ORCCA

About ORCCA

Open Resources for Community College Algebra (ORCCA) is an open-source, openly-licensed textbook package (eBook, print, and online homework) for basic and intermediate algebra. At Portland Community College, Part 1 is used in MTH 60, Part 2 is used in MTH 65, and Part 3 is used in MTH 95.

ORCCA is available as an interactive HTML eBook, a downloadable PDF, and a printed and bound physical book.

Accessing ORCCA

	Free	Paperback from Amazon
2nd Edition	eBook: spot.pcc.edu/math/orcca/ed2/html/ Black and White PDF: 1. Part I (Chapters 1–4 and Appendix A) 2. Part II (Chapters 5–9) 3. Part III (Chapters 10–13) 4. The whole thing (964 pages) Screen PDF: orcca-screenpdf.pdf	Part I (Chapters 1–4 and Appendix A) ISBN-13: 978-1088601761 Part II (Chapters 5–9) ISBN-13: 978-1089202110 Part III (Chapters 10–13) ISBN-13: 978-1687246615 The above links are part of the Amazon Associates program. If you follow one of those links and then make a qualifying purchase, Amazon pays an advertising fee to the PCC Foundation. The price of the purchase is not affected. However, if you would like to opt out of whatever tracking is part of this process, you may search for the books on Amazon using the ISBNs. Be careful to purchase the correct edition. Using the ISBNs should ensure this.
Source Files	github.com/PCCMathSAC/orcca WeBWorK files for all editions: ORCCA-WeBWorK-sets.tgz (see below)	
1st Edition	eBook: spot.pcc.edu/math/orcca/ed1/html/ Black and White PDF: ORCCA-Edition1-BW.pdf Color PDF: ORCCA-Edition1-color.pdf	"Unpublished" from Amazon, but it is still possible to find used copies. Part I: ISBN-13: 978-1724270450 Part II: ISBN-13: 978-1724271570 Part III: ISBN-13: 978-1724271730
Gamma Pilot Edition	eBook: spot.pcc.edu/math/orcca/gamma/html/	"Unpublished" from Amazon, but it is still possible to find used copies. Part I: ISBN-13: 978-1986282598 Part II: ISBN-13: 978-1986282796 Part III: ISBN-13: 978-1986282895
Beta Pilot Edition		"Unpublished" from Amazon, but it is still possible to find used copies. Part I: ISBN-13: 978-1981788170 Part II: ISBN-13: 978-1981806058

Alpha Pilot Edition		"Unpublished" from Amazon, but it is still possible to find used copies. Part I: ISBN-13: 978-1976594861 Note: copies of this book say edition *beta*, but they are really our edition *alpha* from before we had thought more about versioning. Also this book's cover is the color we since use only for Part II.

Sample Schedules

The most common schedule at PCC for face-to-face operation of these classes is ten weeks of class plus a final exam week. Fall term has an additional week of class. In summer, these courses are often (but not always) taught with 8 weeks of class and no finals week. Most classes run two days each week, but some run three. In every term, there are holidays, inservice days, and closures to contend with. So these sample calendars are not a perfect fit.

Week	Day 1	Day 2
1	Section 1.1 Variables and Evaluating Expressions	Sections 1.2, 1.3 Combining Like Terms Comparison Symbols and Notation for Intervals
2	Sections 1.4, 1.5 Equations as True/False Statements Solving One-Step Equations	Sections 1.5 (cont), 1.6 Solving One-Step Equations Solving One-Step Inequalities
3	Section 1.7 Algebraic Properties and Simplifying Expressions	Section 1.8 Modeling with Equations and Inequalities
4	Sections 2.1, 2.2 Solving Multistep Equations Solving Multistep Inequalities	Section 2.2 (cont), Review for Exam 1 Solving Multistep Inequalities Review for Exam 1
5	Exam 1 Section 2.3 Linear Equations and Inequalities with Fractions	Sections 2.4, 2.5 Special Solution Sets Isolating a Linear Variable
6	Sections 3.1, 3.2 Cartesian Coordinates Graphing Equations	Sections 3.3, 3.4 Exploring Two-Variable Data and Rate of Change Slope
7	Sections 3.4 (cont) 3.5 Slope Slope-Intercept Form	Section 3.6 Point-Slope Form
8	Sections 3.7, 3.8 Standard Form Horizontal, Vertical, Parallel, and Perpendicular Lines	Section 3.9, Review for Exam 2 Summary of Graphing Lines Review for Exam 2
9	Exam 2 Section 4.1 Solving Systems of Linear Equations by Graphing	Section 4.2 Substitution
10	Section 4.3 Elimination	Review for Final Exam
11	Finals Week	

