WALSH UNIVERSITY

SCHOOL FOR PROFESSIONAL STUDIES

MATH 104

Algebra

ASSIGNMENTS DUE ON THE FIRST NIGHT OF CLASS: SEE PAGE 4

7/08

Course Description

Algebra is the application of arithmetic to general expressions involving unknown quantities extending the operations with real numbers to polynomials and rational expressions. Equations and equation solving are introduced as well as graphical representation of data.

Introduction and prerequisites

Students of algebra will improve their skills in arithmetic and learn to apply those skills to the manipulation of symbolic expressions. It is helpful to have prior knowledge of:

* Fractions
* Decimals
* Representation of unknown quantities
* Manipulation of expressions involving unknown quantities

Course Objectives

Upon completion of this course, the student will be able to:

1. Operate with real numbers.
2. Use mathematical expressions involving exponents and radicals.
3. Operate with and factor polynomials.
4. Simplify and operate with radical expressions.
5. Solve equations and inequalities.
6. Simplify complex algebraic expressions often encountered in Calculus.
7. Represent data graphically.

Course Outcomes

Emphasis in this course will be on the concepts of representing data symbolically and graphically. Students will develop skills such as:

* Operating on algebraic and rational expressions
* Equation solving
* Graphing

Materials

Beginning Algebra with Applications (6^{th} edition), Aufman, Barker, Lockwood

Graphing calculator (optional)

the instructor will use the TI-84 (overhead version) …
students who choose to use a calculator should consider one of the following …

TI-83
TI-84
TI-86

Graph paper (optional)

General

Attendance

* Students are responsible for all material presented in class including announcements about course procedures. Tests, quizzes, and homework often include questions on material presented only in class, so performance on these indirectly reflects attendance.

Evaluation

* Examinations: there will be two tests and a final examination.
  Tests will comprise 35%, and the exam 30%, of the final grade.
  Test dates will be announced in class at least one week in advance.

* Students should expect a quiz each session. These quizzes will comprise 20% of the final grade.
  * Quizzes will reflect attendance so no provision will be made for makeup.
  * The lowest quiz grade will be dropped **for students with perfect attendance.**

* In cases of **necessary absence**, additional assignments, quizzes, and tests may be required.

* Another 11% of the final grade will be based on homework.

* Another 4% of the final grade will reflect participation by attendance. This portion will be reduced by 2% for the first absence, and an additional 2% for the second absence.

* All tests and homework must be completed in order to complete the course, regardless of lateness. Unexcused late course work will lose 10% of point value for each week it is late.

* Arrangements for excused late work must be made and approved in advance.

* **Bonus points**: many quizzes and tests will contain opportunities for bonus points. Students who have missed more than one class session will not be awarded bonus points.

* Course grades will be assigned as follows:

A: 96% - 100%	A-: 90% - 95%	B+: 87% - 89%
B: 83% - 86%	B-: 80% - 82%	C+: 77% - 79%
C: 73% - 76%	C-: 70% - 72%	D+: 67% - 69%
D: 63% - 66%	D-: 60% - 62%	F : 0% - 59%

Notes on homework

Selected exercises will be assigned from the textbook. Students are encouraged to work together and to complete all exercises on time for evaluation. A portion of each workshop will be used to discuss homework.

Preassignment (to be completed prior to first workshop)

1. Read Chapters 1 and 2
2. Complete these exercises:

Chapter 1:	Section 1.1,	25 -37 odd
	Section 1.2,	every other odd from 5 to 109
	Section 1.3,	every other odd from 3 to 99
	Section 1.4,	every other odd from 3 to 55
Chapter 2:	Section 2.1,	67 -75 odd
	Section 2.2,	31, 37, 43 … from 31 to 145
	Section 2.3,	every other odd from 63 to 101

Workshop One

Activities

Students will learn the properties of real numbers and how to operate with integers, fractions, and decimals:

1. Distribute and discuss syllabus.
2. Review of course and required materials.
3. Lecture: Chapters 1 and 2
    a. Operations with integers
    b. Operations with fractions, decimals, and percent
    c. Exponents and **Order of Operations**
4. Applications

