

## GRADING RUBRIC

You may use this grading rubric when it is called for in the Report-to-You Projects during Lesson 8.

### Project Visuals (20 points)

Scientific accuracy  
Complete according to directions  
Neatness

### Written Report (20 points)

Complete according to directions  
Neatness

### Project Creativity (20 points)

#### Oral Presentation (20 points)

Eye contact  
Voice projection  
Confidence in material

### Worldview Accuracy (20 points)

Truth in Science - Science Criteria for Content (Breakdown by Grade Level and Unit)		
	Grades 3-4	Grades 5-6
Life	Science as a human endeavor Science as inquiry	Science as a human endeavor Nature of science Science as inquiry
Earth	The characteristics of organisms Life cycles of organisms Organisms and environments Characteristics and changes in populations Types of resources Changes in environments	Structure and function in living systems Reproduction and heredity Regulation and behavior Populations and ecosystems Diversity and adaptations of organisms Populations, resources, and environments Natural hazards
Physical	Properties of earth materials Objects in the sky Changes in earth and sky Understanding about science and technology Abilities of technological design Distinguish between natural and man-made objects Types of resources Science and technology in local challenges	Structure of the earth's system Earth in the solar system Earth's history Abilities of technological design Understanding about science and technology Populations, resources, and environments Natural hazards Science and technology in society

Grade 5 - Science Standards for Content (Breakdown by Chapter)	
Chapter 1 - Worldview	Science Criteria Content
<ul style="list-style-type: none"> <li>• Introduce Worldview</li> <li>• Consider the Wonder: What is Viewpoint?</li> <li>• What is Worldview?</li> <li>• What is Evolution?</li> <li>• Contrasting Worldviews—Creation and Evolution</li> <li>• Compromising Beliefs About Evolution and Creation</li> <li>• Ask Creation Lab: What is the Scientific Method?</li> <li>• Report-to-You Project: Dinosaur Scavenger Hunt</li> </ul>	<ul style="list-style-type: none"> <li>• Science as a human endeavor</li> <li>• Nature of science</li> <li>• Science as inquiry</li> </ul>

<b>Chapter 2 - Classification</b>	
<ul style="list-style-type: none"> <li>• Introduce Classification</li> <li>• Consider the Wonder: Alphabet Zoo</li> <li>• Classification</li> <li>• Process of Classifying Vertebrates</li> <li>• Process of Classifying Invertebrates</li> <li>• Process of Classifying Plants</li> <li>• Ask Creation Lab: How are They Alike and Different?</li> <li>• Report-to-You Project: Classification Everyday</li> </ul>	<ul style="list-style-type: none"> <li>• Nature of science</li> <li>• Science as inquiry</li> <li>• Structure and function in living systems</li> <li>• Reproduction and heredity</li> </ul>
<b>Chapter 3 - Plants</b>	
<ul style="list-style-type: none"> <li>• Introduce Plants</li> <li>• Consider the Wonder: What are a Flower's Parts?</li> <li>• Leaves of a Plant</li> <li>• Stems and Roots</li> <li>• Plant Reproduction</li> <li>• How Plants Grow</li> <li>• Ask Creation Lab: What Color is a Leaf?</li> <li>• Report-to-You Project: Flower Power</li> </ul>	<ul style="list-style-type: none"> <li>• Structure and function in living systems</li> <li>• Reproduction and heredity</li> <li>• Diversity and adaptations of organisms</li> </ul>
<b>Chapter 4 - Cells</b>	
<ul style="list-style-type: none"> <li>• Introduce Cells</li> <li>• Consider the Wonder: Cells In Your Body</li> <li>• Inside a Cell</li> <li>• Cells Work Together</li> <li>• Organs Work Together</li> <li>• Species Change</li> <li>• Ask Creation Lab: Why Are Cells So Small?</li> <li>• Report-to-You Project: Cell Model</li> </ul>	<ul style="list-style-type: none"> <li>• Science as inquiry</li> <li>• Structure and function of living systems</li> <li>• Reproduction and heredity</li> </ul>
<b>Chapter 5 - Ecology</b>	
<ul style="list-style-type: none"> <li>• Introduce Ecology</li> <li>• Consider the Wonder: Environment's Effects</li> <li>• Ecosystems</li> <li>• Biomes of the World</li> <li>• Living Together and Energy</li> <li>• Cycles</li> <li>• Ask Creation Lab: What Does an Owl Eat?</li> <li>• Report-to-You Project: Biomes</li> </ul>	<ul style="list-style-type: none"> <li>• Science as a human endeavor</li> <li>• Structure and function in living systems</li> <li>• Regulation and behavior</li> <li>• Populations and ecosystems</li> <li>• Diversity and adaptations of organisms</li> <li>• Populations, resources, and environments</li> <li>• Understanding about science and technology</li> </ul>
<b>Chapter 6 - Meteorology</b>	
<ul style="list-style-type: none"> <li>• Introduce Meteorology</li> <li>• Consider the Wonder: Cooling Water</li> <li>• Oceans and Fresh Water</li> <li>• Water Cycle and Clouds</li> <li>• Air Movements and Masses</li> <li>• Climate</li> <li>• Ask Creation Lab: Salt Water and Fresh Water</li> <li>• Report-to-You Project: Monitoring the Weather</li> </ul>	<ul style="list-style-type: none"> <li>• Science as inquiry</li> <li>• Natural hazards</li> <li>• Structure of the earth's systems</li> <li>• Abilities of technological design</li> <li>• Understanding about science and technology</li> <li>• Science and technology in society</li> </ul>
<b>Chapter 7 - Geology</b>	
<ul style="list-style-type: none"> <li>• Introduce Geology</li> <li>• Consider the Wonder: Dissolving Carbonates</li> <li>• Structure of the Earth</li> <li>• Minerals and Rocks</li> <li>• Weathering and Erosion</li> <li>• Earthquakes and Volcanoes</li> <li>• Ask Creation Lab: How is an Earthquake Measured?</li> <li>• Report-to-You Project: Soil Formation</li> </ul>	<ul style="list-style-type: none"> <li>• Nature of science</li> <li>• Science as inquiry</li> <li>• Natural hazards</li> <li>• Structure of the earth's systems</li> <li>• Earth's history</li> <li>• Understanding about science and technology</li> </ul>

