National Chemistry Week: Picture Perfect Chemistry

Let's Learn to Focus…Light!

Materials required:

- Per group of 3-4 students:
  - Magnifying glass
  - White Paper
  - Flashlight
  - Transparency paper with image
- Per classroom
  - Prism
  - Color wheel on CD

Lesson flow/rough draft of script:

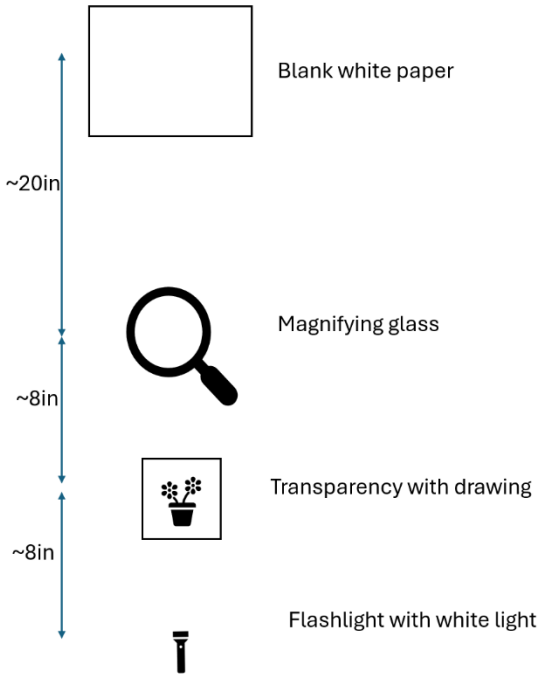
Volunteers introduce themselves and the theme of photography. Ask, "How many of you like to take pictures with phones? Or watch movies? Have you ever thought about how cameras work?"

Hand out worksheets, be clear that students should only stay on the first page

Ask students, "Who do you think this image on the from of your worksheet is of? It's a little blurry, but can you make a guess?" **(Question 2a)**

Ask students to gather in groups of 3-4, and hand out magnifying glasses, blank paper, flashlights and transparent paper with image.

Ask groups to describe what happens to the image on the blank piece of paper as they move their image, keeping everything else still. (The image flips! The main goal here is to have students understand how lenses focus, and that in the process of focusing, images flip!) – **Question 2b**



Now have students turn the page of their worksheet and look at the side-by-side images of a blurry photo of the Bluey and a focused photo of Bluey (have them printed in black and white). On the worksheet ask them to make connections between these images and the focusing experiments they just performed. What did they learn about focusing? How does this relate to blurry photos and clear photos? What is a focal point and what is a lens? – **Question 1c**

Gather attention of the class, and have volunteers demonstrate what happens to white light when you send it through a prism. Use a flashlight, large prism and white paper. Have one volunteer hold the paper, and another send the flashlight through the prism. Walk around the classroom so all the students can observe the diffraction of the white light on the paper. Using the color wheel, now spin it so the colors appear white. Once everyone has observed the diffraction, ask them to write down their observations. **Question 1d**

How light interacts with matter also describes why when light hits rain drops in the sky sometimes we see rainbows, how the sunlight hits the atmosphere is why the sky is blue, and at sunset because of the angle of where we are relative to the sun, the sky appears orange!!