

The Moon: Earth's Traveling Companion



Name: _____

What is the Moon? What is important about it? How did the Moon end up where it is? The Moon and Earth were formed at the same time. This happened about 4.6 billion years ago. Earth and the Moon make a yearly journey together around the Sun. At the same time, the Moon orbits Earth about every 28 days. This is where the idea of the month came from with people long ago.

The Moon was probably caused by a collision in space more than four billion years ago. Earth and the Moon are very different. The Moon has no atmosphere of air or anything else. It does not have any gases or visible water. The surface gravity of the Moon is very weak. Because of this, there has been little change in the surface. When meteors strike the Moon, the impact makes a crater that stays the same for millions of years. There are features on the Moon's surface that look like seas. These seas are the result of volcanoes and lava flows billions

of years ago. One of the mountains on the Moon has remained unchanged over hundreds of millions of years. It is almost as tall as Mount Everest on Earth. An astronaut's footprint on the Moon may survive clearly for 100 million years.

The Moon looks big to someone observing it from Earth. However, it is much smaller than Earth. It has a diameter of 2,160 miles. By comparison, the diameter of Earth is nearly 8,000 miles long. Because the Moon has no atmosphere or air, the temperature can rise to 260 degrees F. This is about twice as hot as the highest temperature on Earth. The lowest temperature on the Moon can be -280 degrees F. This is over 300 degrees below freezing. This is colder than any place on Earth. People on Earth always see the same side of the Moon. The near side of the Moon always faces Earth. The far side of the Moon never faces Earth.

The Moon is a very interesting object in the sky!

What Did You Learn ?

- How old is Earth and the Moon?
(A) 4.6 years (B) 4.6 million years (C) 4.6 billion years (D) 8,000 years
- Why don't air and water remain on the Moon?
(A) the surface gravity is too strong (C) there are no people or animals there
(B) the surface gravity is too weak (D) there are too many mountains
- What is the lowest temperature on the Moon?
(A) 260 degrees F (B) -280 degrees F (C) 1,000 degrees F (D) 300 degrees F
- Why does an astronaut's footprint remain so long on the Moon?
(A) There is no wind or water to wear it away.
(B) The far side of the Moon never faces Earth.
(C) The Moon is always in the same place.
(D) The shoes are very sticky.



Name: _____

Directions: Use the vocabulary words in completing the sentences below.

waxing	getting larger
waning	getting smaller
crescent	a sliver of visible light on the Moon
gibbous	humped or swollen
terminator	boundary between light and dark part of the Moon
eclipse	an event blocking light from being seen from the Moon or Sun
surface	the top layer of a planet
meteors	space objects hurtling through space
diameter	the distance across the center of a circle or a planet
weathering	the wearing away of land by wind or rain

Fill in the Blanks

1. When the part of the Moon that you can see gets smaller, it is said to be _____.
2. When the part of the Moon that you can see gets larger, it is said to be _____.
3. When you can only see a thin sliver of the Moon, it is in its _____ phase.
4. No _____ occurs on the Moon because there is no air, wind, water, or rain.
5. The _____ of the Moon is much shorter than the distance across the center of Earth.
6. The _____ of the Moon has stayed the same for millions of years except when struck by a meteor.
7. There is a place of partial light that can be seen from Earth at the edge of the visible Moon. It is called the _____.
8. An _____ of the Moon occurs when all or part of the visible Moon is blocked by another space object.
9. In the _____ phase of the Moon, it appears like a hump.
10. When _____ strike the Moon, they leave large impact craters.



Name: _____

Directions: Read the information and answer the questions below.

- The surface gravity of the Moon is only 16% that of Earth's surface gravity. Objects are not attracted to the Moon as much as they are on Earth.
- No weathering exists on the surface of the Moon because there is no atmosphere to hold air or water. Therefore, the surface of the Moon has changed very little in millions of years. The Moon has no climate or weather. The Moon has no seasons because it has no atmosphere.
- The Moon does have many interesting surface features: craters, mountains, valleys, and plains which are called "seas."
- The diameter of the Moon is about $\frac{1}{4}$ the diameter of Earth. The diameter is the distance from one side of the Moon to the other like the distance across a circle at its middle.
- The average distance from Earth to the Moon is about 239,000 miles.
- The Moon rotates around on its axis about as often as it takes to go around Earth once. That is why the same side of the Moon always faces Earth and people on Earth never see the far side of the Moon.
- Tides on Earth's oceans are affected by the gravitational pull of the Moon. The water bulges out in the direction of the Moon. Since the Earth is being pulled toward the Moon and away from the water, another bulge occurs on the opposite side of the planet.

Questions

1. How does the Moon affect the oceans and the tides?

2. What kind of movements don't happen on the Moon that do happen to the surface of Earth?

3. What things would the Moon need to have in order to have seasons and weather like Earth?

4. If there had ever been life on the Moon, how would scientists and astronauts know about it?



Name: _____

As the Moon orbits Earth, half of its surface is lit by the Sun while the other half is hidden in darkness.

There are eight distinct phases that reflect the changes of the Moon's shape as seen from Earth when different sections of the Moon's surface are facing Earth. The Moon goes through the same phases every month. The same side of the Moon always faces Earth.

Assignment:

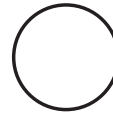
1. Study this page. Read each phase. Study each drawing.
2. Decide which phase the Moon was in last night based on your memory.
3. Check your answer tonight using this paper.

New Moon



The lighted side is facing away from Earth. The Moon is dark.

