arts CORPS

MAKE ART ANYWAY.

ART ACTIVITY INSTRUCTIONS:

ZOETROPE MACHINE:
A SIMPLE ANIMATION DEVICE

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ZOETROPE MACHINE

Discipline: Arts Integration

Duration: 1 hour

Age Range: Grades 6 - 12

Creator: Adam Collet

Contact:
integration@artscorps.org

Materials:
Scissors

Pencil

Tape

Large black construction paper (12" x 18" or 2 9" x 12" pieces taped together)

Long piece of receipt paper, at least 18"

Vocabulary:
Zoetrope: A simple animation machine

Circumference: The distance around a circle

Diameter: The distance across a circle

Radius: Half of the diameter

Have you ever wondered how animation works? In this project we'll make a simple machine that we can use to a very simple animation.

Learning Goals:

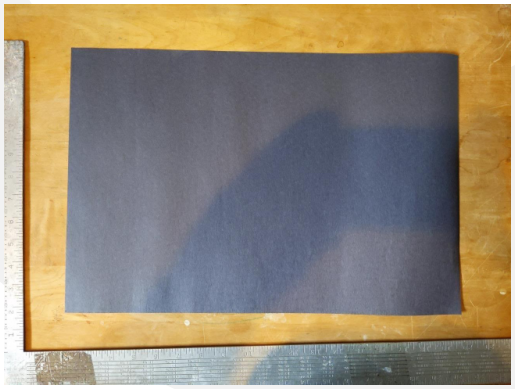
- You will learn how to make a zoetrope.
- You will learn how to make a simple animation.

Activity Opening:

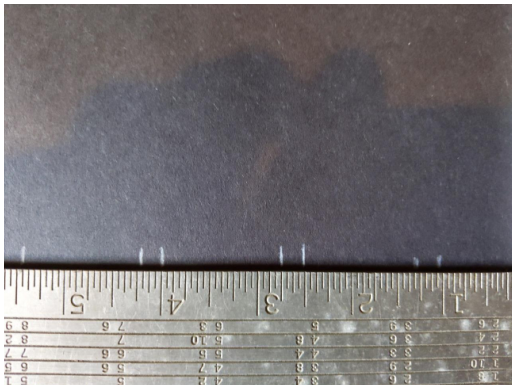
Imagine a simple action: jumping in the air; waving your hand; a flower growing. Think about each moment in that action. How many tiny moments are in even the simplest action? How would you make an animation of it?

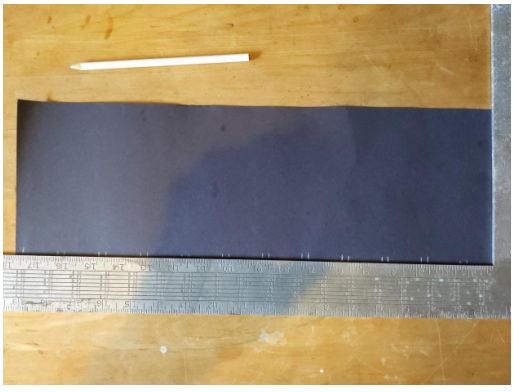
Steps/Instructions:

1. Cut your 12"x18" construction paper in half lengthwise so it is 6" x 18". If you have two pieces of 9"x12" paper, tape them together and cut them in half.



