

Algebra
UC Santa Cruz Project for Inmate Education, Spring 2009
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Why Learn Algebra?

This question has both a practical and a philosophical answer. Practically, algebra today is as much a part of literacy as reading and writing. Someone who does not know algebra, and has not practiced the skills of abstraction and problem-solving that it teaches, faces serious disadvantages when searching for a job, reading a newspaper, or thinking about political issues that hinge on technical questions. Conversely, mastering algebra opens doors to economic success in many fields.

The philosophical answer is that algebra is the language in which the sciences are written. Modern science is powerful because it allows us to think in abstractions, and to recognize apparently different phenomena as manifestations of the same underlying principles. Algebraic abstraction is what makes this possible. Someone who does not speak the language of algebra can have at best a limited understanding of science, just as someone who does not speak English can have only a limited appreciation of Shakespeare. The sciences are human achievements as significant and as rewarding to study as Shakespeare, and to appreciate them we must learn algebra.

Logistics

Each week there will be two classes, one on Monday from 2:00 - 3:30 PM, and one on Thursday from 10:00 - 11:30 AM. Attendance on both of these nights is *mandatory*. We will cover one topic per week. The first class on each topic will introduce the concepts, and the the second class will focus on problem solving. During that class, you will work in small groups under the supervision of the instructor.

Assignments

For each week and each topic there will be a reading assignment from the textbook, *Akst & Bragg*. You are expected to complete the reading assignment for each week before the first class on the next topic. Each week there will also be a homework assignment that is due in class one week after it is assigned. The homework assignments are a critical part of mastering the material – trying to learn algebra without solving problems is like trying to learn carpentry without picking up a hammer.

When turning in your homework, please be sure to write the date, which homework assignment this is, and your first and last name on your homework. Please try to write neatly. *Show your work*. Without work shown, it is impossible to tell if you're on the right track, or how you arrived at your answer. In addition to the weekly homeworks, we will have a final exam at the end of the course as practice for the GED.

The course schedule and homework assignments are on the back of this sheet. **Homework problems are odd numbers only**, although if you want more practice feel free to do more problems.

Date	Topic	Reading	Homework Due
May 11	Pre-algebra review		
May 14	Pre-algebra review	1.1–1.5	
May 18	Linear equations		1.1: 9-11, 27-33 41-51, 61-67 1.2: 13-21, 35-43, 55-65, 85-95 1.4: 5-15, 41-51, 103-111, 149-151 1.5: 21-25, 41-45, 59-61, 81-87, 99-103
May 21	Linear equations	2.1	
May 28	Linear inequalities		2.1: 1-31, 39-53, 59-69, 81-87, 95, 97, 103
June 1	Linear inequalities	2.3–2.4	
June 4	Plotting and lines I		2.3: 1-37, 41-63, 71-77, 83 2.4: 1-17, 21-25, 35-39, 53, 57, 59
June 8	Plotting and lines I	3.1–3.3	
June 11	Plotting and lines II		3.1: 1, 3, 17-23; 3.2: 1-11, 25-29, 49-57 3.3: 7-39, 53-61
June 15	Plotting and lines II	3.4, 3.6	
June 18	Polynomials		3.4: 1-21, 33-47, 51-61; 3.6: 1-7, 13-41, 51-57
June 22	Polynomials	5.1–5.3	
June 25	Factoring		5.1: 9-25, 33-55, 61-73 5.2: 1-19, 29-49, 67-77, 101, 103, 109-115 5.3: 1-15, 21-27, 39, 51, 53
June 29	Factoring	5.4–5.5	
July 2	Quadratic equations		5.4: 1-11, 17-21, 29-41, 57-61 5.5: 1-17, 21-23, 55-61, 93, 95
July 6	Quadratic equations	5.6–5.7	
July 9	Rational expressions		5.6: 7, 15-19, 23-27, 31, 65, 117-119 5.7: 1-23, 31, 61-67
July 13	Rational expressions	6.1–6.2	
July 16	Rational equations, complex numbers		6.1: 3-11, 21-25, 31-33, 45-49, 53, 61-63, 79, 83, 85 6.2: 1-15, 21-37, 51-57
July 20	Rational equations, complex numbers	6.4, 7.6	
July 23	Quadratic formula		6.4: 1-31, 61, 63, 69; 7.6: 1-15
July 27	Quadratic formula	8.1–8.2, 8.4	
July 30	Linear systems, radical equations		8.1: 1-17, 35-47, 69-75 8.2: 1-17, 27, 31, 35-39, 45, 49, 51 8.4: 1-17, 21-25, 39-43
August 3	Linear systems, radical equations	4.2, 7.1	
August 6	Final review		4.2: 1-5, 9-13, 21-27, 37, 39, 45-55 7.1: 1,3, 7-13, 17-25, 33-37, 49-51, 61-63, 93-97
August 10	Practice test		