## Chapter 8 - Earth's Resources

- Introduce Earth's Resources
- Consider the Wonder: Absorbing Solar Energy
- Nonrenewable Energy
- Other Energy Resources
- Conserving Resources
- Technology In Our Lives
- Ask Creation Lab: How Can I Reuse Materials?
- Report-to-You Project: Spice Maps

- Science as a human endeavor
- Populations and ecosystems
- Populations, resources, and environments
- Structure of the earth's system
- Earth's history
- Abilities of technological design
- Science and technology in society

## Chapter 9 - Astronomy

- Introduce Astronomy
- Consider the Wonder: Sun Affecting Temperatures
- Stars and Galaxies
- Earth's Movements
- Parts of the Solar System
- The Moon and its Movement
- Ask Creation Lab: How Can I Tell Time?
- Report-to-You Project: Nebula Picture Book

- Science as inquiry
- Earth in the solar system
- Abilities of technological design
- Understanding about science and technology

## Chapter 10 - Matter

- Introduce Matter
- Consider the Wonder: Changing Phases
- Describing Matter
- Measuring Matter
- Physical Changes
- Chemical Changes
- Ask Creation Lab: Salty Water?
- Report-to-You Project: Atomic 3-D

- Science as inquiry
- Structure and function in living systems
- Structure of the earth's system

## Chapter 11 - Forces and Energy

- Introduce Forces and Energy
- Consider the Wonder: Bending Light
- Force and Motion
- Electricity and Magnetism
- Kinetic and Potential Energy
- Nuclear and Sound Energy
- Ask Creation Lab: Do Force and Mass Affect Motion?
- Report-to-You Project: Relative Gravity and Weight

- Science as inquiry
- Structure and function in living systems
- Natural hazards
- Structure of the earth's systems

## STEP 2—Classification

### LESSON 1

1. Why do we classify living things? To study them
2. Botany is the study of plants.
3. What is a Biblical Kind? Plants and animals that can have babies/offspring that are like themselves
4. Fill in the blanks with Biblical facts that explain how Adam could have named the animals.

Did not have to gather the animals

Did not have to name millions/each type of animals

Was created fully grown/mature with ability to talk

Was created with perfect memory/creativity/intelligence

1. What word occurs in both Genesis 1:1 and Genesis 1:21? Created
2. How do you think the Bible defines life? Answers will vary
3. What are the primary differences in the way modern science classifies life and the way the Bible classifies life? Evolution assumes all life evolved from nonlife; the Bible assumes God created everything basically as we see it today

### SCIENCE REVIEW

1. Biologists are scientists who study living things.
2. If something is alive, it shares life processes. A living thing must do all of the 7 life processes to be considered alive. The life processes are: respiration, nutrition, growth, movement, sensitivity (to stimuli), excretion, and reproduction.
3. Biologists classify living things, or put living things in groups, to study, compare and identify. A classification system organizes information for communication.
4. The classification system has been developed over many years by many different people.
5. Kingdoms in the secular system include:
  - a. Animalia – all animals
  - b. Plantae – all plants
  - c. Fungi – this is the fungus group
  - d. Protista – these are microscopic living things hard to tell if they are really plants or animals

### LESSON 3

## STEP 2—Classification

L3

- e. Monera – these are the bacteria, which have no nucleus in their cell. Evolutionists have broken bacteria in the Moneran group into two more groups: the Archaeobacteria and Eubacteria. “Archae” just means “ancient” and “Eu” means “true”. Evolutionists believe that some bacteria are “more evolved” than others. The Archaeobacteria are the ones they say we evolved from.