Week	Day 1	Day 2
1	Section 5.1 Adding and Subtracting Polynomials	Sections 5.2, 5.3 Introduction to Exponent Rules Dividing by a Monomial
2	Sections 5.4, 5.5 Multiplying Polynomials Special Cases of Multiplying Polynomials	Sections 5.5 (cont), 5.6 Special Cases of Multiplying Polynomials More Exponent Rules
3	Sections 6.1, 6.2 Square and nth Root Properties Rationalizing the Denominator	Sections 6.3, 6.4 Radical Expressions and Rational Exponents Solving Radical Equations
4	Section 6.4 (cont), Review for Exam 1 Solving Radical Equations Review for Exam 1	Exam 1 Review Solving Linear Equations (Selected Topics from Chapter 2)

5	Sections 7.1, 7.2 Solving Quadratic Equations by Using a Square Root The Quadratic Formula	Sections 7.2 (cont), 7.3 The Quadratic Formula Complex Solutions to Quadratic Equations
6	Section 7.4 Solving Equations in General	Section 8.1 Scientific Notation
7	Sections 8.2, 8.3 Unit Conversion Geometry Formulas	Section 8.3 (cont), 8.4 Geometry Formulas Geometry Applications
8	Section 9.1, Review for Exam 2 Review of Graphing Review for Exam 2	Exam 2 Section 9.1 (cont) Review of Graphing
9	Section 9.2 Key Features of Quadratic Graphs	Section 9.3 Graphing Quadratic Expressions
10	Section 9.4 Graphically Solving Equations and Inequalities	Review for Final Exam
11	Finals Week	

Week	Day 1	Day 2
1	Sections 10.1, 10.2 Factoring Out the Common Factor Factoring by Grouping	Sections 10.3, 10.4 Factoring Trinomials With Leading Coefficient One Factoring Trinomials With a Nontrivial Leading Coefficient
2	Section 10.5, 10.6 Factoring Special Polynomials Factoring Strategies	Section 10.7 Solving Quadratic Equations by Factoring
3	Section 11.1 Function Basics	Section 11.2 Domain and Range
4	Section 11.3, Review for Exam 1 Using Technology to Explore Functions Review for Exam 1	Exam 1 Section 11.4 Simplifying Expressions With Function Notation
5	Section 11.5 Technical Definition of a Function	Sections 12.1, 12.2 Introduction to Rational Functions Multiplication and Division of Rational Expressions
6	Section 12.3 Addition and Subtraction of Rational Expressions	Section 12.4 Complex Fractions
7	Section 12.5 Solving Rational Equations	Section 12.5 (cont), Review for Exam 2 Solving Rational Equations
8	Exam 2 Section 13.1 Overview of Graphing	Section 13.2, 13.3 Quadratic Graphs and Vertex Form Completing the Square
9	Sections 13.4, 13.5 Absolute Value Equations Solving Mixed Equations	Sections 13.5 (cont), 13.6 Solving Mixed Equations Compound Inequalities
10	Section 13.7 Solving Inequalities Graphically	Review for Final Exam
11	Finals Week	

Selected Exercise Sets

A few members of the committee overseeing these courses (MTH 60, 65, 95 at PCC) came together and selected exercise sets that an instructor might adopt and feel comfortable that they provide adequate coverage. And of course, customize as wanted.

Most exercises are available as WeBWorK exercises, but not all, as indicated below. It is important to know this, because if you rely on WeBWorK for homework, you would want to separately assign these exercises as "pencil and paper" exercises. The non-WeBWorK exercises are typically exercises where something needs to be graphed or explained, and automated grading by WeBWorK is not appropriate.

If you use WeBWorK, you may elect to load these "selected" exercise sets or load exercise sets with all WeBWorK exercises from each section. In either case, you may of course customize by adding, removing, or editing exercises.

