

Kolbe Academy Home School

GRADE THREE HARCOURT SCIENCE *Harcourt Science 3/4 (Red)*

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COURSE TITLE: Science

COURSE TEXT: *Harcourt Science, 4th Grade*, Harcourt Publishing, 2005
 Kolbe Academy Answer Key for Harcourt Science 3/4, Optional
Harcourt Science Workbook 4th Grade, Harcourt Publishing, Optional
Harcourt Science, 4th Grade Workbook Teacher Manual, Optional

COURSE DESCRIPTION:

Third grade science is a 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 in depth science in later years. 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 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 A: Life Science: World of Living Things

Unit C: Earth Science: The Earth's Surface

Unit E: Physical Science: Matter and Energy

Quarter 1

1. Unit A, Chapter 1: Cells, Animals, Plants, Fungi
2. Unit A, Chapter 2: Animal Growth and Adaptations: Basic needs, anatomy, behavior

Quarter 2

1. Unit A, Chapter 3: Plant Growth and Adaptations: Needs to live, structure, reproduction
2. Unit A, Chapter 4: Human Body Systems: Skeletal, Muscular, Respiratory, Circulatory, Nervous, and Digestive systems.
3. Unit C, Chapter 1: Earthquakes and Volcanoes: causes and formations

Quarter 3

1. Unit C, Chapter 2: Fossils: formation, fossil fuels
2. Unit E, Chapter 1: Matter and Its Changes: States, measurement, chemical and physical properties

Quarter 4

1. Unit E, Chapter 2: Heat – Energy on the Move: heat transfer, thermal energy
2. Unit E, Chapter 3: Sound: Sound wave travel
3. Unit E, Chapter 4: Light: Behavior, color

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
Safety Goggles	Most!
Hand lens (magnifying glass)	A12, A18, A24
Pine cone	A18
Alfalfa Seed	A82
Bean Seed	A82
Stopwatch (or clock with a second hand).	A12, E54
Plastic Metric Ruler	E68
Stick of Modeling Clay	C18, E98
Funnel	C18
Bike (air) pump	C18
Glue gun	C34
Animal Footprint Stamps and Stamp-pad	C40
Balloon (hot – dog style)	E41
Thermometer	E54

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 third 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 student 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"/>			
Week 1 Average	Add up column C & divide by number of included <input checked="" type="checkbox"/> assignments =			%

WEEK 2				
◆◆◆ UNIT A: A World of Living Things ◆◆◆				
Book	Weekly Breakdown	Goals and Notes for the Week		
HAR	Chapter 1, Lesson 1	To understand the cell as the basic building block of living things. To understand the parts of different types of cells.		
Notes				
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines	
DAY 1	HAR Do Investigation	<input type="checkbox"/>	Investigation pages A4-A5: Make a Model Cell. This investigation will teach the student to use a model to understand the cell and to make conclusions about the parts of a cell. Have the student draw conclusions by answering the questions at the end of the investigation.	
	HAR Draw Conclusions	<input type="checkbox"/>		
DAY 2	HAR Read pages A6-A8	<input type="checkbox"/>	Have the student pages A6-A8. Have the student answer the embedded "check" questions orally after reading these pages. Discussion: The student should understand that all living things are made up of cells. The cell membrane and cytoplasm are common to all cells.	
	HAR: Answer check questions	<input type="checkbox"/>		
DAY 3	HAR Read pages A9-A10	<input type="checkbox"/>	Have the student read pages A9-A10. Have the student answer the embedded "check" questions orally after reading these pages. Discussion: The student should understand that different types of cells may have different parts (i.e. in animals cells there are no cell walls or chloroplasts as there are in plant cells).	
	HAR: Answer check questions	<input type="checkbox"/>		
DAY 4	HAR Answer Review questions	<input type="checkbox"/>	On page A11, 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"/>			
Week 2 Average	Add up column C & divide by number of included <input checked="" type="checkbox"/> assignments =			%

WEEK 3				
Book	Weekly Breakdown	Goals and Notes for the Week		
HAR	Chapter 1, Lesson 2 Chapter 1, Lesson 3	The investigation for lesson 2 is optional as it requires real sponge, a material that is not always readily available in the home. However, this investigation does provide a good introduction as to how body features and support systems are used to classify animals. This week, the student will learn the structure of simple animals and the role of seeds in plants.		
Notes				
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines	
DAY 1	HAR Read pages A14-A17	<input type="checkbox"/>	Have the student read pages A14-A17. Have the student answer the embedded "check" questions orally after reading these pages. Discussion: This chapter explains that the simplest animal is a sponge. It continues to describe some differences between simple and more complex animals. On page A16, have the student identify which animals shown are arthropods and which are invertebrates.	
	HAR Answer check questions	<input type="checkbox"/>		
DAY 2	HAR Answer Review questions	<input type="checkbox"/>	Have the student answer the Review questions at the end of Lesson 2 on a separate piece of paper. Go over the questions with the student so he understands the correct answers.	
DAY 3	HAR Do Investigation	<input type="checkbox"/>	Investigation, Pages A18-A19: Cones and Fruits. Have the student draw conclusions by answering the questions at the end of the investigation orally. This investigation will help the student understand plants that contain seeds. Have the student read pages A20-A21. Have the student answer the embedded "check" questions orally after reading these pages.	
	HAR Draw Conclusions	<input type="checkbox"/>		
DAY 4	HAR: Read pages A22-A23	<input type="checkbox"/>	Have the student read pages A22-A23. Have the student answer the embedded "check" questions orally after reading these pages. 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.	
	HAR: Answer check questions	<input type="checkbox"/>		
	HAR: Answer Review questions	<input type="checkbox"/>		
Week 3 Grade Book				
Assignments	Include <input checked="" type="checkbox"/>	(A) Points Earned	(B) Possible Points	A/B x100 =% (C)
Review questions (Page A17)	<input type="checkbox"/>			
Draw Conclusions (Page B66)	<input type="checkbox"/>			
Review questions (Page A23)	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
Week 3 Average	Add up column C & divide by number of included <input checked="" type="checkbox"/> assignments =			%