



Discovery Day – Amazing Adaptations Make Your Own Magnification Tool

Video Premieres
March 28, 2021
on Facebook!

What you need

- 2 pencils
- Pipette
- Clear tape
- 1 sheet of white paper
- Cup of water
- Microscope slide (or just something small & interesting to examine!)
- Optional: Hand-held magnifying glass
- Optional: Flashlight

Follow the steps below to make your own magnification tool for examining microscope slides or other tiny things!

Preparation

1. Gather the supplies listed above.

What to do

1. Place the two pencils down on a flat surface (e.g., desk) on top of the white paper. Make sure the pencils are lined up parallel to one another, and space the pencils a little more than 1 inch apart.
2. Take a long piece of clear tape (try to only touch the farthest edges – NOT in the middle!) and stick it over the two pencils. The tape between the two pencils should be in the air, not touching the paper. You can stick the tape that extends beyond the pencils to the paper/table in order to secure your DIY microscope in place. It should ultimately look similar to a bridge. Make sure the tape between the two pencils is as flat and taut as possible.
3. Repeat the second step two more times so that you end up with three potential magnification areas.
4. Using the pipette, suck up some water and then squeeze one small drop of water onto the first tape “lens,” two small drops of water onto the second tape “lens,” and three small drops of water onto the third tape “lens.” You may need adult assistance to make sure the droplets are small enough; too much water will spill over the tape edges.
5. Carefully slide your microscope slide underneath the tape lenses (but don’t touch the tape).
6. As you move the slide under the three lenses, does the magnification of the image change?
7. Try examining other small things, such as tiny plant parts like seeds!
8. Optional: Increase the magnification by looking through a hand-held magnifying glass over top of your tape lenses, and/or place a flashlight at one end of the paper so that the light points toward the microscope slide.



Example of magnification tool. Image from raisinglifelonglearners.com

What is happening?

The beads of water sitting on the tape lenses act as convex lenses. Convex lenses are thicker in the middle and therefore magnify the images viewed through them. The lens of your eyeball is a convex lens, too! The droplets of water refract the light and trick your eyes into seeing the object larger than it actually is. Using a hand-held magnifying glass in addition to your DIY microscope further increases the magnification because magnifying glasses are also convex lenses. Experiment with droplets of different sizes to find the best balance between image size and clarity.