

# Kolbe Academy Home School

## GRADE EIGHT OR NINE ALGEBRA I *Elementary Algebra by Harold Jacobs*

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**COURSE TITLE:** Algebra I

**COURSE TEXTS:**

- ❖ *Elementary Algebra*, Harold Jacobs, © 1979 (T4100)
- ❖ *A Teacher's Guide to Elementary Algebra*, Harold R. Jacobs (T4100A), Optional
- ❖ Algebra DVD Lectures (T4100D), Optional

**COURSE DESCRIPTION:**

Harold Jacob's *Elementary Algebra* provides a strong course for the Algebra I student. His text is set up in a traditional style so that students have the opportunity to practice many types of problems taught within each lesson. This course provides the backbone of Algebra I concepts to prepare the student for taking Algebra II, and adequately prepare a student to take the Algebra 1 Math sections of the PSAT, SAT, and ACT standardized tests. Additional graphing supplements are provided in the course plan starting on page 21 as an introduction to graphing.

Students can succeed in this course after completing any pre-Algebra course, including the *Saxon Math 8/7* (with pre-Algebra) text. Students who struggled with *Saxon Math 8/7* are advised to use *Saxon Algebra 1/2* or another pre-Algebra course prior to beginning this course. Note that about the first five chapters will include much review of pre-Algebra concepts.

**SCOPE AND SEQUENCE:**

- |                                  |   |
|----------------------------------|---|
| 1. Fundamental operations        | 11. Factoring                               |
| 2. Functions and graphs          | 12. Fractions                               |
| 3. Domain and range of functions | 13. Square roots                            |
| 4. Integers                      | 14. Quadratic equations                     |
| 5. The rational numbers          | 15. Graphing Quadratic equations            |
| 6. Equations in one variable     | 16. The real numbers                        |
| 7. Equations in two variables    | 17. Fractional equations                    |
| 8. Simultaneous equations        | 18. Inequalities                            |
| 9. Exponents                     | 19. Graphing inequalities in two variables. |
| 10. Polynomials                  | 20. Arithmetic and geometric sequences      |

**HIGH SCHOOL\* DIPLOMA REQUIREMENTS:**

***Summa Cum Laude*** diploma candidates are required to follow this course plan as laid out if they wish to receive math credit for this course. Summa students should be sure to turn in the appropriate sample work to receive the (K) designation on their transcript as a Kolbe Academy Core high school course (see next page). Summa students using this course in 9<sup>th</sup> grade will be required to complete an additional three years of math including Geometry, Algebra II, and Pre-Calculus. ***Magna Cum Laude*** and ***Standard*** diploma candidates may choose to pursue the (K) designation by following the course plan, but are not required to do so, and instead have the option of altering the course plan as they choose. ***Magna Cum Laude*** diploma students must complete three years of mathematics including Algebra I, Geometry, and Algebra II. ***Standard*** diploma students must complete 2 years of mathematics including Algebra I.

\*There are no diploma requirements for 8<sup>th</sup> grade students.

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**REQUIRED SAMPLE WORK FOR HIGH SCHOOL CREDIT:**

Designation*		K
Course Title	Algebra I	Algebra I
Quarter 1	1. Any written sample work	1. Quarter 1 Exam
Quarter 2	1. Any written sample work	1. Quarter 2 Exam
Quarter 3	1. Any written sample work	1. Quarter 3 Exam
Quarter 4	1. Any written sample work	1. Quarter 4 Exam

\*Designation refers to designation type on transcript. K designates a Kolbe Academy Core High School course.

If a student wishes to have the course distinguished on the transcript with a (K) as a Kolbe Academy Core high school course, please be sure to send the correct exams and components each quarter for verification as specified above. **If no designation on the transcript is desired, parents may alter the lesson plan and any written sample work is acceptable to receive credit for the course each quarter.** If you have any questions regarding what is required for the (K) designation or high school diploma type status, please contact the academic advisory department.

**COURSE PLAN "AT A GLANCE" OUTLINE:**

	<u>Quiz Schedule</u>		<u>Graphing Supplement Schedule</u>
<b>Quarter 1</b>			
Weeks 1-8: Chapters 1-5	Week 2: Quiz 1	Week 5: Quiz 3	Week 3: GS1 (page 21)
Week 9: Quarter 1 Exam	Week 3: Quiz 2	Week 6: Quiz 4	
		Week 8: Quiz 5	
<b>Quarter 2</b>			
Weeks 1-8: Chapters 6-9	Week 2: Quiz 6	Week 6: Quiz 8	
Week 9: Quarter 2 Exam	Week 4: Quiz 7	Week 8: Quiz 9	
<b>Quarter 3</b>			
Weeks 1-8: Chapters 10-12	Week 3: Quiz 10	Week 9: Quiz 12	
Week 9: Quarter 3 Exam	Week 5: Quiz 11		
<b>Quarter 4</b>			
Weeks 1-8: Chapters 13-17	Week 3: Quiz 13	Week 6: Quiz 15	Week 1: GS2 (page 23)
Week 9: Quarter 4 Exam	Week 4: Quiz 14	Week 7: Quiz 16	Week 7: GS3 (page 26)
		Week 8: Quiz 17	