Full Moon



The entire lighted side of the Moon is visible.

Waxing Crescent



A crescent or sliver of light becomes visible. It gets larger each night.

Waning Gibbous



The lighted side declines or wanes until half of the Moon is visible.

First Quarter



Half of the Moon is visible from Earth (like half of a pie).

Last Quarter



Half of the lighted portion is visible.

Waxing Gibbous



Gibbous means "humped" and the Moon's light is swelling.

Waning Crescent



The sliver of moonlight declines until the new Moon with no visible light returns and the cycle repeats itself.



Name: _____

Directions: Study the Moon terms below.

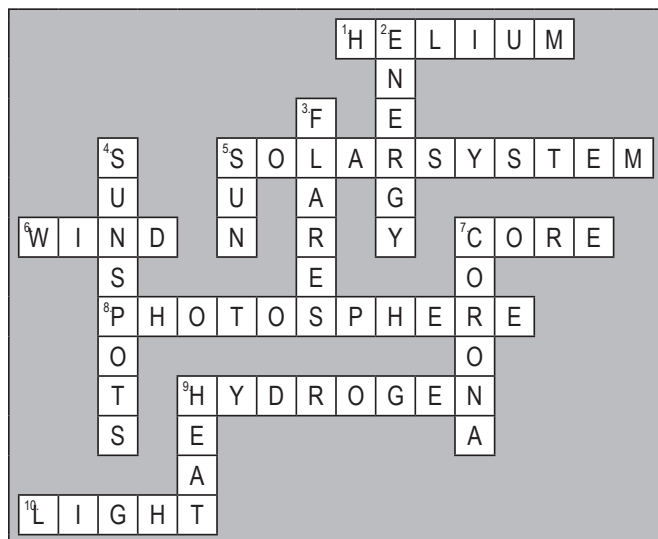
erosion	the change in landscape caused by running water or wind
craters	holes created in the Moon's surface by meteors
seas	name given to Moon objects caused by lava flows
gravity	the attraction of a Moon or planet toward other objects
atmosphere	the gases present in the area around a planet or Moon
phase	a stage in a series or cycle of changes
features	the physical parts of the land or landscape, like mountains
equator	an imaginary line around the center of a Moon or planet
climate	long-term weather pattern
astronaut	a space explorer

Directions: Fill in the correct term from above in each sentence below.

- Both the Earth and the Moon are attracted to each other by _____.
- The Moon has no _____ but Earth has many different _____ in different parts of the world.
- The distance around the Moon at its center is called the _____.
- The Moon has no _____ because it has no air or other gases.
- Some of the physical _____ of the Moon include mountains and craters.
- No _____ occurs on the Moon because it has no water or air.
- An _____ explores other parts of space.
- The Moon goes through several _____.



Page 149—Sun Crossword



Page 150—Word Study

Accept appropriate responses.

Unit 17

Page 151—The Moon: Earth's Traveling Companion

1. C
2. B
3. B
4. A

What Am I?: astronaut footprint

Page 152—Moon Terms

1. waning
2. waxing
3. crescent
4. weathering
5. diameter
6. surface
7. terminator
8. eclipse
9. gibbous
10. meteors

Page 153—Moon Facts

1. The Moon's gravitational pull pulls on the Earth, creating high tide on the water areas facing the Moon and low tides on the opposite sides of the Earth.
2. Weathering, seasons, climate, and changes to the surface of the Moon don't happen on the Moon.
3. The Moon would need air, water, and enough gravity to hold them on the surface of the Moon.
4. Signs of life would show in fossils or remnants of living things.

Page 154—Phases of the Moon

Accept appropriate responses.

Page 155—Moon Terms

1. gravity
2. climate
3. equator
4. atmosphere
5. features
6. erosion
7. astronaut
8. phases

Page 156—Word Study

Accept appropriate responses.

Unit 18

Page 157—The Inner Planets

1. B
2. C
3. A
4. B

Who Am I?: Venus

Page 158—Inner Planet Facts

1. Accept appropriate responses. Many students might pick Venus because of the heat but only Earth can sustain life.
2. Accept appropriate responses.

Page 159—Inner Planet Terms

1. inner planets
2. poles
3. Mars
4. temperature
5. volcanoes
6. seasons
7. gravity
8. Venus
9. Mercury
10. Earth
11. atmosphere
12. craters
13. moons
14. orbit

Questions:

1. craters; volcanoes
2. Mercury, Venus, Earth, Mars

Page 160—Organizing the Planets

Mercury: 1, 5, 8, 9, 13

Venus: 2, 6, 7, 14

Earth: 4, 7, 10, 11

Mars: 3, 7, 12, 14, 15, 19

Page 161—Planets by the Numbers

1. Mars
2. Earth
3. Venus
4. Mercury

Page 162—Word Study

Accept appropriate responses.

Unit 19

Page 163—The Outer Planets

1. B
2. B
3. A
4. A

Who Am I?: Jupiter

Page 164—Outer Planets and Moons

1. Jupiter, Saturn, Uranus, Neptune, Pluto
2. Ganymede
3. Ganymede, Callisto, Europa, Io
4. Jupiter: any of the four moons named above
Neptune: Triton
Saturn: Tethys, Titan
Uranus: Miranda

Page 165—Outer Planet Facts

1. Uranus
2. Neptune
3. Jupiter, Saturn
4. Jupiter
5. Ganymede
6. Jupiter
7. Neptune
8. Saturn
9. Saturn
10. Uranus

Page 166—Word Study

Accept appropriate responses.