CHALLENGE 1: DIY Camera Obscura

Camera Obscura

Camera obscuras were the first step to inventing the camera that we know and love today. Light bounces off the subject and gets filtered through the hole of your camera obscura. When you look through you will see an upside down image.

MATERIALS
A paper towel roll
Scissors
aluminum foil
wax paper
regular tape and duct tape
small pin

EXAMPLES
Vocab
● **Camera Obscura** - “a dark room.”
  ○ The first version of a camera

Create:
● Step 1: take your paper towel roll and cut off about 2 inches from the roll

● Step 2: on the longer roll cover one end with wax paper. Make sure the wax paper is as flat as possible, then tape down.

● Step 3: Reattach the short roll to the long roll on top of the wax paper. Use duct tape to make sure no light will get through.

● Step 4: Lay aluminum foil over the short end closest to the wax paper with the shiny side facing down. Try to get the foil as flat as possible and tape down.

● Step 5: Use a tack or pin to make a small hole in the center of the foil

● Step 6: Decorate with fancy paper or markers

● Step 7: Explore by looking through your new Camera Obscura!

Tips
● Try making the hole a little bigger, this will allow more light to enter, but the larger the hole to more blurry your image will look

● Go outside! The more light you have they easier you will be able to see the image inside your camera obscura

● Look at something with a lot ot contrast, like a tree against a bright blue sky

SHARE

Upload your photos and tag MOPA on Instagram @MOPASD
The Camera Obscursa

WHAT IS IT?

- an ancient optical tool (dating back to 500-300 BCE) that went on to be used by painters and astronomers

- led to development of the camera and photography!

HOW DOES IT WORK?

1. All objects reflect light
2. Light enters the hole at an angle
3. Light rays reflect from the top of the object going down, and from the bottom of object going up

In the camera obscura we see an upside-down image of whatever is outside
(this is the reflected light!)

DID YOU KNOW...?

Your eye receives images just like the camera obscura: through a small opening and upside down! But, the brain automatically flips the image so you see things right-side up.

This is how a camera works too! A mirror inside of a film camera flips the image for us to see through the viewfinder. In a digital camera, the software does the same thing.
ADJUSTING APERTURE

- Adjusting the opening where the light comes in (i.e. the aperture in the camera) affects the image that we see!

What happens when the aperture (opening) is small?

- Less light comes in    darker image
- Light comes in through a small hole so it doesn’t scatter    more of the image is sharp (this is called depth of field)

What happens when the aperture (opening) is big?

- more light comes in    brighter image
- Light scatters as it comes in    only part of the image is in focus (shallow depth of field)

MAKING PHOTOGRAPHS!

- You can create a photograph inside a camera obscura by placing a photosensitive material on the place where the image is being projected! (this is how film cameras work)

BEYOND: What does a lens do?-- a lens focuses the light coming in, depending on your distance from the object; some lenses take in more light than others.