

CBL Earth Science
Earth Science: Geology, the Environment, and the Universe
Quarter 4, Week 4, Day 1
Standard Focus:

PREPARE

1. **Background knowledge necessary for today's reading**

The best tool an astronomer can use to learn about the universe is the light that reaches Earth. Light is the common term for electromagnetic radiation. In a vacuum light travels at a constant speed. A refracting telescope focuses the light by bending it, while a reflecting telescope uses a curved mirror to focus the light. A radio telescope, much like a reflecting telescope, uses a curved dish to focus radio waves.

2. **Vocabulary Word Wall**

Introduce 3-5 important words from today's reading

refracting telescope
interferometry

reflecting telescope
spin-off

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. **Review the vocabulary and concepts previously covered in this chapter.**

4. **Read directions for the investigation**

5. **Read text:** Ch. 28.1, pp. 747-752

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Electromagnetic radiation includes visible light, infrared light, ultraviolet light, radio waves, microwaves, x-rays, and gamma rays.
- The majority of telescopes used today are reflectors, although both refracting and reflecting types are still used.
- Space is explored by telescopes, satellites, probes, and humans.

7. Post information to the billboard. Add new information to ongoing whole class projects.

EXPLORE

8. Explore today's investigation

9. Explore today's simulation

10. Collect data and post

One possible activity: Discovery Lab – Make a Scale Model, text p. 747

Procedure: Students construct a model of the relationship of the Sun, Moon, and Earth to one another

Discussion: Discuss the relative sizes and distances

Key question: Why wasn't a model cut out for the Sun?

EXTEND

11. **Prompt every student to write a short product tied to today's reading**
12. **Close with a short summary**

Extend the reading to the students' lives or to the world

CBL Earth Science

Earth Science: Geology, the Environment, and the Universe

Quarter 4, Week 4, Day 2

Standard Focus: Earth Sciences 1.f “students know the evidence for the dramatic effects that asteroid impacts have had in shaping the surface of planets and their moons and in the mass extinction of life on Earth”

PREPARE

1. Background knowledge necessary for today’s reading

From earliest times Man has speculated about the Moon. Early astronomers studied its observable features and gave them names. The smooth areas surrounded by mountains resembled seas so they were named maria or mare (singular) and given names related to moods or feelings. Other features such as mountains and craters were named for important people in astronomy. Many other names are in Latin. The features on the far side of the Moon have Russian names since the Russians photographed it in 1959.

2. Vocabulary Word Wall

Introduce 3-5 important words from today’s reading

albedo **mare** **impact crater**
ray **regolith**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for the investigation

5. Read text: Ch. 28.2, pp. 753-757

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- The first manned ventures into space were in 1961 and in 1969 Americans landed on the Moon.
- The physical surface of the Moon is very different from Earth's.
- There are several theories on how the Moon was formed.

7. Post information to the billboard. Add new information to ongoing whole class projects.

EXPLORE

8. Explore today's investigation

9. Explore today's simulation

10. Collect data and post

One possible activity: Lunar Surface

Procedure: Students model lunar features from clay

Discussion: Discuss the different types of features on the Moon

Key question: Why is there no erosion to the Moon's features?

Source: <http://analyzer.depaul.edu/paperplate/Lunar20%Surface.htm>

EXTEND

11. **Prompt every student to write a short product tied to today's reading**
12. **Close with a short summary**
Extend the reading to the students' lives or to the world

Quarter 4, Week 4, Day 3
Standard Focus

PREPARE

1. **Background knowledge necessary for today's reading**

Ancient civilizations studied the paths of the Sun, the Moon, and other celestial bodies across the sky as a reference for measuring the passage of time. In what is present day Iraq the Sumerians had a calendar that divided the year into 30-day months five thousand years ago. The Babylonians calculated a year with alternating 29- and 30-days months. The Egyptians used a calendar that had 365 days. In the Americas the Mayans and Aztecs also had calendars of 365 days.

