

Lesson 2

Consider the Wonder

Consider: Silkworm Growth

This activity demonstrates the life stages of silkworms.

1. Prepare

Time Required: 10 minutes for set-up; several weeks for observation

MATERIALS:

- live silkworm eggs or larvae
- habitat for silkworms

2. What to Do

In this activity you will observe the **growth** of silkworms through the **life cycle** stages of egg, larva, pupa, and adult. You will not be able to observe the egg stage if your silkworms come already hatched.

Ask yourself the following questions and record your answers under **Predictions** in your Science Journal:

- What will happen as the silkworms change from larvae into pupae?
- How does silkworm **growth** take place?

EXPLORE

- Set up the habitat for your silkworms.
- Put the silkworm eggs or larvae into the habitat.
- Over the next few weeks, observe the silkworm larvae as they become pupae and finally adults. Once hatched, the larvae will eat a lot of leaves and shed its skin (called molting) four or five times. The worms will then spin a yellow or white silk chrysalis (cocoon) and enter the pupa stage in which they will transform into an adult moth.



Silkworm Moth emerging from cocoon

EXPLAIN

Some insects go through a process called complete metamorphosis. There are four stages in complete metamorphosis: egg, larva, pupa, and adult. In this process, the insect totally changes form so that the adult looks nothing like the earlier stages. Examples of insects that go through complete metamorphosis are: fleas, flies, beetles, butterflies, ants, wasps, bees.

EXPECTED RESULTS

- You should have been able to observe the **life cycle** stages of the silkworm and witness complete metamorphosis take place.

EXTEND

- Do you know any other animals that go through metamorphosis? How is it like the silkworm's metamorphosis? How is it different?
- The pupa is vulnerable in the cocoon, meaning that it can't defend itself from predators or dangers. Why do you think God designed insects to go through this process even though He knew that?

Write down what you learned under **Conclusions** in the Science Journal on the next page. Be sure to say if your predictions were correct or not. Then tell what you might have done differently to get different results.

Lesson
2

Science Journal

Predictions: (I think)

Observations: (I saw, felt, heard, or smelled)

Conclusions: (I found out)

Lesson 3

Earth's Water

Science Review

Directions: Choose a word from the word bank to complete the following sentences.

1. About $\frac{3}{4}$ of Earth's surface is covered with _____ an average of 2 miles deep.
2. Water can be solid (_____), liquid (water), or _____ (water vapor).
3. Only about $\frac{1}{100}$ of the water on Earth is _____. The rest is salty.
4. Ocean water is _____ because rivers carry dissolved minerals into the ocean. The pure water then _____, leaving the mineral salts behind in the ocean.
5. Living things need water to _____. Water helps them to _____ food, to _____ materials, to regulate their body _____, and even to breathe.
6. Water's _____ chemical and physical properties make it a substance _____ to all forms of life that are known.

Word Bank

gas	evaporates	temperatures	water	salty	transport
digest	essential	drinkable	unique	ice	survive

Water, Air and the Weather

Lesson 4

1. Biblical Application/Worldview Integration

STEP 1. Read Job 28:24-25a. Underline where the Bible refers to air pressure.

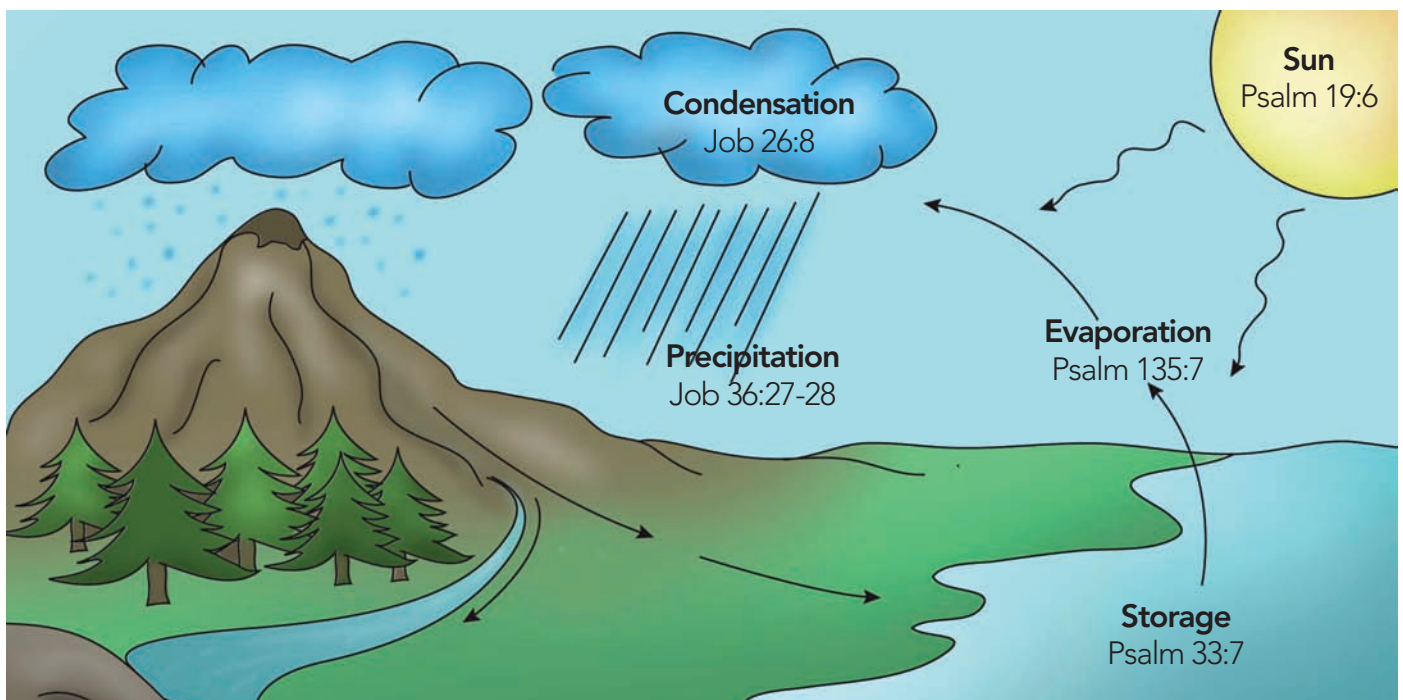
Job 28:24-25a "For He (God) looks to the ends of the earth and sees under the whole heavens; to establish a weight for the wind...."