2. Measure on the long side of the paper 1 1/4." Mark it, move the pencil 1/4" further and make another mark.





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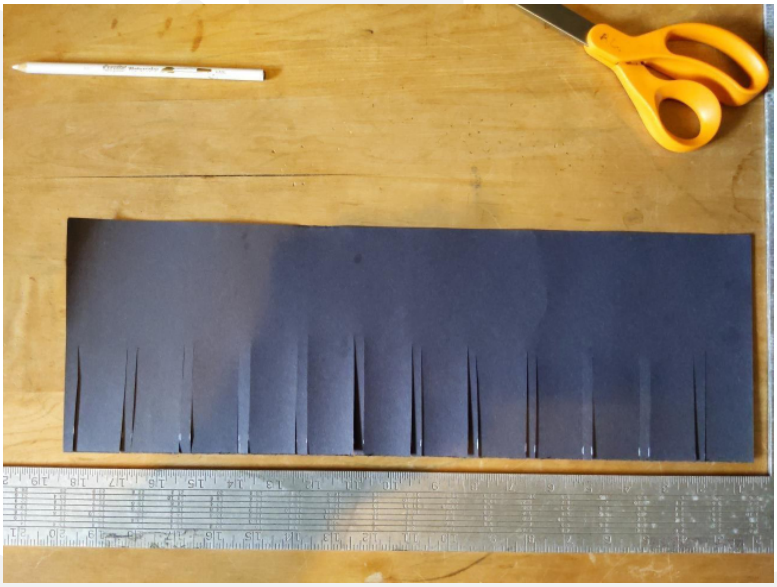
3. Starting from the second mark, measure another 1 ¼” and mark it. Move the pencil ¼” further and make another mark.

4. Keep doing this until you get to the end of the paper. You should have 12 evenly spaced 1/4” segments.

5. Make a cut at each mark about 2 1/2” long.



6. Fold over each thin strip so that it stand straight up.

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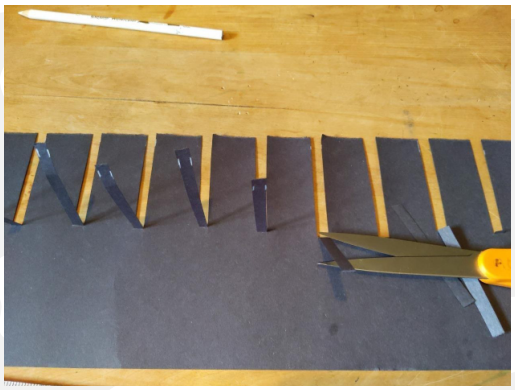
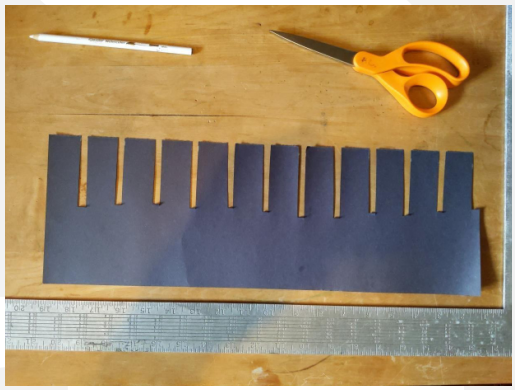
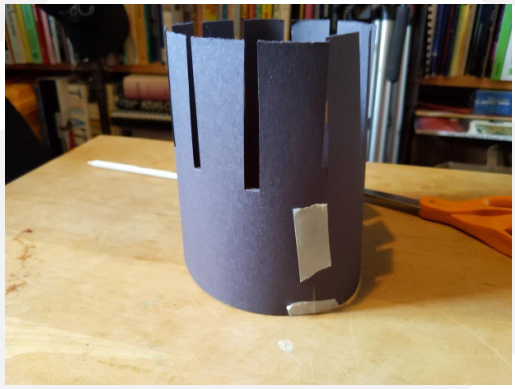
7. Cut each thin strip off.





8. Place a piece of tape on the lower corner of the uncut side of the black paper.

9. Put one more piece of tape on it so it doesn’t come apart.



10. Set that aside for a few minutes and we’ll work on Part 2.

PART II

Next we need to make a platform for our zoetrope.

Our zoetrope is 18” in circumference so our platform needs to be about 5 3/4 in diameter, a little under 6”.

Our platform doesn’t have to be super exact but it’s nice to know how to do it if you are interested.

Here’s the math involved.

If you want you can pause here and study this a little more.

