw one part of the picture on the first side.



Flip the circle horizontally and draw on the second side.

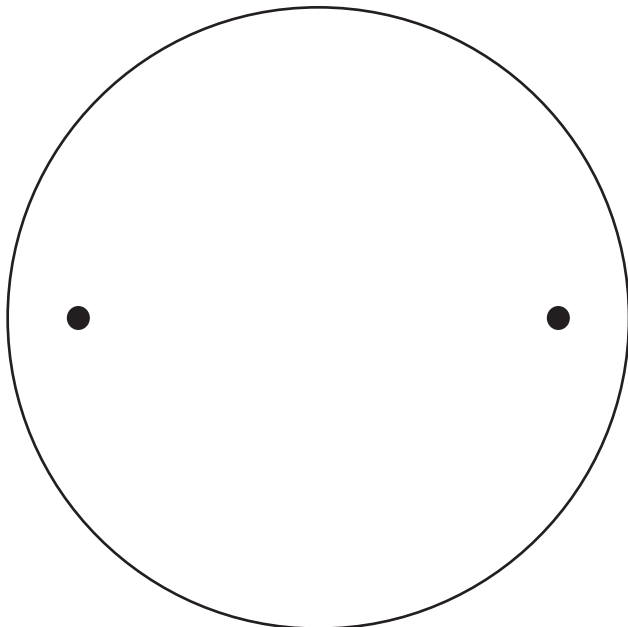
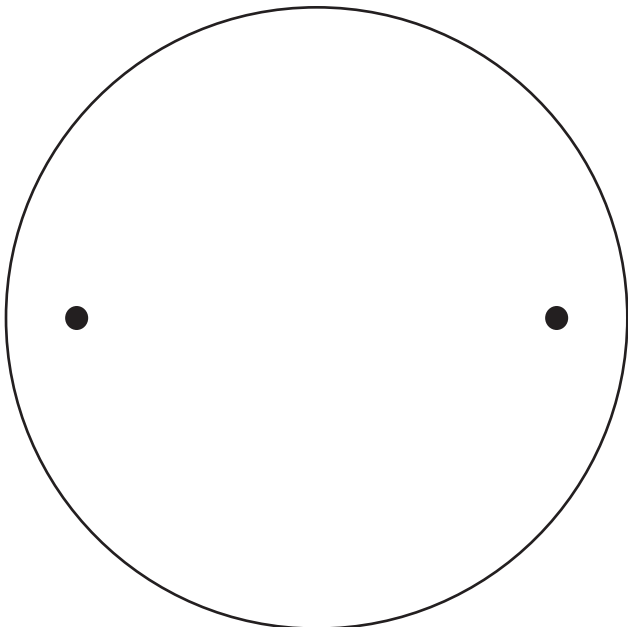
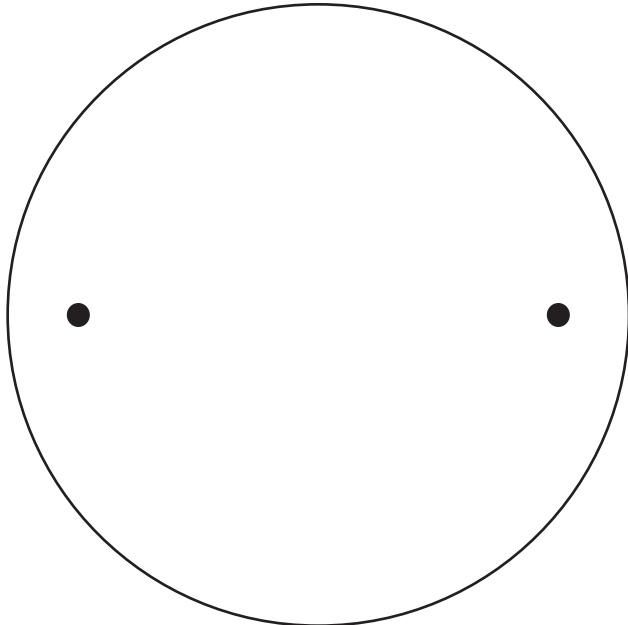
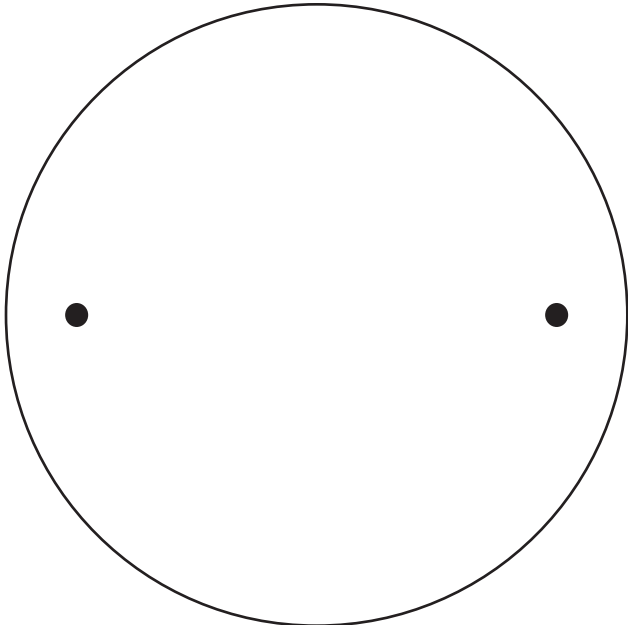
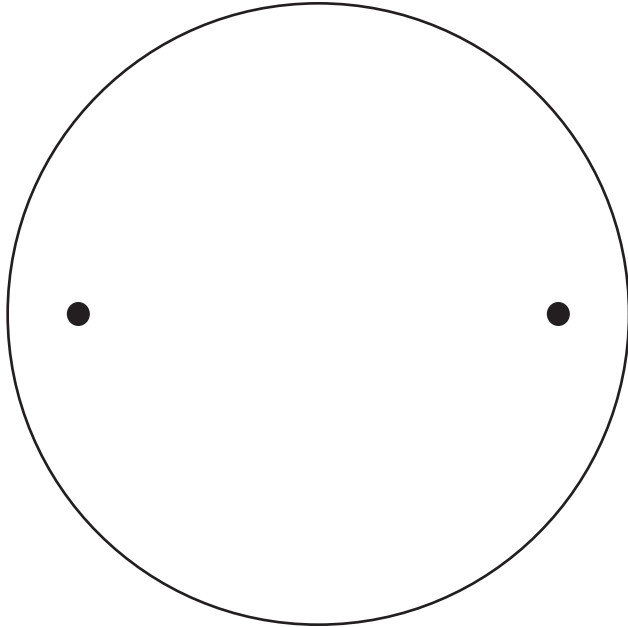
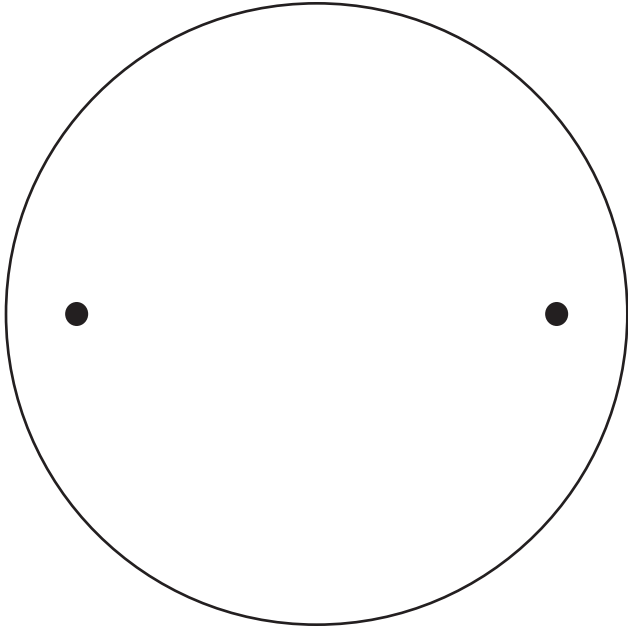


