

# Apple Model Earth

### ***Introduction:***

This lesson introduces students to Earth's atmosphere, where interactions take place that cause the colors of the aurora. Students learn that household items, like apples, can be used as models. The lesson ties together concepts about Earth students have learned in earlier associated classroom lessons.

### ***Objectives:***

The student will:

- examine where Earth's atmosphere exists;
- discover Earth's atmosphere is a mixture of gases that surrounds our planet in a relatively thin layer;
- identify the gases in the lower atmosphere sustain life on Earth;
- determine the gases in the upper atmosphere act as a buffer zone between outer space and the life-sustaining gases near Earth's surface;
- conclude gases in the upper atmosphere produce the colors of the aurora; and
- review and tie together what they have learned about the components of Earth as a system in space in earlier associated classroom lessons by using the apple model.

### ***Materials:***

- Apples (washed and ready to eat)
- Thin red rope licorice
- Fruit roll-ups
- Model Earth ball
- Bar magnet/iron filings (optional)
- VISUAL AID: "Apple/Earth Layers"
- VISUAL AID: "Apple/Earth Atmosphere"
- VISUAL AID: "Earth's Atmosphere"
- VISUAL AID: "Apple/Earth Magnetic Field Lines"
- STUDENT WORKSHEET: "Apple Model Earth"



# Apple Model Earth

### **Activity Procedure:**

1. Show VISUAL AID: “Apple/Earth Layers” and explain that apples can be used as models to represent Earth because they are round, have an inner core, and thin skins.
2. Overlay VISUAL AID: “Apple/Earth Atmosphere” on VISUAL AID: “Apple/Earth Layers.” Explain Earth’s atmosphere is a thin layer of gases that we cannot live without. On an apple, a thin piece of caramel can be used to represent Earth’s atmosphere.
3. Use VISUAL AID: “Earth’s Atmosphere” to review the following points:
  - Earth’s atmosphere is a mixture of gases.
  - The gases are thickest (most dense) in the lower atmosphere and thinner at higher elevations.
  - Although the atmosphere surrounding our planet is relatively thin, we cannot live without it. The thin layer of atmosphere allows us to breathe and protects us from outer space.
  - The gases close to the surface of our planet in the lower atmosphere allow people to breathe and make it possible for all life to exist on Earth.
  - The gases in the upper atmosphere act as a buffer zone between outer space and the life-sustaining gases near Earth’s surface.
  - Gases in the upper atmosphere also are responsible for the different colors of the aurora. (If students have interacted with the *Aurora’s Light* unit on the *Aurora Alive* DVD, ask if they remember which gases are responsible for the different colors in the upper atmosphere.)
4. Use VISUAL AID: “Apple/Earth Magnetic Field Lines” to discuss how the shape of Earth’s magnetic field is pulled by solar particles. Explain that licorice can be used to represent Earth’s magnetic field lines on their model Earth apples.
5. Hand out the STUDENT WORKSHEET: “Apple Model Earth” and ask students to answer the questions.
6. After students turn in their completed worksheet, hand out apples, fruit roll-ups and licorice and ask students to build their own model Earths with atmospheres and magnetospheres.



### **Answers to Student Worksheet:**

1. gases    2. A. L    B. U    C. L    D. U    E. U

Name: \_\_\_\_\_

## Apple Model Earth

1. Fill in the blank:

Earth's atmosphere is made up of a mixture of \_\_\_\_\_.

2. Place a U if the statement refers to the upper atmosphere or L if the statement refers to the lower atmosphere.

- A. \_\_\_\_\_ This is where the atmosphere has the greatest density.
- B. \_\_\_\_\_ Gases here produce the colors of the aurora.
- C. \_\_\_\_\_ This part of the atmosphere contains the gas we need to breathe.
- D. \_\_\_\_\_ Air is least dense (or thin) here.
- E. \_\_\_\_\_ This acts as a buffer zone between outer space and gases near Earth's surface.