

Kolbe Academy Home School

GRADE FOUR SCIENCE

Harcourt Science 3/4 (Red)

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Teachers' Notes: Begin every class with a prayer. This is a good way to help the child memorize new prayers. Repeat the same ones every day until they are known. Be sure to explain the meanings of the prayers. Repetition in all areas of study is most beneficial. In most cases, Fridays have been left open. You may do a four-day week or use Friday as a "catch-up" day. While art and music should be worked in during the week, Friday is also a good day to concentrate on those subjects.

Your student may not need all of Week 8 for review. You can use this time to catch up and then go over the subject matter. If you intend to use the sample tests provided, look them over before teaching the subjects and make sure you teach the material in the tests. Some children have a difficult time doing written exams, but it is important for them to learn how to take them. If your fourth grader does poorly on them, give them to him a couple of days after he has taken them and average the grades.

COURSE TITLE: Science**COURSE DESCRIPTION:**

Fourth grade science continues the basic introduction to the life, earth, and physical sciences. The most important part of teaching science in the early years is helping the student see the wonders of God's world, and making him unafraid of the subject when he pursues science in more depth later. Children learn more from doing the experiments and investigations alongside the reading of the textbook.

The Harcourt Science series has the availability of several online learning tools to anyone who purchases the textbook. The first is provided by the publisher, Harcourt. Simply go to www.harcourtschool.com and click on the Learning Site. This will take you to a login page in which you will be instructed how to gain access to the site. *Be sure to put Kolbe Academy as the school!* This will help create fewer problems when you are trying to gain access to the website. There are several supplementary activities for the student and teacher on this website. Another website is provided by the National Science Teachers Association (NSTA) at www.scilinks.org/harcourt. This website allows you to select the topic you are studying in the book, and will take you to a page of selected website links that can help you to enhance and further develop the topics that your child is studying. Be sure to select **Grade 4** to see the topics that correspond to the book you are using. The online resources are a wonderful addition to the activities provided within the text itself.

COURSE OBJECTIVES:

This course is a continuation of the work of the first and second grades in the further development of scientific skills necessary to apply the scientific method:

- ❖ the observation and examination of data
- ❖ experimentation
- ❖ formulations of explanations by means of hypotheses and theories
- ❖ testing the hypotheses

Introduction to scientific concepts

- ❖ introduction to basic science vocabulary in preparation for later coursework
- ❖ introduction to the three main disciplines in science: life, earth, and physical science

SCOPE AND SEQUENCE:

1. **Life Science:** Looking at Ecosystems
 - a. Ecosystems: Components, habitats, rain forests, coral reefs
 - b. Protecting Ecosystems: Conservation
2. **Earth Science:** Patterns on Earth and in Space
 - a. Weather Conditions: The atmosphere, air masses and fronts, and weather prediction
 - b. The Oceans: Water cycle, ocean floor
 - c. Planets and Other Objects in Space: Earth, moon, planets

3. **Physical Science:** Forces and Motion
- Electricity and Magnetism
 - Motion and Forces at Work:
 - Simple Machines: Levers, pulleys, and wheels

SKILLS TO BE DEVELOPED:

- ❖ Observation and forming of hypotheses
- ❖ Keeping accurate notes
- ❖ Analyzing scientific data accurately
- ❖ Measuring with precision
- ❖ Drawing conclusions
- ❖ Reporting findings

INVESTIGATION MATERIALS:

The following are a list of the harder to find materials used in the corresponding investigations throughout the course. If at any point finding the materials becomes a hardship, the parent should feel free to skip the investigation for that week. **A comprehensive list of materials for the investigations is included at the very end of the course plan (located after the quarterly exams).**

SUGGESTED MATERIALS NEEDED FOR INVESTIGATIONS	INVESTIGATION PAGE
Gravel	B4
Sand	B4
Soil	B4
6 small plants	B4
Meterstick	B10, B50
Hand trowel	B10
Hand lens	B10
Modeling clay	B26, D32, D46
Fishing line	B26
Pipe cleaners (chenille stems)	B26
Aquarium gravel	B50
Plastic green plants	B50
Colored ice cube	D38
Grid or graphing paper	D38
D-cell battery	F10, F22
Miniature light bulb	F10
Bar magnet	F16, F22
Insulated electrical wire	F10, F22
Compass	F22
2 spring scales (a fishing scale works well)	F44

COURSE TEXT: *Harcourt Science, 4th Grade* (Copyright 2005), Red book with parrot on cover

COURSE PLAN METHODOLOGY: *Harcourt Science* is represented by the abbreviation **HAR**. Each weekly assignment is summarized in the first line of the week’s daily course plan. The specific daily assignments are outlined in the following lines indicated by the **MON, TUES, WED, and THUR** abbreviations.