1. Who was Carolus Linnaeus? The creationist who developed the modern system of classification
2. Is a Biblical Kind the same as a species? No
3. How is the classification system used to support the Evolutionary Model? By using common ancestors as one of the characteristics used for classification

### SCIENCE REVIEW

1. Vertebrates are all animals that have a backbone. These include the following Classes:
  - a. Agnatha – the jawless fishes, like lampreys
  - b. Chondrichthyes – the cartilage fishes, like sharks, rays, and skates
  - c. Osteichthyes – the bony fishes; all the other types of fishes that have bones; (“osteo” means bone)
  - d. Amphibia – live part of life in water and part on land; frogs, toads, newts, and salamanders
  - e. Reptilia – the reptiles; all have scaly body covering; some lay eggs and some have live births
  - f. Aves – the birds; all lay eggs; (aviation means flying)
  - g. Mammalia – the mammals; a few lay eggs, like the platypus and echidna; most have live births, hair on their bodies, and nurse their young
2. Evolutionists will classify humans as being within the mammal group. Humans do have the same body features as animals in the mammal group. But evolutionists put us in that group because they think we came from that group.
3. Evolutionists place humans in the Mammal Order of Primate. That is because we have fingernails instead of claws and we have a thumb on our hands.

LESSON 4

LESSON 5

1. Describe in your own words how this amazing process is evidence of a Master Creator. Answers will vary
2. Is the metamorphosis of the ladybug evidence of evolution? Why or why not? Answers will vary

## STEP 2—Classification

### LESSON 5

3. What is incomplete metamorphosis? A type of body change where there are only 3 stages; the nymph looks like the adult

#### SCIENCE REVIEW

1. Most of the world's animals are invertebrates. Invertebrates don't have backbones. They can have soft sacs or hard shells for support.
2. Invertebrates can range in length from microscopic to the width of a basketball court.
3. Scientists have named more than a million species of invertebrates. Some Phyla of invertebrate groups are sea jellies, starfish, corals, mollusks, worms, and arthropods.
4. Arthropods make up the largest group of invertebrates. These are animals with jointed legs and separated body parts. The word "arthritis" means "inflamed joints". The word "arthro" means joint. All arthropods have an exoskeleton – hard parts on the outside of the body instead of on the inside, as in the vertebrates.
5. Arthropods include Class Insecta, Class Crustacea, and Class Arachnida (spiders).
6. Some arthropods experience big changes in their life cycle. Complete metamorphosis is four stages: egg, larva, pupa, and adult. Moths, butterflies, and houseflies experience complete metamorphosis.
7. Some arthropods experience incomplete metamorphosis which is three stages: egg, nymph, and adult.
8. A dichotomous key is an organized series of questions designed to lead to the identification of an unknown organism.

### LESSON 6

1. Fill in the blanks [with plants] identified in the Bible.  
Should be, in order: grass, herb, tree
2. How does modern science classify plants? Mosses, ferns, conifers, flowering plants

#### SCIENCE REVIEW

1. Plants are different from animals in that they produce their own food, using sunlight, water and carbon dioxide to make sugar.
2. Plants have distinctive features like stems, roots and leaves. Plants are multicellular, just like animals.
3. Plants are sorted in the secular system by how they transport water and how they reproduce. Most plants are vascular which means there are tubes for carrying water and food to all the areas of the plant. Plants reproduce by flowers and seeds, cones and seeds or spores.
4. There are four plant phyla: the flowering plants called angiosperms, conifers- called gymnosperms, byrophytes - seedless, nonvascular plants like mosses, and pterophytes - seedless, vascular plants like ferns.

## STEP 2—Classification

### Quiz Answer Key

1. A      6. F      10. Humans classify things because that is the way they relate to their environment. It the way they think; Scientists classify to identify and study living things; God commanded that we “subdue and have dominion”.
2. B      7. T
3. B      8. T
4. B      9. F
5. B
- 11. Bonus:** Genesis 2:19 “Out of the ground the Lord God formed every beast of the field and every bird of the air, and brought them to Adam to see what he would call them. And whatever Adam called each living creature, that was its name.”