Poke your skewer or pencil in between the layers of cardboard. Glue or tape it if it's loose.



Roll the stick between your hands to view your image.

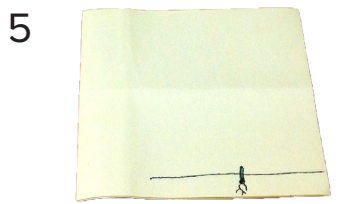
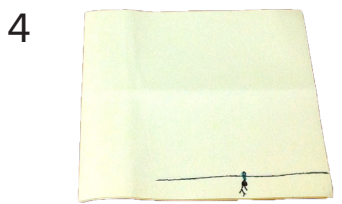
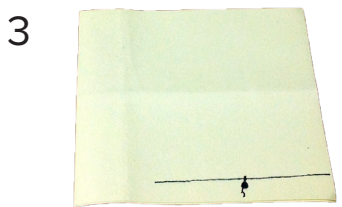
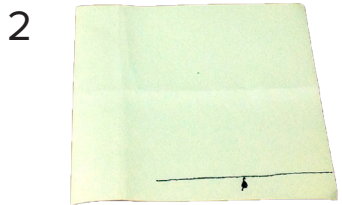
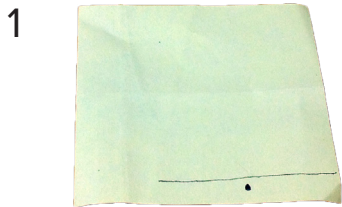
Cardstock and String Thaumatrope Template



# Flip-Book



Use either a light-colored post-it note pad or a stapled stack of copy paper. The stapled book shown here was made using 1/8 of letter-size sheets, cut from the template on the next page. When stapling the pages together, it is important that the edges on the side opposite the staples are flush.



