

EARTH SCIENCE

GRADE 1

ASSESSMENT PACKET

A fun set of experiments and activities designed to get you into the field of astronomy. You'll learn about the phases of the moon, transits, and more as you study the sun, moon, and star's path across the sky. You'll also make sundials, pinhole projectors, and discover how it's possible for the sun to never rise during a season.



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This curriculum is aligned with the National State Standards and STEM for Science.

Educational Goals

To the Teacher/Parent: Kids will demonstrate how well they understand important key concepts from this section. Some kids at this level are not reading quite yet, so you'll need to work together with them and observe them carefully as you go in order to understand what they know as they may not be able to tell you directly.

Overview: One of the most incredible areas of science is astronomy. I'm constantly amazed by how much astronomy inspires excitement and awe in people, no matter what they study or what careers they have later in life. There's just something magical about the celestial skies, and that's what I'm going to share with you in this section.

Our first dip into astronomy is going to cover planets, stars, the sun and moon, and let you play with phases, transits, and ways of observing different astronomical phenomena, just like real scientists do. Although there's a handful of activities here, if you feel your student is ready for it, feel free to dive into the full-blown Astrophysics section and find experiments that will challenge and engage them in a meaningful way.

By the end of the labs in this unit, students will be able to:

- Use observations of the sun, moon and stars to describe patterns that can be predicted.
- Make observations at different times of the year to relate the amount of daylight to the time of year.
- Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.
- Measure and estimate the weight, length and volume of objects.
- Formulate and justify predictions based on cause-and-effect relationships.
- Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.
- Follow a set of written instructions for a scientific investigation.

Earth Science Grade 1 Explorations

Teacher's Outline with Answers

Teacher/Parent: This is not a quiz. This is a chance for you to explore the key concepts with your student to you can understand what they know and where they still need work. Read each question aloud and do the action and invite the students discuss their answers with you to help them answer the questions. Answers and/or experiment references given in parenthesis. If you've completed the lab experiments, then you should have no trouble answering these questions. Feel free to grab the materials you used in the lab experiments as you go through the questions together.

Materials:

- Tennis ball
- Beach Ball
- Flashlight
- Stick
- Piece of paper
- Pencil

Questions to Explore Together:

1. How can the shadow cast by the sun to tell time? (Refer to *Sundial* Experiment and use the flashlight for the sun and the stick and paper to make a quick sundial.)
2. The moon appears to change size and shape in the sky. Use the flashlight and balls to teach your parent/teacher what the truth about this really is. (Refer to *Phases of the Moon* Experiment.)
3. Using the beach ball for the earth, put a sticker or piece of tape to show where you live on the ball (or use a globe if you have one). Using a flashlight for the sun, demonstrate to your parent/teacher the reason that we have seasons. (Refer to *Seasons* Experiment.)
4. What are four things you might look for to tell if a rock is a meteorite? (Most meteorites are small, look like splashed metal, are attracted to a magnet, are small, non-porous (no holes), and are dark.)

Earth Science Grade 1 Evaluation

Student Worksheet

(Teacher: You'll need to go over the instructions with the kids and work with them on this part.)

Overview: You're going to show your teacher how much of this science stuff you already know. Choose one of the following activities:

- a. Make up a short story about the earth, sun, and moon system and include eclipses and transits. You can act it out if you want to with costumes and everything.
- b. Draw a poster that teaches why we have seasons on earth and shows people the most common misconception in this area (misconception: the seasons are caused by how close the earth is to the sun). When you're finished, you'll use it to teach your parent or teacher and demonstrate what you've learned.
- c. Perform a science experiment from this section that you learned the most from and run it as a science fair project that teaches others. Expand on it to include new discoveries you've made and include your audience.