### Test Answer Key

1. D      8. T      13.C      19. Kingdom, Phylum, Class, Order, Family, Genus, Species
2. A      9. T      14.A
3. C      10.T      15.D
4. C      11.F      16.B
5. D      12.T      17.F
6. B      18.E
7. B
- 20.** Answers will vary. A possible answer would be that man is a special Creation of God. Man is a child of God.
- 21. Bonus:** Same as quiz.

## STEP 5—Ecology

### LESSON 5

4. Energy flows through an ecosystem. Nutrients are recycled in an ecosystem.
5. Producers (plants) make their own food. Consumers eat producers for energy. Decomposers eat waste or dead organisms.
6. An energy pyramid is a diagram that shows the amount of energy that flows through each level of a food chain. Less energy flows through the higher levels of an energy pyramid because by the time it gets to the top-order consumers, most of the original energy made by the plants has been used up to do life activities by the lower consumers on the pyramid.

1. Does the Bible talk about cycles? Yes
2. What specific examples of cycles in the Bible can you name? Answers will vary

### SCIENCE REVIEW

1. In an ecosystem, a substance may be passed from one organism to another. There is constant cycling of minerals and nutrients that pass from living organisms to soil and then back to living things.
2. Producers are organisms that originally make the organic materials needed by the ecosystem. They also absorb all of the inorganic nutrients and minerals from the soil that are needed by the other living things in the ecosystem.
3. Decomposers are organisms that eat waste and break down dead matter. The niche of a decomposer is to recycle wastes and dead material to be used again.
4. Fire can also break down matter, but it also destroys some of the more complex organic nutrients that are needed in the cycles. The pure carbon and other elements found in the ashes may become part of the soil again. The producers will gradually come back into a burn area, and will once again uptake these substances through their roots, and so the cycle begins again.
5. The nitrogen cycle provides the nitrogen that plant and animal cells need to do their work. Nitrogen cycles through the ecosystem within the food chain from the plants and animals that are eaten. It is an important part of many proteins, and also of both DNA and RNA.
6. Nitrogen compounds are made from nitrogen in the air by lightning, soil bacteria, and some plants that keep some of these bacteria in special chambers in their roots. Nitrogen gas composes about 78% of the Earth's atmosphere. It is abundant as a gas, but cannot be used until the lightning and bacteria convert it for us.
7. Carbon dioxide is breathed in by plants and then they breathe out oxygen. This works well for the animals, as they need the oxygen. Animals then breathe out the carbon dioxide. This works well for the plants, because they need that. It is easy to see in this example how living things are dependent on one another. The carbon cycle has many other additional paths through an ecosystem.

### LESSON 6

## STEP 5—Ecology

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8. Oxygen is the second most abundant gas in the atmosphere. Oxygen makes up 21% of the air. Without the green plants, it would soon all be used up by the animals and would all be gone. All animal life would then cease to exist on Earth.

### Quiz Answer Key

- |      |      |   |
|------|------|---|
| 1. A | 6. F | 10. All the parts in earth's cycles had to be in place quickly, balanced and fully functioning from the very beginning and could not have developed slowly over time or they would not have worked.   |
| 2. C | 7. T |   |
| 3. A | 8. T |   |
| 4. A | 9. F | 11. <b>Bonus:</b> Romans 8:19-21 "For the earnest expectation of the creation eagerly waits for the revealing of the sons of God. For the creation was subjected to futility, not willingly, but because of Him who subjected it in hope; because the creation itself also will be delivered from the bondage of corruption into the glorious liberty of the children of God. |
| 5. B |      |   |

### Test Answer Key

- |      |       |       |   |
|------|-------|-------|---|
| 1. B | 8. T  | 13. E | 19. Possible answer would be: Since the tropical rain forest is located near the equator it is warm all year long. It also receives a lot of rain. The organisms that live there would have to be suited to the warm, wet climate. Trees grow very big there with a lot of thick foliage. Animals living on the ground would have features that would allow them to move through the thick vegetation on the ground. Minimal light would penetrate the thick canopy of the trees. |
| 2. B | 9. F  | 14. C |   |
| 3. B | 10. F | 15. D |   |
| 4. A | 11. T | 16. A |   |
| 5. B | 12. T | 17. F |   |
| 6. A |       | 18. B |   |
| 7. B |       |       |   |
20. Possible answer: By filling in the wetlands, the natural habitat for many plants and animals would be gone. This change could affect entire species by displacing them. Natural predators, like alligators, could lose their fear of man due to a lack of food supply and people could be harmed.
21. **Bonus:** Same as quiz.