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C=circumference (the distance around the circle)

π=circumference divided by diameter (approx. 3.14) diameter=distance across a circle through the center

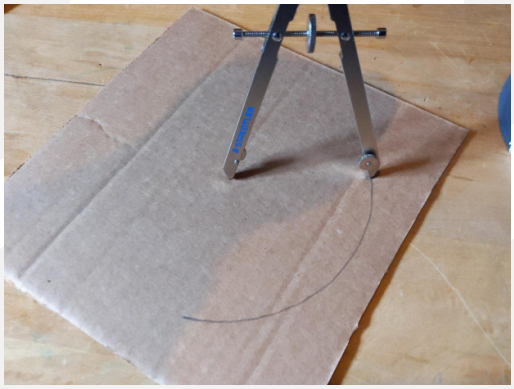
C=π(d)

18=π(d)

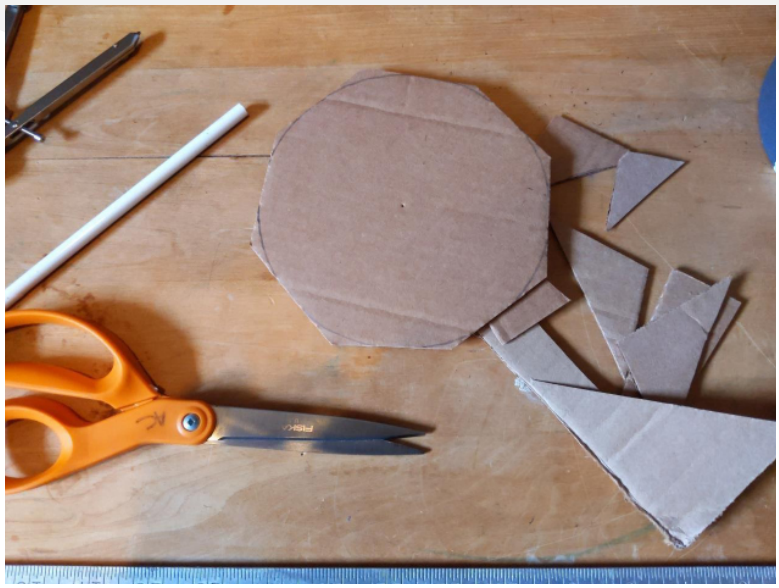
18=3.14(d) 18/3.14=d d=5.73. That’s really close to 5 ¾”

To make a circle with a diameter of 5 ¾” the radius needs to be 2 7/8.”

1. Set your compass at 2 7/8” and use that to make a circle.



2. Make a dot in the center and cut out the cardboard circle. Don’t worry about cutting it out perfectly.



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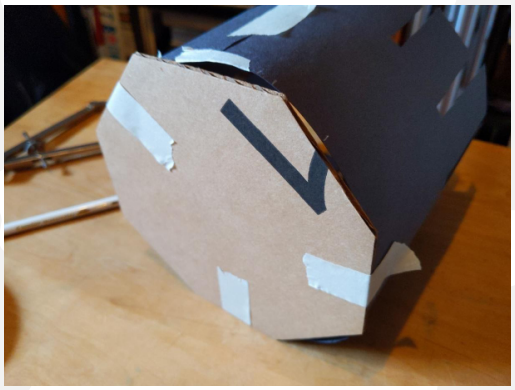
3. Place the zoetrope on the cardboard and tape it down.

4. Use a pencil to poke a hole through the center of the cardboard.

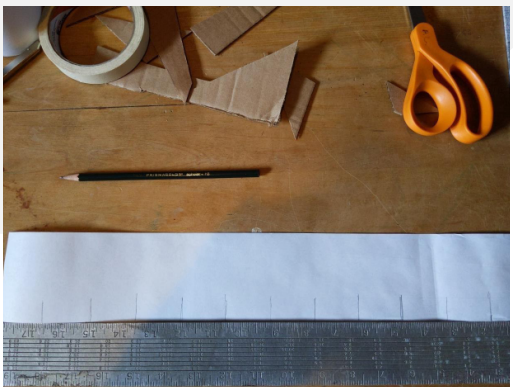


5. Put a couple pieces of tape on the pencil under the platform to keep it from sliding down.

PART III

1. If your receipts aren't that long, tape a couple of them together. If you are cutting your own, it should be about 3" wide.

