

Lesson 2

Consider the Wonder

Consider: Butterfly Growth

This activity demonstrates the life stages of a butterfly.

1. Prepare

Time Required: 10 minutes for set-up; 3 weeks for observation

Materials:

- Butterfly pavilion with live butterfly larvae

2. What to Do

In this activity you will observe the growth of a butterfly in the stages of **larva**, **pupa**, and adult (the eggs have already hatched into larvae). You will make a hypothesis about what you think you will see. A hypothesis is a scientific guess. Make one hypothesis for each question you see below. Record each hypothesis under **Predictions** in your Science Journal.

- What will happen as the butterfly changes from a **larva** into a **pupa**?
- How will the butterfly's growth take place while it is a **pupa**?

EXPLORE

- Your teacher will set up the butterfly pavilion.
- In the next few weeks, observe the butterfly larvae as they change into pupae and, finally into adults. Record what you see under **Observations** in your Science Journal.

EXPLAIN

- The butterfly larvae (they look like worms) hatched from eggs laid by an adult butterfly. Sometimes we call them caterpillars.
- They will eat the leaves and grow into a **pupa**. They will form a cocoon called a chrysalis. Inside that cocoon, they will rearrange their cells until they are ready to come out as an adult butterfly.

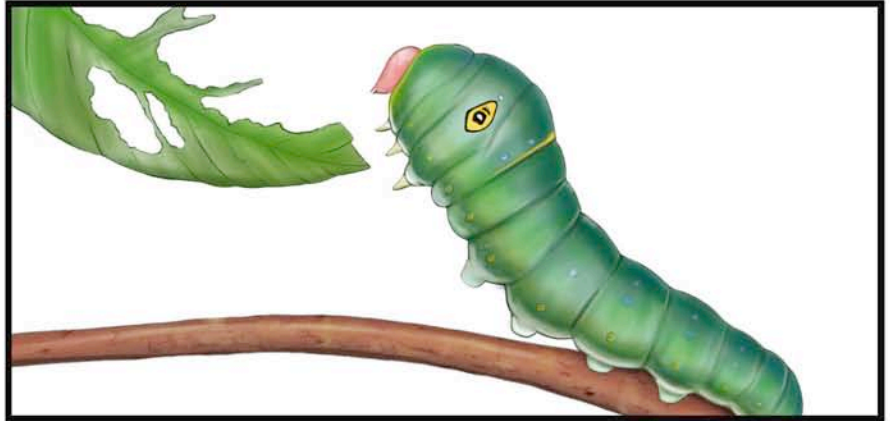
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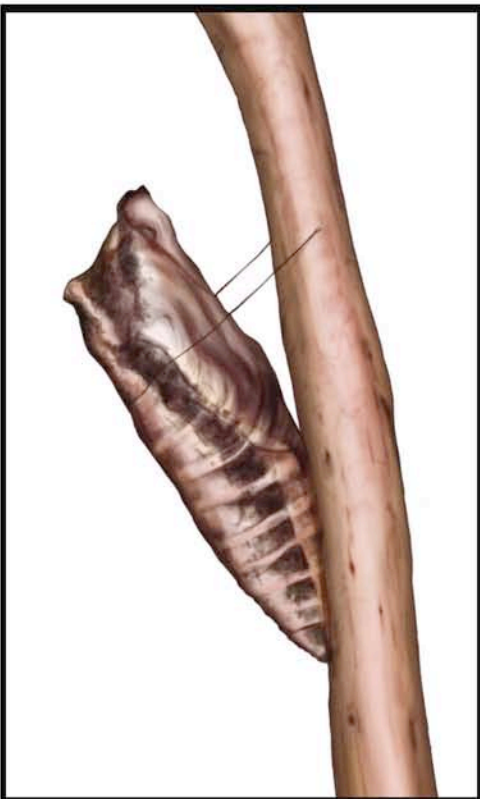
1. Egg