2. **Vocabulary Word Wall**

Introduce 3-5 important words from today's reading

ecliptic **summer solstice** **winter solstice**
autumnal equinox **vernal equinox**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. **Review the vocabulary and concepts previously covered in this chapter.**

4. **Read directions for the investigation**

5. **Read text:** Ch. 28.3, pp. 758-762

RESPOND

6. **Fix the facts. Clarify what's important.**

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- The rotation of the Earth makes the Sun, Moon, and stars appear to rise in the east.
- The winter and summer solstices refer to positions in Earth's orbit where the Sun is overhead at the Tropic of Capricorn and the Tropic of Cancer.
- At the autumnal and vernal equinox the length of day and night are equal.

7. Post information to the billboard. Add new information to ongoing whole class projects.

EXPLORE

8. Explore today's investigation

9. Explore today's simulation

10. Collect data and post

One possible activity: Kinesthetic Astronomy, lesson IIa

Procedure: Students physically move through activities to represent positions of the Earth in relation to the Sun

Discussion: Discuss the difference between orbit and rotation

Key question: How can your body present the Earth?

Source:

http://www.spacescience.org/education/extra/kinesthetic_astronomy/KASkTimeAug04.pdf

For student pages –

http://education.sdsc.edu/teachertech/downloads/k_astronomy.pdf

EXTEND

11. Prompt every student to write a short product tied to today's reading
12. Close with a short summary

Extend the reading to the students' lives or to the world

CBL Earth Science
Earth Science: Geology, the Environment, and the Universe
Quarter 4, Week 4, Day 4
Standard Focus

PREPARE

Students might mention:

- The light from the moon that we see is a reflection of the Sun's light.
- The monthly cycle of moon phases corresponds to our changing view of the sunlit side of the Moon.
- Our time system is based on the solar day.

7. Post information to the billboard. Add new information to ongoing whole class projects.

EXPLORE

8. Explore today's investigation

9. Explore today's simulation

10. Collect data and post

One possible activity: Kinesthetic Astronomy, activity IIb

Procedure: Students physically demonstrate the connection between Earth's rotation and the times of day

Discussion: Discuss constellations visible in your night sky

Key question: Do stars appear to rise and set?

Source:

http://www.spacescience.org/education/extra/kinesthetic_astronomy/KASkTimeAug04.pdf

EXTEND

11. Prompt every student to write a short product tied to today's reading

12. Close with a short summary

Extend the reading to the students' lives or to the world

CBL Earth Science
Earth Science: Geology, the Environment, and the Universe
Quarter 4, Week 4, Day 5
Standard Focus

PREPARE

1. Background knowledge necessary for today's reading

A lunar eclipse can only occur at the full moon phase and only if the Moon passes through some part of the earth's shadow. During a total lunar eclipse indirect sunlight still manages to reach and illuminate the Moon, so it is not completely dark. Instead, because of the filtering and refracting of Earth's atmosphere the Moon can take on a range of colors from reddish brown to yellow depending on how much dust may be present in the atmosphere.

A solar eclipse can only occur at the new moon phase when the moon passes between Earth and the Sun.

2. Vocabulary Word Wall

Introduce 3-5 important words from today's reading

solar eclipse **perigee**
apogee **lunar eclipse**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for the investigation

5. Read text: Ch. 28.3, pp. 765-767

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- A total solar eclipse is only visible from a very small portion of the Earth, while a partial solar eclipse is visible over a wider area.
- The Moon's orbit is tilted 5 degrees from the Earth's orbit of the Sun.
- Solar and lunar eclipses occur in almost equal numbers.

7. Post information to the billboard. Add new information to ongoing whole class projects.

EXPLORE

8. Explore today's investigation

9. Explore today's simulation

10. Collect data and post

One possible activity: Kinesthetic Astronomy, lesson IIc

Procedure: Students physically move through activities to represent winter and summer

Discussion: Discuss the tilt of the Earth and the relationship to the seasons

Key question: What makes winter different from summer?

Source:

http://www.spacescience.org/education/extra/kinesthetic_astronomy/KASkTimeAug04.pdf

EXTEND

11. Prompt every student to write a short product tied to today's reading

12. Close with a short summary

Extend the reading to the students' lives or to the world