Section	Exercises	Count	non-WW
1.1	1, 3, 9, 11, 13, 15, 17, 21, 25, 37, 41, 45, 47, 49, 53, 57, 65	17	
1.2	1, 3, 5, 7, 9, 11, 15, 21, 25, 29	10	
1.3	1, 3, 7, 11, 15, 19, 23, 27, 31, 35, 39, 43, 47, 53, 59, 65	16	
1.4	11, 21, 25, 29, 31, 33, 37, 41, 43, 49	10	
1.5	3, 7, 11, 13, 19, 25, 31, 37, 43, 45, 47, 49, 53, 57, 63, 73, 77, 85	18	
1.6	15, 17, 25, 27, 29, 35, 39, 45	8	
1.7	9, 11, 13, 17, 19, 31, 33, 35, 39, 43, 47, 53, 61, 67	14	
1.8	1, 3, 5, 7, 9, 13, 15, 19, 23, 25, 31, 39, 47, 55, 63, 71	16	
2.1	9, 15, 17, 21, 25, 27, 29, 35, 41, 43, 45, 51, 63, 67, 71, 73, 75, 77, 87, 101, 119, 121, 123, 127, 129	25	
2.2	3, 11, 13, 21, 29, 35, 41, 43, 45, 49	10	
2.3	7, 11, 27, 35, 37, 43, 49, 53, 57, 75, 77, 79, 81, 93, 103, 111, 115	17	
2.4	9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39	16	
2.5	9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53	12	
3.1	1, 3, 7, 13, 15, 17, 19	7	3, 7
3.2	1, 5, 9, 13, 17, 21, 25, 27, 29, 31, 33, 35, 37, 39, 41	15	27, 29, 31, 33, 35, 37, 39, 41
3.3	1, 3, 5, 7, 13, 15, 17, 21, 23, 25	10	
3.4	11, 17, 23, 29, 33, 35, 37, 41, 43, 45, 47, 49, 51, 53	14	
3.5	3, 7, 9, 19, 21, 23, 25, 27, 37, 39, 43, 45, 47, 49, 53, 57, 65, 67, 69, 71	20	37, 39, 43, 45, 47
3.6	5, 9, 13, 17, 21, 25, 29, 31, 33, 35, 39, 45, 47, 51, 55, 61, 63, 65	18	51, 55
3.7	7, 11, 15, 21, 23, 25, 29, 31, 35, 39, 43, 45, 47	13	29, 31, 35, 39
3.8	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 27, 29, 31, 35, 39, 43, 47, 49	19	27, 29
3.9	1, 3, 5, 11, 13, 15, 17, 19, 23, 25, 27, 29	12	1, 3, 5, 11, 13, 15, 17, 19, 23, 25, 27, 29
4.1	13, 15, 17, 23, 25, 27, 29, 31, 33, 43, 45, 47, 49	13	23, 25, 27, 29, 31, 33
4.2	11, 17, 23, 29, 35, 41, 47, 53, 59, 61, 65, 69, 73	13	
4.3	7, 9, 11, 15, 19, 25, 29, 31, 35, 39, 41, 43, 45, 47, 49	15	

Section	Exercises	Count	non-WW
5.1	5, 7, 25, 27, 31, 35, 41, 57, 65, 67, 69, 71, 73, 77, 83, 87, 91	17	
5.2	9, 11, 13, 15, 19, 21, 23, 25, 27, 31, 33, 35, 37, 39, 41, 45, 47, 51, 55, 57, 61, 65	22	
5.3	1, 3, 5, 19, 21, 23, 25, 29, 33, 35, 37	11	
5.4	17, 23, 33, 35, 39, 43, 45, 51, 59, 61, 67, 69, 71, 73, 77, 79, 85	17	
5.5	13, 17, 21, 25, 29, 31, 35, 39, 43, 47, 51, 69	12	
5.6	1, 7, 9, 11, 13, 15, 17, 19, 21, 23, 29, 33, 37, 39, 43, 45, 47, 49, 55, 67, 71, 75, 79, 95, 99, 105, 115, 117	28	
6.1	3, 5, 15, 17, 21, 25, 27, 31, 33, 37, 41, 45, 47, 49, 53, 57, 65, 67, 71, 75, 79, 81, 83, 87, 93, 97, 99	27	
6.2	9, 11, 13, 21, 23, 25, 27, 39, 41, 43, 45	11	
6.3	15, 19, 21, 23, 27, 31, 37, 39, 41, 43, 45, 49, 51, 57, 61, 63, 67, 73	18	
6.4	13, 15, 17, 19, 21, 29, 33, 35, 37, 39, 43	11	
7.1	1, 5, 9, 21, 23, 25, 29, 31, 33, 35, 37, 39, 43, 45	14	
7.2	11, 15, 17, 19, 23, 25, 31, 33, 35, 39, 43, 45, 49, 53, 57, 61, 63, 65, 67, 69	20	
7.3	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	10	
7.4	1, 3, 7, 9, 13, 15, 19, 21, 25, 27, 31, 33, 37, 39, 43, 45, 49, 51, 55, 57, 61, 63, 67, 69	24	
8.1	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 29, 33, 35, 37, 41	18	
8.2	7, 11, 15, 21, 25, 29, 35, 43, 45, 49, 51	11	
8.3	1, 3, 7, 9, 11, 13, 15, 19, 27, 31, 37, 39, 43, 47, 49, 51	16	
8.4	1, 3, 9, 11, 15, 17, 19	7	

