

# Kolbe Academy Home School

## GRADE FOUR SCIENCE *Harcourt Science 3/4 (Red)*

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**COURSE TITLE:** Science

**COURSE TEXT:** *Harcourt Science, 4<sup>th</sup> Grade*, Harcourt Publishing, 2005, (T4824)  
 Kolbe Academy Answer Key for Harcourt Science 3/4, (T4824A), Optional  
*Harcourt Science Workbook 4<sup>th</sup> Grade*, Harcourt Publishing, (T4824B), Optional  
*Harcourt Science, 4<sup>th</sup> Grade Workbook Teacher Manual*, (T4824C), Optional

**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](http://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](http://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, second, and third 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:**

**This course plan covers the following units in the Harcourt Science Grade 4 textbook:**

**Unit B: Life Science:** Looking at Ecosystems

**Unit D: Earth Science:** Patterns on Earth and in Space

**Unit F: Physical Science:** Forces and Motion

**Quarter 1**

1. Unit B, Chapter 1: Ecosystems: Components, habitats, rain forests, coral reefs
2. Unit B, Chapter 2: Protecting Ecosystems: Conservation

**Quarter 2**

1. Unit D, Chapter 1: Weather Conditions: The atmosphere, air masses and fronts, and weather prediction
2. Unit D, Chapter 2: The Oceans: Water cycle, ocean floor

**Quarter 3**

1. Unit D, Chapter 3: Planets and Other Objects in Space: Earth, moon, planets
2. Unit F, Chapter 1: Electricity and Magnetism

**Quarter 4**

1. Unit F, Chapter 2: Motion and Forces at Work:
2. Unit F, Chapter 3: 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, Sand, 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 PLAN METHODOLOGY:**

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 them to meet the individual learning needs of your child. **Do not feel obligated to follow these course plans exactly.**

In the course plans that follow, *Harcourt Science* is represented by the abbreviation **HAR**. Each weekly assignment is summarized in the first rows of the week's daily course plan along with the goals and notes for that week. The specific daily assignments for the student are outlined in the following lines indicated by the **DAY 1, DAY 2, DAY 3, and DAY 4** abbreviations. Parent daily guidelines are given to the left of the student assignments. Most families will use Days 1-4 as a Monday through Thursday schooling schedule. This leaves Friday open for review, catch-up, field trips, or other activities. A family's schedule can and should vary as needed.

A weekly grade book is included at the end of the week's course plan *as a convenience*. Parents should use the grade book only as a help to their homeschooling and not as a hindrance. It includes a cumulative list of written assignments from the week's course plan as well as space for additional assignments, if needed. **Kolbe Academy does not require that you keep record of all student work.** If you intend to report your student's work to Kolbe Academy for an official record, only one sample of written and graded work is required per quarter per course along with the signed and filled out report card. The weighting suggestion in the end of quarter grade book is there for *convenience* and may be modified as the parent deems fit. Please consult the welcome packet for a full tutorial on using the grade book.

This science course contains 36 weeks broken into four 9-week quarters. Week 8 is considered a review week and week 9 is dedicated strictly to examination. Your student may not need all of Week 8 for review. You can use this time to catch up if necessary and then go over the subject matter. **If you intend to use the tests provided, look them over before teaching the subjects and make sure you review the material in the tests throughout the quarter.** 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 orally a couple of days after he has taken them and average the grades.

Finally, 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.

◆◆◆ FIRST QUARTER ◆◆◆

WEEK 1				
Book	Weekly Breakdown	Goals and Notes for the Week		
HAR	Introduction: Pages x-xvii Pages xxii-xxiv	To learn about the scientific method and to understand how to be safe when performing investigations. 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 student will concentrate mainly on reading about the processes involved in making a proper scientific investigation. This includes working safely and appropriately in the laboratory.		
Notes				
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines	
DAY 1	HAR Read pages x-xii	<input type="checkbox"/>	Read 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.	
DAY 2	HAR Read pages xiii-xvi	<input type="checkbox"/>	Read pages xiii-xvii. These pages give good examples of the scientific method in action. For future investigations, the student can be asked to research what materials that may be needed for the upcoming week's investigation.	
DAY 3	HAR Read pages xxii-xxiii	<input type="checkbox"/>	Read pages xxii-xxiii. There will be some application of the student's 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.	
DAY 4	HAR Read page xxiv	<input type="checkbox"/>	Read 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.	
Week 1 Grade Book				
Assignments	Include <input checked="" type="checkbox"/>	(A) Points Earned	(B) Possible Points	A/B x100 =% (C)
Other:	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
<b>Week 1 Average</b>	<b>Add up column C &amp; divide by number of included <input checked="" type="checkbox"/> assignments =</b>			<b>%</b>

WEEK 2				
◆◆◆ UNIT B: Looking at Ecosystems ◆◆◆				
Book	Weekly Breakdown	Goals and Notes for the Week		
HAR	Chapter 1, Lesson 1	To understand what makes up a system and how that system remains stable.		
Notes				
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines	
DAY 1	HAR Do Investigation	<input type="checkbox"/>	Investigation pages B4-B5: 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. <b>Have the student draw conclusions by answering the questions at the end of the investigation.</b>	
	HAR Draw Conclusions	<input type="checkbox"/>		
DAY 2	HAR Read pages B6-B7	<input type="checkbox"/>	Have the student read 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). <b>Have the student answer the embedded "check" questions orally after reading these pages.</b>	
	HAR Answer check questions	<input type="checkbox"/>		
DAY 3	HAR Read pages B8-B9	<input type="checkbox"/>	Have the student read 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. <b>Have the student answer the embedded "check" questions orally after reading these pages.</b>	
	HAR Answer check questions	<input type="checkbox"/>		
DAY 4	HAR Answer Review questions	<input type="checkbox"/>	On 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.	
Week 2 Grade Book				
Assignments	Include <input checked="" type="checkbox"/>	(A) Points Earned	(B) Possible Points	A/B x100 =% (C)
Draw Conclusions	<input type="checkbox"/>			
Review questions	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
<b>Week 2 Average</b>	<b>Add up column C &amp; divide by number of included <input checked="" type="checkbox"/> assignments =</b>			<b>%</b>