

# Kolbe Academy Home School

## GRADE FIVE SCIENCE *Harcourt Science 5/6 (Purple)*

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**COURSE TITLE:** Science

**COURSE TEXT:** *Harcourt Science*, Student Book, Harcourt Publishing, 2005, (T4826)  
 Kolbe Academy Answer Key for Harcourt Science 3/4, (T4826A), Optional  
*Harcourt Science Workbook 6<sup>th</sup> Grade*, Harcourt Publishing, (T4826B), Optional  
*Harcourt Science, 6<sup>th</sup> Grade Workbook Answer Key*, (T4826C), Optional

**COURSE DESCRIPTION:**

Fifth-grade Science is an intermediate 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 along with the reading of the textbook.

The Harcourt Science series has several FREE online learning tools available to anyone who purchases the textbook. The first is provided by the publisher. 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 access the site. *Be sure to put Kolbe Academy as the school!* This will help create fewer problems when you are trying to access 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 6** 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 alone.

**COURSE OBJECTIVES:**

This course is a continuation of the work of the third and fourth 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 6 textbook:

**Unit A: Life Science:** Understanding Living Things

**Unit C: Earth Science:** The Living Planet

**Unit E: Physical Science:** Matter and Energy

**Quarter 1**

1. Unit A, Chapter 1: Cells, Genetics, and Heredity: Plant and animal cells, reproduction, trait inheritance
2. Unit A, Chapter 2: Classification: Kingdoms and subdivisions of kingdoms

**Quarter 2**

1. Unit C, Chapter 1: Ecosystems-Characteristics and Cycles: natural cycles, natural resources
2. Unit C, Chapter 2: Interactions in Ecosystems: Energy for Organisms, Symbiosis
3. Unit C, Chapter 3: Earth's Oceans: Ocean Ecosystems

**Quarter 3**

1. Unit C, Chapter 4: Weather Changes: Atmosphere, weather fronts, weather prediction, and severe storms
2. Unit E, Chapter 1: Atoms, Elements, and Compounds: Components and properties of atoms, states of matter

**Quarter 4**

1. Unit E, Chapter 2: Matter-Properties and Changes: Physical and chemical properties of matter
2. Unit E, Chapter 3: Energy: Thermal energy and heat, magnetism and electricity, chemical and nuclear energy
3. Unit E, Chapter 4: Sound and Light: Properties of waves, sound waves, light

**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)	Several
Bar magnet	E12, E58
Red and green clay	A4
2 cups of mixed dry beans	A40
Toy wooden blocks (Jenga pieces would work well)	E4
Marbles	E4
Thermometer or other temperature sensor	C106, E20
Iron filings	E58
Galvanometer, battery tester or other voltage meter	E82, E90 (optional investigations)
Slinky	E106

**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 fifth 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				
<p>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 working safely and appropriately in the laboratory. Students will gradually learn how to formalize the scientific method by writing lab reports on a few of the investigations this year. These will be assigned in the 3<sup>rd</sup> and 4<sup>th</sup> quarters.</p>				
Book	Weekly Breakdown	Goals and Notes for the Week		
HAR	Introduction: Pages x-xvii Pages xxxii-xxiv	To understand how to apply the steps of the scientific method within an investigation. To understand how to analyze results and draw conclusions. To understand how to work safely in the laboratory while performing experiments.		
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Notes</div>				
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines	
DAY 1	HAR Read pages x-xii	<input type="checkbox"/>	<b>Have the student read pages x-xii.</b> Go over the steps of the scientific method with the student before beginning any investigations. You may choose to do the paperclip investigation outlined on these pages if you wish, although it is for demonstration of the scientific method only.	
DAY 2	HAR Read pages xiii-xvii	<input type="checkbox"/>	<b>Read pages xiii-xvii.</b> These pages give good examples of the scientific method in action. For future investigations, students can be asked to research what materials may be needed for the upcoming week's investigation.	
DAY 3	HAR Read pages xxii-xxiii	<input type="checkbox"/>	<b>Have the student read pages xxii-xxiii.</b> 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 the application of math skills to interpreting collected data.	
DAY 4	HAR Read page xxiv	<input type="checkbox"/>	<b>Have the student read page xxiv.</b> It is very important for student's to continue to develop a sense of responsibility within the laboratory. Although the investigations are fairly safe, understanding safety at this age is important for preparing them to work safely in a laboratory environment in high school. 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"/>			
<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 A: Understanding Living Things ◆◆◆		
Book	Weekly Breakdown	Goals and Notes for the Week
HAR	Chapter 1, Lesson 1	To recognize that cells make up all living things. To understand the differences between plant and animal cells. To understand the function of the nucleus within a cell.
Notes		
Student Daily Assignments		Parent Daily Guidelines
DAY 1	HAR Do Investigation	<input type="checkbox"/> <b>Review pages A2-A3 and discuss the fast facts.</b> Have the students look over the vocabulary review previous to beginning the lesson. <b>Investigation pages A4-A5:</b> The Structure of Cells. The student should build a 3-dimensional model that includes a representation of the cell wall, cell membrane, nucleus, and organelles. <b>Have the student draw conclusions by writing the answers to the questions at the end of the investigation.</b> The "Investigate Further" is an interesting addition to this investigation, but is optional due to the material requirements.
	HAR Draw Conclusions	
DAY 2	HAR Read pages A6-A7	<input type="checkbox"/> <b>Read page A6-A7. Have the student answer the embedded "check" questions orally.</b> Have the student compare the different cells located on page A7. Have the student tell how they are alike and how they are different. Ask the student why all cells do not look exactly alike (they each have a different function). Discuss with the student why the nerve cell might have long extensions (the long extensions allow nerve signals to travel over great distances within the body).
	HAR Answer check questions	
DAY 3	HAR Read pages A8-A9	<input type="checkbox"/> <b>Read pages A8-A9. Have the student answer the embedded "check" questions orally.</b> Discuss with the student the parts of the cell that animal and plant cells have in common by comparing the diagrams on pages A8 & A9. Discuss the function of the parts of the cell described in these pages. Have the student compare the similarities and differences of the animal and plant cell (plant cells have cell walls and chloroplasts, but animal cells do not).
	HAR Answer check questions	

◆ COURSE PLAN ◆

<b>DAY 4</b>	<b>HAR Read pages A10- A11</b>	<input type="checkbox"/>	<p><b>Read pages A10-A11. Have the student answer the embedded "check" questions orally.</b> Explain to the student that all of the cell's functions are controlled within the nucleus of a cell. Have the student look at the picture of the magnified nucleus and drawing of the nucleus, and discuss the role of the pores visible in those pictures to the function of the nucleus (allows chemical instructions to move from within the nucleus to the rest of the cell). Discuss the relationship between chromosomes and DNA. Explain to the student that each person in the world has a different blueprint of DNA. <b>Answer Review questions at the end of the lesson on a separate piece of paper.</b> Go over the questions to be sure the student understands the correct answers.</p>		
	<b>HAR Answer Review questions</b>	<input type="checkbox"/>			
<b>Week 2 Grade Book</b>					
<b>Assignments</b>		<b>Include</b> <input checked="" type="checkbox"/>	<b>(A) Points Earned</b>	<b>(B) Possible Points</b>	<b>A/B x100 =% (C)</b>
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>