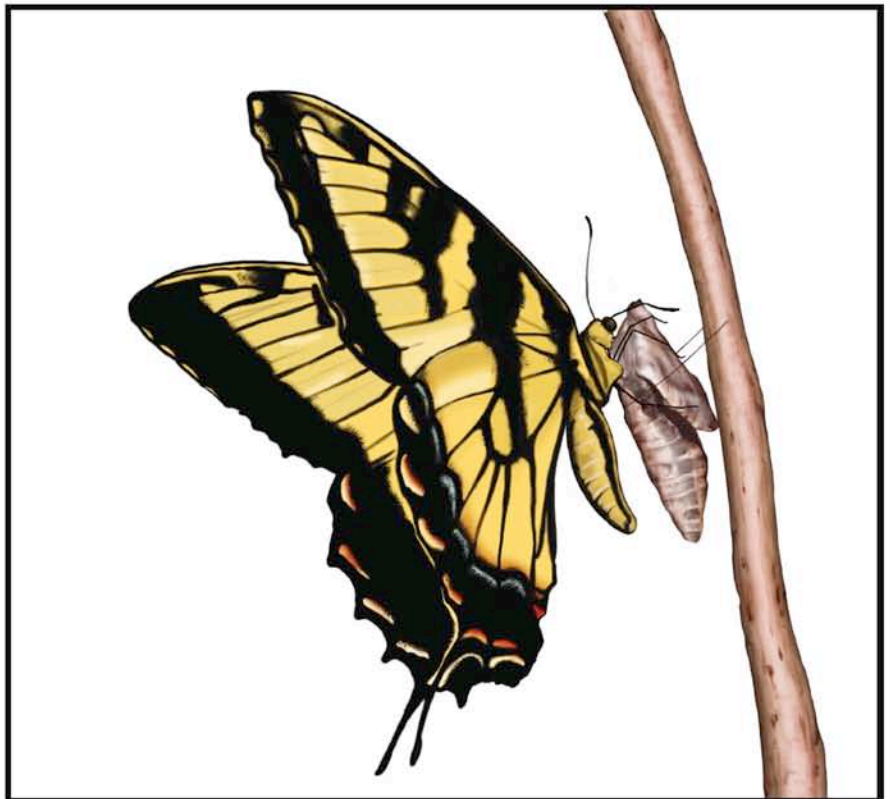
2. Larva (caterpillar)



3. Pupa (cocoon)



4. Adult (butterfly)



Lesson 2

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EXPECTED RESULTS

- You should have seen three of the four life stages of a butterfly: **larva**, **pupa**, and adult.

EXTEND QUESTIONS

- Can you think of any other animals that go through **metamorphosis**? How is it like the butterfly **metamorphosis**? How is it different?
- While the **pupa** is in the cocoon, it cannot protect itself from danger. Why do you think God designed butterflies so they go through this process, even though He knew in the middle of it that they would be in danger?

In the Science Journal provided on the next page, write about your findings and what you learned under **Conclusions**. Be sure to say if your predictions were correct or not. Then tell what you might have done differently to get different results.

Predictions: (I think)

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

Conclusions: (I found out)

Inquire: How Many Breaths?

In this activity, you will see how the wind can move things.

Time Required: 15-20 minutes

Make a Prediction: After you set up your experiment, ask yourself the following questions and record your **Predictions** in your Science Journal:

- How can air move things?
- How can you move things without touching them?

WHAT YOU NEED

- various objects (e.g. pebbles, small toy car, paper scrunched into a ball, crayon or pencil)
- 4-6 feet of floor space
- start and finish line

WHAT YOU WILL DO

- Find four objects that you think you can move, one for each person in the group.
- Select who will go first. That student should begin at the start line with his object. The other students should keep track of how many breaths he blows on the object to get it to the finish line.
- Write the name of the object in the table on the next page. Write how many breaths it took to blow the object across the finish line.
- Repeat until everyone in the group has gone.

Lesson 7

Ask Creation Lab

Object Name	Student	Number of Breaths

WHAT HAPPENED?

- Air can move objects because air has substance.
- When a little air pushes on light objects, they move.
- It takes more air to move heavier objects.
- Some other things affect how much an object moves. Can you name some?
- Which object took fewer breaths to move? Which took the most breaths? Why do you think that is?

WHAT NOW?

- Do you think that wind is important in our **weather**? Why?
- Which objects were easier to blow? How do you know?

In the Science Journal provided on the next page, write about your findings and what you learned under **Conclusions**. Be sure to say if your predictions were correct or not. Then tell what you might have done differently to get different results.

Predictions: (I think)

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

Conclusions: (I found out)

Lesson
5**Volcanoes and Earthquakes****1. Biblical Application/Worldview Integration**

STEP 1. Read Psalm 104:32. What does it sound like the psalmist is describing?

Psalm 104:32 "He looks on the earth, and it trembles; He touches the hills, and they smoke."

