

NAME: _____

Science Experiment: Blinking (#68)

Cycle 3, Week 1

Purpose: To demonstrate persistence of vision

Can a drawing appear to move?

Make a hypothesis: (Color in the circle next to your guess).

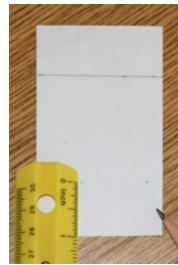
- ☐ **Yes**, a drawing **can** appear to move.
- ☐ **No**, a drawing **cannot** appear to move.

Needed materials: (Check off each material you need and have.)

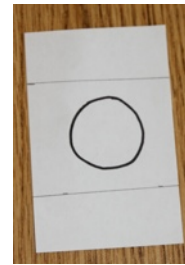
- | | |
|---|---|
| <input type="checkbox"/> 2 - 2x4 inch strips of white paper | <input type="checkbox"/> ruler |
| <input type="checkbox"/> pencil | <input type="checkbox"/> tape |
| <input type="checkbox"/> marker (optional) | <input type="checkbox"/> stapler (optional) |

Procedure:

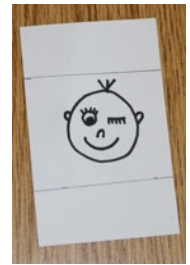
1. Take one strip of paper and draw a pencil line 1 inch from each end.
2. Draw a circle in the center between the lines.
3. Turn the circle into a face with **one eye open** and **one eye closed**.



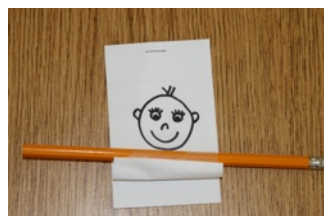
1. Draw lines



2. Draw circle



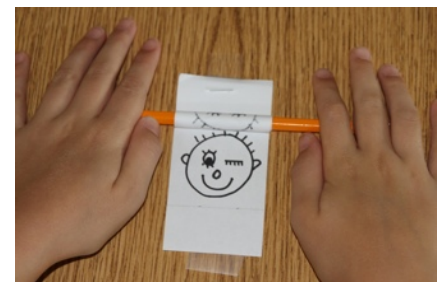
3. Draw face



4. Lay the 2nd paper strip on top of the first, line up the edges, and tape or staple together at the top.
5. Tape the top edge to the table.
6. Trace the face on the top strip, but **draw both eyes open**.

7. Tape a pencil to the bottom edge of the top strip and tape the bottom edge of the free piece of paper to the table.

8. Roll the pencil up to the first line drawn on paper.
9. Place your hands on the ends of the pencil and roll the pencil back and forth quickly between the two lines several times.



Roll the pencil back & forth.

Conclusion: (Color in the circle next to what you observed.)

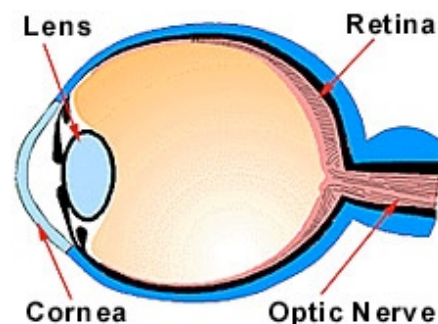
- ☐ My drawings appeared to move and wink at me.
- ☐ Nothing special happened. My drawings did not appear to move.



WHY WITH MISS WIZZLE

The **retina** is at the back of the eye. It is made up of light-sensitive, paper-thin tissue which lines the back of the eye like wallpaper. The *retina* tissue transfers information to the brain.

When you look at a picture or object, an image of it is projected on the *retina* of your eyes. Even if the object is moved or removed, its image remains on the retina for a fraction of a second. This phenomenon is called **persistence of vision**.



In our experiment, rolling the paper strip back and forth allowed you to see each face for a fraction of a second. Because the retina retains the image for about $\frac{1}{16}$ of a second, the brain did not register the transition when the next image appeared in less than $\frac{1}{16}$ of a second.

Since the eyes in one drawing are open and the eyes in the other has one eye closed, the overlapping of the images gives you the illusion that the one eye is blinking. **The ability of your eye and brain to hold onto these images in order to form a single, complete picture is an example of persistence of vision.**

To You I lift up my eyes,
O You who are enthroned in the heavens!
~ Psalms 123:1