Kolbe Academy has worked diligently to create the best possible course plans with the home schooling family in mind. Remember, however, that our program is intended to be flexible. Per the principle of subsidiarity, these course plans are a **suggested** course of study. As the teacher, you should adapt and modify these course plans to meet the individual learning needs of your child. **Do not feel obligated to follow these course plans exactly.**

◆◆◆ **FIRST QUARTER** ◆◆◆

WEEK 1	
Throughout the year, there will be several opportunities for hands-on scientific investigations. These investigations will be a wonderful tool for understanding the material in each lesson. This week the students will concentrate mainly on reading about the processes involved in making a proper scientific investigation. This includes <u>working safely and appropriately in the laboratory.</u>	
Goals: To learn about the scientific method and to understand how to be safe when performing investigations.	
Pages x – xii	Go over the steps of the scientific method with the student before beginning any investigations. You may choose to do the marigold seed experiment outlined on these pages if you wish, although it is for demonstration of the scientific method.
Pages xiii – xvii	These pages give good examples of the scientific method in action. For future investigations, students can be asked to research what materials that may be needed for the upcoming week’s investigation.
Pages xxii – xxiii	There will be some application of the students’ mathematics skills throughout the lessons and investigations. These pages will explain the importance of accurate measurements and application of math skills to interpret collected data.
Page xxiv	It is very important for the student to develop a sense of responsibility within the laboratory. Although the investigations are fairly safe, understanding safety at this age will ensure that they will work safely in a laboratory environment in later years. Discuss each safety rule with the child and ask him what would happen if each rule were not followed.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Notes</div>	
WEEK 2	
◆◆◆ UNIT B: Looking at Ecosystems ◆◆◆	
Chapter 1 Lesson 1	Goals: To understand what makes up a system and how that system remains stable. Have the student answer the embedded “check” questions orally after reading.
Pages B4 – B5	Investigation: How Parts of a System Interact. Be sure to have the student check that the roots of the plants are secure in the soil and that the terrariums have been sealed tightly. The terrariums

	should receive at least 3 hours of sunlight daily. The student will find that plants need plenty of sunlight to survive. Have the student answer the embedded "check" questions orally after reading.
Pages B6 – B7	Discussion: Emphasize to the student that a system is made up of many parts that work together. Have them name some systems and the parts that make the system work (i.e. the human body). Have the student look at the picture of the yard. Discuss with the student the parts of the system that exist in the yard, both pictured in the diagram and not pictured (like pipes that deliver the water to the yard). Have the student answer the embedded "check" questions orally after reading these pages.
Pages B8 – B9	Discussion: Emphasize that many systems have regular patterns of change, but that these patterns balance each other out to keep the system stable. Have the student answer the embedded "check" questions orally after reading these pages.
Page B9	Have the student answer the Review Questions at the end of the lesson on a separate piece of paper. Go over the questions with the student so he understands the correct answers.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Notes</div>	
WEEK 3	
Chapter 1 Lesson 2	Goals: To understand the basic parts and organization of an ecosystem. Have the student answer the embedded "check" questions orally after reading.
Pages B10 – B11	Investigation: An Ecosystem. Have the student classify the organisms they find as a plant, animal, or fungus (i.e. moss). You may want to review Chapter 1 of Unit A for specific characteristics of plants, animals, and fungi. The student will discover all of the different organisms that live in a small area near your home. Have the student draw conclusions by answering the questions at the end of the investigation.
Pages B12 – B13	Discussion: Several living things and their environment make up a single ecosystem. Organisms of the same species form populations of the ecosystem. Have the student hypothesize about why different organisms survive in different types of environments (the type of adaptations let each organism survive in an environment that meets their needs). Have the student observe the pictures on page B12 and B13. Ask the student which plant is the most prevalent in this particular ecosystem (red mangrove tree) and what the role of this plant is for the ecosystem (provide shelter for animals to live).
Pages B14 – B15	Discussion: Have the student compare the ways in which plants and animals depend on each other to survive. Have the student read "The Inside Story" and make predictions on which seedling would be the most likely to become a full-grown healthy tree.
Pages B16 – 17	Emphasize to the student that non-living parts of an ecosystem are just as important as the living parts of the ecosystem. Have the student answer the Review Questions at the end of the lesson on a separate piece of paper. Go over the questions with the student so he understands the correct answers.