9.1	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 23	11	3, 13, 15, 17, 19
9.2	9, 13, 17, 21, 25, 29, 31, 33, 35, 37, 41, 45, 49, 53, 57	15	29, 31, 33, 37, 39, 41
9.3	13, 15, 17, 19, 23, 25, 33, 35, 37, 39, 41, 43, 47, 53, 55, 57, 61, 63	18	33, 35, 37, 39, 41, 43, 47
9.4	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	10	

Section	Exercises	Count	non-WW
10.1	9, 11, 13, 17, 21, 25, 29, 31, 35, 39, 43, 45	12	
10.2	7, 9, 11, 13, 17, 19, 21, 23, 27, 29, 33, 35	12	
10.3	11, 13, 15, 17, 19, 21, 27, 35, 37, 41, 43, 47, 49, 53, 55, 59, 61, 63	18	
10.4	9, 11, 13, 15, 19, 21, 25, 29, 31, 33, 37, 41, 43, 47, 49, 71, 73	17	
10.5	13, 15, 17, 19, 21, 23, 27, 31, 35, 37, 39, 45, 49, 55, 57, 61, 63, 67, 69, 71, 73, 79, 81	23	
10.6	5, 11, 17, 19, 23, 25, 29, 31, 35, 37, 41, 43, 45, 47, 49, 53, 57, 59, 63, 65, 67, 69, 71	23	
10.7	11, 13, 15, 17, 19, 21, 25, 27, 29, 33, 35, 39, 41, 45, 47, 51, 53, 67, 69, 71	20	
11.1	11, 17, 19, 21, 27, 31, 33, 37, 39, 41, 43, 45, 47, 49, 51, 59, 61, 63, 65, 67, 69, 75, 81, 89, 93, 97	26	
11.2	9, 11, 13, 15, 17, 21, 23, 29, 35, 37, 43, 47, 49, 53, 57, 59, 61, 69, 71, 75, 77, 81	22	
11.3	3, 7, 9, 15, 19, 21, 25, 27, 29, 31, 33, 41, 45, 47	14	
11.4	9, 11, 17, 21, 23, 25, 29, 31, 33, 35, 37, 39, 41, 43	14	
11.5	1, 5, 7, 9, 11, 13, 15	7	
12.1	1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 25, 29, 31, 33, 35	16	
12.2	21, 23, 27, 29, 31, 33, 35, 37, 39, 41, 45, 49, 63, 65, 71, 75, 77, 79, 83, 87, 91, 93, 95, 97	24	
12.3	19, 21, 23, 25, 27, 29, 31, 35, 39, 41, 43, 45, 49, 53	14	
12.4	9, 11, 13, 15, 17, 19, 25, 27, 29	9	
12.5	17, 19, 21, 23, 25, 27, 29, 35, 37, 41, 47, 51, 53, 55, 57, 61, 71, 75, 77, 79, 81	21	
13.1	1, 5, 7, 9, 11, 15	6	1, 5, 7, 9, 11, 15
13.2	15, 25, 29, 31, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 57, 59, 61, 63, 65, 71, 75, 77, 79, 81, 85, 87	26	25
13.3	3, 7, 9, 13, 17, 21, 23, 29, 31, 35, 37, 47, 49, 51, 55	15	47, 49, 51, 55
13.4	9, 11, 15, 17, 19, 23, 25, 27, 29, 35, 37, 41, 45, 47, 49	15	11
13.5	3, 5, 11, 13, 15, 17, 21, 25, 27, 29, 31, 33, 37, 41, 43, 45	16	
13.6	13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 43, 39	15	
13.7	9, 11, 15, 17, 19, 21, 25, 27, 29, 35, 37	11	9, 11

Online Homework

About 5600 of the roughly 7000 exercises in ORCCA are available as online exercises in WeBWorK.