The weight of the wind is the amount that air presses down on or pushes on anything.

STEP 2. How do you think Job knew that there was a "weight for the wind"?

Job knew there was a "weight for the wind" because God directly told him or he observed it. It does not really matter how Job received this knowledge. It is important that we realize that this knowledge came from God the Creator. Job and other great men of the Bible spoke of great scientific truths that were confirmed much later by complex instruments designed to measure wind, air, and water.

STEP 3. On page 21, label the water cycle by looking up the Scriptures on the diagram.



Lesson 1

Vocabulary

Directions: Match the correct word to the definition by writing the letter of the word in the circle.

Letter	Definition	Word
<input type="radio"/>	1. rock formed by sediments that fall to the bottom of moving water and harden, forming layers	A. sediment
<input type="radio"/>	2. rock formed when melted rocks from inside the earth cool down and harden	B. volcano
<input type="radio"/>	3. a break or crack in the earth's crust	C. sedimentary rock
<input type="radio"/>	4. the carrying away of weathered loose rock or sediments by moving water, wind, ice, or gravity	D. fault
<input type="radio"/>	5. tiny pieces of rock like pebbles, sand, or mud that are deposited at the bottom of the water	E. metamorphic rock
<input type="radio"/>	6. the way a mineral reflects light	F. erosion
<input type="radio"/>	7. a landform in a cone shape with an opening at the top where hot rocks, gases, and ashes sometimes shoot out of its top	G. igneous rock
<input type="radio"/>	8. rock formed when great heat and pressure changes the rock chemically and physically	H. luster

Lesson 1

Introduce Astronomy

IN THIS UNIT, BE READY TO LEARN:

- Two worldviews of how the **universe** began
- What causes solar **eclipses**
- The importance of gravity to light, time, and the age of the **universe**
- The effect of gravity in the **universe**
- The names and diversity of the eight planets in our solar system
- Other celestial bodies in the **universe**
- The difference between astronomy and **astrology**
- The earth's movements and characteristics
- The scaled distances of the planets from the sun
- Facts about astronauts – their life and training

VOCABULARY FOR THIS UNIT:

galaxy—a huge collection of stars

universe—everything in space

Asteroid Belt—a band of rocks held together by gravity that exists between the planets Mars and Jupiter

kilometer—a distance of metric measure; one **kilometer** equals .62 miles

Milky Way—a spiral-shaped **galaxy** filled with many other star systems

astrology—a false religion based on the belief that stars and planets can affect humans' behaviors and futures

eclipse—partial or total blocking of light of one celestial object by another

constellation—a group of stars that form a pattern

natural satellite—a naturally occurring object that orbits a planet; usually a moon

phase—the different shapes of light and shadow that we see when we look at the moon

ellipse—a slightly flattened circle



Earth's tilt and rotation around the sun create seasons, length of days, and makes energy available. The solar system consists of a very large star, the sun, and planets that differ in size, characteristics, and composition. Patterns in the sky were created by God for telling time.

Memory VERSE



Psalm 19:1

“The heavens are telling of the glory of God; and their expanse is declaring the work of His Hands.”
(NASB)

Introduce Astronomy

Lesson 1

1. Biblical Application/Worldview Integration

STEP 1. Genesis 1:1 says, “In the beginning, God created the heavens and the earth.” Creationists and evolutionists disagree about how the universe began. How do creationists believe it began? How do evolutionists believe it began?

The Bible says God spoke and the earth and **universe** appeared by a miracle of His power.

Psalm 33:9 “For He spoke, and it was done; He commanded, and it stood fast.”

Evolution says all the energy and matter of the **universe** was crammed into a really, really tiny ball that exploded with a Big Bang into hydrogen gas. From that gas the stars were created, Earth was formed, and life evolved.

STEP 2. What will decide in somebody’s mind, how old they think the universe is?

What you believe about how the **universe** began will determine how old you think the **universe** is. Your worldview guides your thinking.

The Bible teaches that the entire **universe** was created in six days (see Exodus 20:11). The Bible records the genealogies of the patriarchs (Biblical fathers of the faith) since the Creation of the world. In an earlier chapter, we talked about Ussher’s chronology and the age of the earth. Ussher arrived at the earth’s age by counting the generations of the patriarchs. By doing so, Bible scholars can place the time of Creation to about 6,000 years ago in the year 4004 BC. It should be noted that some Young-Earth Creationists believe that it should be a little older, but no more than 10,000 years ago.

Many people today who believe in the Big Bang Model teach that the **universe** is about 15 billion years old. They think the earth is approximately 4.6 billion years old.