Minimum assignment in preparation for workshop two

1. Read Chapter 3, sections 3.1 and 3.2

2. Complete these exercises:

Chapter 3:	Sec. 3.1	odd 31 - 57
		odd 91 -111
		141, 145, 177,181, 198
	Sec. 3-2	21, 27, 33, 39, … , 141

Workshop Two

Activities

Students will learn to use the properties of algebra to write and solve equations for various problem situations:

1. Lecture: Chapter 3, sections 3.1 and 3.2
    a. solutions to equations of the form **x + a = b** and **ax = b**
    b. solutions to equations of the form **ax + b = c** and **ax + b = cx + d**
    c. applications
2. Discussion of assignment from workshop one

Minimum assignment in preparation for workshop three

1. Read section 3.3.

2. Complete these exercises:

    Chapter 3: Sec. 3.3 odd 3 – 51, 113 - 121

Workshop Three

Activities

Students will learn to solve inequalities, plot points, and determine linear equations from given conditions:

1. Test one: Chapters 1 through 3.2
2. Lecture: Section 3.3
    a. transformations resulting in equivalent inequalities
3. Lecture: Chapter 5
    a. Plotting points
    b. Graphs of equations: **y = mx + b** and **Ax + By = C**
    c. Slope
    d. Equations from given information
    e. Functions and inequalities
4. Discussion of assignment from workshop two

Minimum assignment in preparation for workshop four

1. Read Chapter 7.

2. Complete these exercises:

Chapter 5:	Sec. 5.1	odd 3 – 21
	Sec. 5.2	1, 7, 15, 17, 27, 31, 33, 47, 53, 61, 67 81, 83, 95
	Sec. 5.3	3, 7, 9, 19, 33, 37, 41, 45
	Sec. 5.4	1, 5, 11, 17, 21, 25, 29
	Sec. 5.5	9, 11, 13, 17, 27, 29, 39, 43, 57, 61
	Sec. 5.6	3, 5, 9

Workshop Four

Activities

Students will learn to operate with polynomials

1. Discussion of assignment from workshop three
2. Lecture: Chapter 7, sections 1 to 3
    a. definition of a polynomial
    b. operations with polynomials
3. Applications

Minimum assignment in preparation for workshop five

1. Read Chapter 7, sections 4 and 5

2. Complete these exercises:

Chapter 7:	Sec. 7.1	1, 7, 13, 19, … , 55
	Sec. 7.2	3, 9, 15, 21, … , 87
	Sec. 7.3	7, 13, 19, 25, … , 97

Workshop Five

Activities

Students will learn the laws of exponents, scientific notation, and synthetic division:

1. Lecture: 7.4
    a. laws of exponents
    b. scientific notation
2. Lecture: 7.5
    a. division of polynomials
    b. synthetic division
3. Discussion of assignment from workshop four

Minimum assignment in preparation for workshop six

1. Read Chapter 8, sections 1 through 4

2. Complete these exercises:

    Chapter 7: Sec. 7.4 11, 17, 23, 29, 35, … , 107
    Sec. 7.5 1, 7, 13, 19, … , 49

Workshop Six

Activities

Students will learn to factor all forms of quadratic polynomials:

1. Test two: Chapters 3 to 7
2. Lecture: Chapter 8, sections 1 to 4
    a. factoring common factors, grouping
    b. factoring trinomials
    c. special product forms
    d. factoring completely
3. Discussion of assignment from workshop five

Minimum assignment in preparation for workshop seven

1. Read Chapter 8, section 8.5 and Chapter 10

2. Complete these exercises;

Chapter 8:	Sec. 8.1	21, 27, 33, 39, … , 111
	Sec. 8.2	7, 13, 19, 25, … , 103
	Sec. 8.3	1, 7,13,19, … , 109
	Sec. 8.4	13, 19, 25, 31, … , 115

Workshop Seven

Activities

Students will learn to use factoring to solve quadratic equations; and properties of radicals

1. Lecture: section 8.5
    a. use of the zero factor property to solve quadratic equations
2. Lecture: Chapter 10
    a. simplifying radical expressions
    b. combining radical expressions
    c. solving equations containing radicals
3. Discussion of assignment from workshop six

Minimum assignment in preparation for workshop eight

1. Read and study supplementary material in preparation for exam

Workshop Eight

Activities

1. Discussion, instruction, and review based on all previous assignments.
2. Course evaluation.
3. Final examination.