

GRADE LEVEL
Elementary

SCIENCE CONTENT STATEMENT ADDRESSED

Earth and Space Sciences

Cycles and Patterns in the Solar System

The solar system includes the sun and all celestial bodies that orbit the sun. Each planet in the solar system has unique characteristics

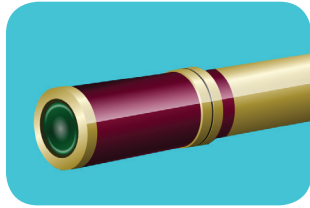
Physical Science

Light, Sound and Motion

Light and sound are forms of energy that behave in predictable ways

OVERVIEW

Students build a telescope from paper towel rolls and simple lenses that can be adjusted for different distances. The students then use their telescopes to observe different objects in the solar system and record their findings.



TELESCOPE

MATERIALS

- Two lenses with different focal lengths or Two magnifying glasses—different strengths OR A variety of lenses from local eye doctor. Here is one resource for lenses, <https://www.edmundoptics.com>.

Set these out with items that students can look at through each type of lens.

- Paper roll tubes
- Scissors
- Tape

PROCEDURE

- Obtain a variety of old lenses from a local eye doctor. You can also order lenses
- Allow students time to explore looking through single lenses and pairs of lenses. Students should observe different capabilities and powers of the single lenses.
- Next have students investigate pairs of lenses and how they interact with each other. Have them make notes and measurements as to which combinations produce the sharpest images of objects the farthest away.
- If available use a spreadsheet (for example Google Sheets or MS Excel) to record types of lenses, distance and level of sharpness.
- Students design and build a telescope from paper towel rolls and simple lenses that can be adjusted for different distances, with either different slots in the tubes, or sliding tubes.
- The students then use their telescopes to observe different objects in the solar system and record their findings.

More information about how simple make it yourself Telescopes work, <http://www.wikihow.com/Make-a-Telescope>.

POST-PROJECT CLASSROOM DISCUSSION/ACTIVITIES

Discuss the trial and error process when building your Telescope.

What did you discover? Did Lenses have to go in a certain order?

What if you were to change one lens to a different strength? Predict what would happen.

Adapted from a lesson provided by STEM is Elementary, <http://www.stemiselementary.com>.