**Be sure to refer to the course plan that follows for specific guidance on assignments, quizzes, and exams.**

**COURSE PLAN METHODOLOGY:**

The text provides four sets of exercises for the student to use in practicing the concepts presented in the lesson. The Set I exercises provide an opportunity for students to review past concepts. These exercises are generally assigned as optional work within the course plans. However, a struggling student would be advised to complete the Set I exercises on a regular basis to help reinforce previous concepts presented in the text. A selection of the Set II and Set III exercises are assigned from each Lesson in the text. Both Set II and Set III exercises provide the same type of practice problems for the concepts in the Lesson. However, all Set II exercises have answers provided for the student in the back of their text. It is important for students to have the opportunity to correct mistakes immediately, and the Set II exercises will provide an opportunity for the student to do so. The Set III exercises provide the additional exercises for students to complete without dependence on answers in the back of the book. Finally, the Set IV problems provide advanced topics in Algebra I for a student that may need challenging supplementation. The Set IV problems are not assigned in the Kolbe Academy course plan, but parents are welcome to add them in if they prefer. The answers to the Set I, Set III, and Set IV exercises can be found within the *Teacher's Guide to Elementary Algebra*.

Three graphing supplements are included within the course plan for students to use to enhance the course. These concepts will appear on the quarterly tests, so the student is advised to complete these supplements when they are assigned in the course plan. The graphing supplements can be found beginning on page 21 of the course plan.

**For struggling students:**

The quarterly tests have problems taken directly from the Test Masters provided by the author. The test master booklet also includes supplemental problems. If the parent finds that the student would benefit from additional quizzes and or problem working, these test masters may be ordered from Kolbe Academy. Struggling students may omit the following Lessons in order to concentrate on the most important concepts presented in Algebra I: Chapter 10, Lesson 8; Chapter 13, Lesson 2, 3, and 9; Chapter 14, Lesson 4; Chapter 15, Lesson 5; all of Chapter 17. Note, students wishing to receive the (K) designation for a Kolbe Academy Core high school course *may not* alter the course plan.

## ◆◆◆ FIRST QUARTER ◆◆◆

WEEK 1			
◆◆◆ Chapter 1: Fundamental Operations ◆◆◆			
Most of the concepts in Chapter 1 will be review for the student from courses in pre-Algebra and beginning math. Students should take this time to review quickly and bring their math skills back to the forefront in order to have more success in later chapters.			
Chapter 1	Set I Exercises	Set II Exercises	Set III Exercises
Lesson 1	1 – 9 (odd)	11 (a – d, j); 13 (c, d); 16	17 (a, f, g, i); 19 (a, c, e); 20; 22
Lesson 2	1 – 9 (odd)	11 (a – d, f); 12 (c, d, f); 15; 16	19 (a, b, c, e); 21; 22
Lesson 3	1 – 9 (odd)	12 (a, b, e, f, h, i, m); 13 (c, f, h, j); 14; 17	19 (a, b, f, g, h, k, o); 21; 24

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◆ COURSE PLAN ◆

Lesson 4	1 – 7 (odd)	9 (a, c, e, g); 11 (f, g, h); 12 (i, j, k, l); 14, 16	18 (i, j, k, l); 19; 21; 23
Lesson 5	1 – 9 (odd)	13 (a, c, e); 14 (f, i, j); 15; 17	19; 20 (b, d, f); 22 (a, c, e); 23
Lesson 6	optional review	4; 6; 8 (a, c, e, g); 9 (a, c, e, g); 10	11 (a, c, e, g); 14 (b, d, f, h); 17
Lesson 7	optional review	4; 5 (d – j, n – q); 6 (b, d, f); 7; 8 (c, e)	12 (a, c, e); 14 (b, d, f); 15
Lesson 8	optional review	4; 5; 7 (a, c, e, g, i); 8 (a, c, e, g)	12 (b, d, f, h, j)
<b>MON</b>	Read Lesson 1 and Lesson 2. Do corresponding exercises.		
<b>TUES</b>	Read Lesson 3 and Lesson 4. Do corresponding exercises.		
<b>WED</b>	Read Lesson 5 and Lesson 6. Do corresponding exercises.		
<b>THUR</b>	Read Lesson 7 and Lesson 8. Do corresponding exercises.		

Notes

**WEEK 2**

Chapter 1	Set I Exercises	Set II Exercises	Set III Exercises
Lesson 9	optional review	5 (a, c, e, g); 6 (a); 7 (a, c, e, g, i); 9	14 (b, d, f, h); 15; 17
Quiz 1	<b>Summary and Review</b>	Use <b>Set II</b> : 1 – 14 to review Chapter 1.	
Page 61	Use <b>Set I</b> : 1, 2, 5 – 8, 12 – 14 for Quiz 1. Grade: _____ /50 (5 points each).		

◆◆◆ Chapter 2: Functions and Graphs ◆◆◆

Chapter 2	Set I Exercises	Set II Exercises	Set III Exercises
Lesson 1	Optional review	4 (a, c, e); 5; 6 (a, c, e, g); 7; 9	10 (b, d); 11; 12 (b, d, f); 13; 15
Lesson 2	Optional review	4; 6; 8; 10	11; 12; 14; 16
Lesson 3	Optional review	4; 6 (a, c, e, g, i); 7 (a, c, e, g)	9; 10 (b, d, f, h, j); 11 (b, d, f, h)
<b>MON</b>	Read Chapter 1, Lesson 9. Do corresponding exercises. Review for Quiz 1.		
<b>TUES</b>	Take Quiz 1.		
<b>WED</b>	Read Chapter 2, Lesson 1. Do corresponding exercises.		
<b>THUR</b>	Read Chapter 2, Lesson 2. Do corresponding exercises.		
<b>FRI</b>	Read Chapter 2, Lesson 3. Do corresponding exercises.		

Notes