2. Measure the paper into 12 equal segments, each one 1 ½" wide. These will be our frames.



3. In the first frame, we are going to draw a picture. In each frame after that, we will draw the same picture but with a little change. I'm going to trying something simple to start: a hand waving back and forth.

4. In each box, I'll move the hand a little from the position it was in the previous frame.

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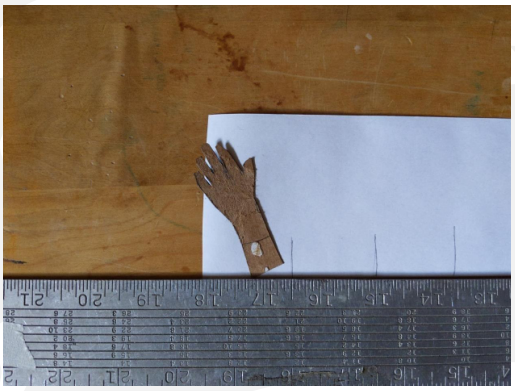

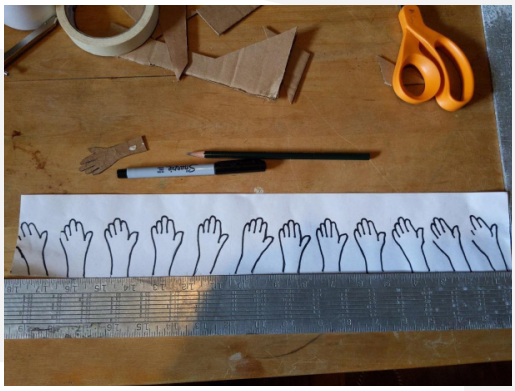

5. When you’re done, put the strip of paper inside the zoetrope with the drawings facing towards the center.

6. Now let’s try spinning it. Spin it by putting the pencil between your palms and move them back and forth.

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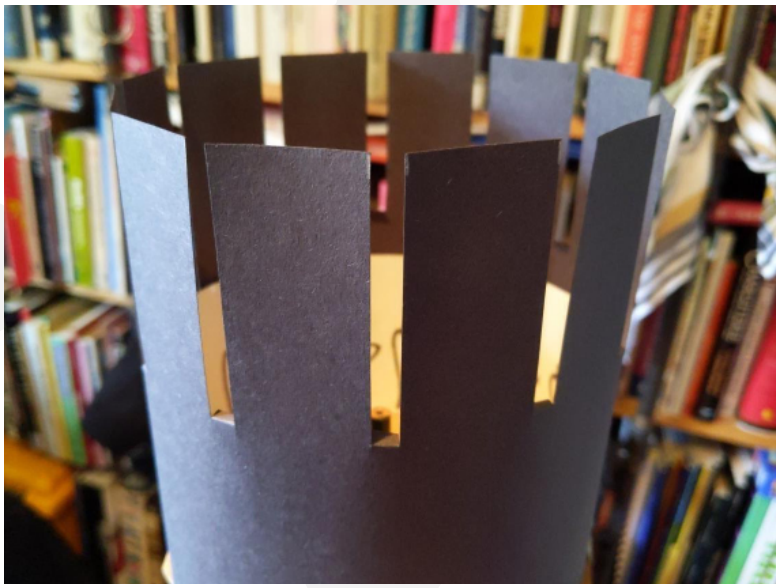
7. Look through the slits at the drawings while it is spinning. This might take some practice.



8. Experiment by spinning it at different speeds. I hope you’ll see the drawings come to life and start moving.

9. Congratulations! You just made an animation!

Activity Closing:

- Are there any other ways you could make it spin? Maybe you have a tray or toy that spins you could attach it to. Maybe a pottery wheel or turntable?

- What are some other things you could animate? A plant growing? The sun setting?

If you have any animations you want to share send them to us at:
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CLICK HERE TO WATCH THE VIDEO VERSION OF THIS LESSON.

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