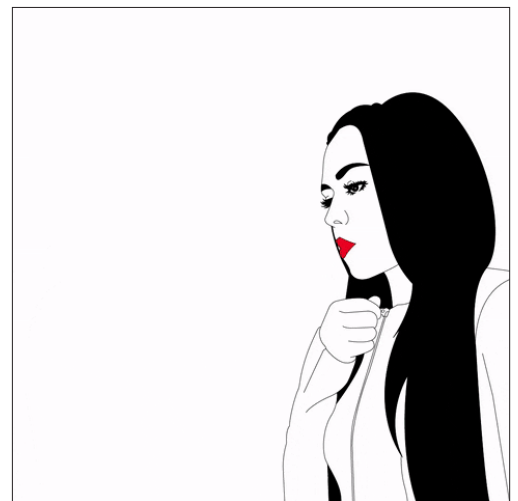
Make your first drawing on the last sheet of paper in the book or pad, your second on the second last, your third on the third last, etc. That way you can always trace the parts of the picture you want to stay still from the drawing below.

Keep your action in the right two-thirds of the paper, since you won't see the left third when flipping.

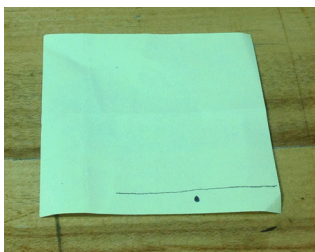
I separated my post-its so I could photograph them more easily, but I made the drawings while they were still in the pad.

## Artist Spotlight: Xaviera Lopez

[Xaviera Lopez](#) is a Chilean artist who is well known for her gifs, which are sort of like digital flip-books. Her animations are often the way she explores her own thoughts and feelings.



*“To me, this is an inner journal, a real inner life moving comic inspired by people, ideas, nature, art history, and pop culture.”*



# Flip-Book Template


# Stop-Motion Video

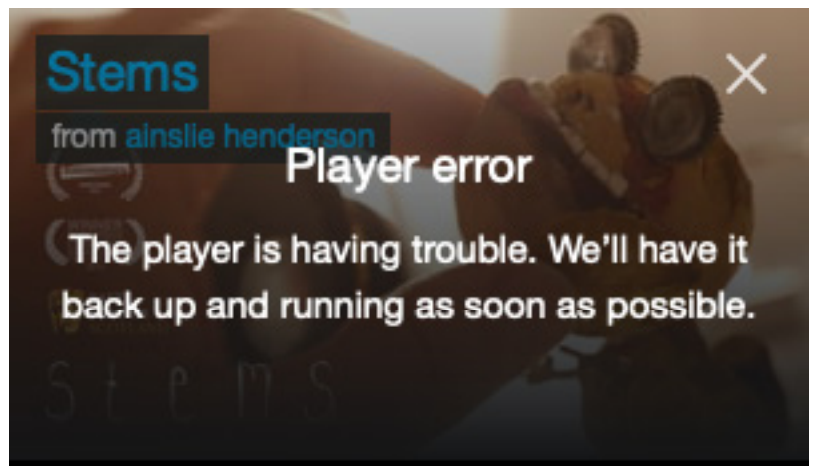


Instead of using separate drawings for each frame, stop-motion animation uses pictures of objects (or sometimes a single, erasable drawing) that are physically moved or altered between each picture. *Coraline*, *Fantastic Mr. Fox*, and *Kubo and the Two Strings* are all stop-motion animations.

You can make your own stop-motion animations with the free Stop Motion Studio app for [iOS](#) or [android](#), or one of many other stop-motion apps. Most have features that allow you to see the ghost of the previous image, which makes lining up a new image easier. You can make animations using clay, toys, paper, or anything else you can find.

## Artist Spotlight: Ainslie Henderson

[Ainslie Henderson](#) is a Scottish writer, director, and animator who works with many different objects to create stop-motion films. In *Stems*, Henderson talks about making puppets while we see them come to life.



## Share what you made!



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