1. What does it sound like the psalmist is describing?

When we see nature, we are reminded of God's magnificence. When we see the power of earthquakes and volcanoes, we are reminded of the awesome power of God. These things remind us that He is in control of all nature and Creation.

Do you think God may have used earthquakes and volcanoes to start the Genesis Flood?

STEP 2. What event occurred on May 18, 1980, in the state of Washington that showed how much geologic activity could be accomplished in a very short period of time with the right conditions?

The eruption of the Mount St. Helens volcano created canyons, petrified forests, and 25-foot thick deposits of sediment that turned very quickly into rock.

Evolutionary geologists used to believe that everything in **geology** happens over very long periods of time. They thought that it took millions of years for a small river like the Colorado to cut through rock to form the Grand Canyon. But that is not what they saw happen when Mount St. Helens erupted. So they carefully observed all that happened. Now they understand that with the right conditions—like an earthquake and a volcano—that a lot of changes can happen in a short amount of time. A formation called the Little Grand Canyon was formed at Mount St. Helens in only one day by a huge mudflow in March of 1982.

Volcanoes and Earthquakes

Lesson 5

Nobody was there to see land being formed during the Creation Week except God. Some people refuse to believe that event happened so quickly, because they did not see it. But at Mount St. Helens, everybody did see what can happen in a short amount of time if you have the right conditions. So when you hear the words “millions of years,” remember what was created in less than a day at Mount St. Helens.

2. What event occurred on May 18, 1980, in the state of Washington that showed how much geologic activity could be accomplished in a very short period of time with the right conditions?



**Lesson
5****Volcanoes and Earthquakes****2. Science Instruction**

- **Landforms** are solid features formed on the **crust** of the earth.
- **Landforms** can be formed both slowly and quickly.
- **Magma** is the melted rock in the **mantle** of the earth.
- **Lava** is the melted rock that comes out onto the surface of the earth. One way to remember this is: "**Magma** flows in the **Mantle** in the Middle of the earth. **Lava** flows on Land."
- A volcano forms when a deep crack opens in the **crust** of the earth allowing **magma** to come up to the surface.
- When volcanoes erupt, they add new rock material to the surface of the earth.
- Earthquakes are caused by sudden shifts of pieces of the earth's **crust**.
- Most earthquakes occur at faults (large cracks) in Earth's **crust**.
- Earthquake vibrations can cause a lot of damage by causing huge waves, landslides, and by crumbling buildings.



Volcanoes and Earthquakes

Lesson 5

Science Review

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

1. **Landforms** are solid _____ formed on the **crust** of the earth.
2. _____ can be formed both slowly and quickly.
3. _____ is the melted rock in the **mantle** of the earth.
4. The melted rock that comes out onto the surface of the earth is called _____.
One way to remember this is: "**Magma** flows in the **Mantle** in the Middle of the earth. **Lava** flows on Land."
5. A _____ forms when a deep crack opens in the **crust** of the earth allowing **magma** to come up to the surface.
6. When volcanoes erupt, they add new _____ material to the surface of the earth.
7. _____ are caused by sudden shifts of pieces of the earth's **crust**.
8. Most earthquakes occur at _____ (large cracks) in the earth's **crust**.
9. Earthquake vibrations can cause a lot of damage by causing huge _____, _____, and by crumbling buildings.

Word Bank

lava	waves	landforms	volcano	faults
earthquakes	features	magma	rock	landslides

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. one complete turn-around of an object	A. axis
<input type="radio"/>	2. the study of the sun, moon, planets, and stars	B. orbit
<input type="radio"/>	3. a line going straight between the north and south poles of a planet	C. star
<input type="radio"/>	4. the sun and everything that revolves around it	D. astrology
<input type="radio"/>	5. the path of a revolution	E. astronomy
<input type="radio"/>	6. one complete trip by one object around another	F. solar system
<input type="radio"/>	7. a huge ball of hot, glowing gases	G. revolution
<input type="radio"/>	8. a false science based on the belief that stars and planets can affect human behavior and can tell fortunes	H. rotation

Directions:

1. From the vocabulary list, choose one word you would like to learn more about. Copy the word and its definition in the "I Know" box.
2. What else would you like to learn about this word? Write your questions in the "I Wonder" box.
3. As you study this chapter, look for the answers to your questions.
4. At the end of the chapter, fill in the "I Learned" box.

I KNOW...

I WONDER...

I LEARNED...