WeBWorK	WeBWorK is an open-source, free online homework platform. An institution can host its own WeBWorK server. An institution with its own WeBWorK server may be willing to host courses for faculty at other schools not having adequate IT resources. For a fee, the Mathematical Association of America will provide 6 months of access to a WeBWorK course. For a WeBWorK demonstration of ORCCA exercises (edition 2), see this demonstration course and log in as guest.
edfinity	Edfinity is a commercial online homework platform that can use WeBWorK exercises. Subscribers pay to gain certain features for both instructors and students. There is an Edfinity course with ORCCA edition 1 problem sets. For edition 2, you could work with Edfinity to create such a course (or one may even already exist).

If you are PCC faculty and are interested in using ORCCA together with WeBWorK for online homework, please see WeBWorK for Faculty.

If you are not PCC faculty and you have access to a WeBWorK server, download ORCCA-WeBWorK-sets.tgz and follow the instructions in the README file. The instructions assume that you have server side command line access to the WeBWorK server.

Odd (and Even) Answers

For edition 2, the answers to odd-numbered exercises are in orcca-odd-answers.pdf. If some answer is incorrect or missing, please report this use the feedback form below.

Edition 1 odd-numbered answers are also available, but there is no effort to correct errors and omissions.

We don't publish the even answers. The committee that oversees these course has a majority opinion that they should not be published. Some faculty intentionally make use of the even-numbered exercises, knowing that there is no readily-available answer guide. Since ORCCA generally has exercise parity (e.g. #19 and #20 are the same exercise with different random details) faculty who want published answers may assign odd-numbered exercises and not miss out on content covered in an even-numbered exercise.

Video Playlists

The HTML version of ORCCA has a YouTube video playlist at the top of almost every section. These videos are not exactly a replacement for the written content, but they are meant to be a close approximation and are labeled "Alternative Video Lesson". Meaning, an alternative to reading everything. You may want to use the playlists for other purposes, and here you may find the complete list of YouTube playlist IDs for edition 2.

These may be used in many ways. The most common ways would be to provide someone a link to go to YouTube and watch the playlist. That would be a URL with the following structure. Note the playlist ID is at the end.

`https://www.youtube.com/playlist?list=PLmuZCPhWPt-dqjDRbGl2sSeMeTvrHik4p`

Another common need would be to embed the playlist in something else. For that, use a URL with the following structure. Note the playlist ID is at the end.

https://www.youtube.com/embed/videoseries?list=PLmuZCPhWPt-dqjDRbGl2sSeMeTvrHik4p

Section	Title	Playlist ID
1.1	Variables and Evaluating Expressions	PLmuZCPhWPt-cOp0ZMJHO6zy0bhdu2gKjQ
1.2	Combining Like Terms	PLmuZCPhWPt-dqjDRbGl2sSeMeTvrHik4p
1.3	Comparison Symbols and Notation for Intervals	PLmuZCPhWPt-eG16R-Bwkkcna9LWJrMXho
1.4	Equations and Inequalities as TrueFalse Statements	PLmuZCPhWPt-dTJw-zF33uIwEoFmBjd2jp
1.5	Solving OneStep Equations	PLmuZCPhWPt-cttxbKypuCvTQFoSXATxAF
1.6	Solving OneStep Inequalities	PLmuZCPhWPt-e07ZjJTXdkRf9V8MDJaz1m
1.7	Algebraic Properties and Simplifying Expressions	PLmuZCPhWPt-eiwLULOcn5X4ZyZ5kB6H6A
1.8	Modeling with Equations and Inequalities	PLmuZCPhWPt-dL4to2zbHwZBLGkJ6cBf0I
2.1	Solving Multistep Linear Equations	PLmuZCPhWPt-f7ezMxAmmOJqEHiU6BOLTH
2.2	Solving Multistep Linear Inequalities	PLmuZCPhWPt-cJeXEsK8ig6AWi0FgfEGuQ
2.3	Linear Equations and Inequalities with Fractions	PLmuZCPhWPt-e_QSbGeacmrdYyommPaxf4
2.4	Special Solution Sets	PLmuZCPhWPt-esiq8AiMfACzqOpC5bJygR
2.5	Isolating a Linear Variable	PLmuZCPhWPt-f5-qOx8wPyZf4j1u4OHhQV
3.1	Cartesian Coordinates	PLmuZCPhWPt-cHeBo5cBbvM9w9bPCv8TU6
3.2	Graphing Equations	PLmuZCPhWPt-cYCLcYMtd7GdwFZ4DRDTBc
3.3	Exploring TwoVariable Data and Rate of Change	PLmuZCPhWPt-dy8SL-jRrCcU2G2ueG9BXb
3.4	Slope	PLmuZCPhWPt-ehhIZJSr3Tp7xyA450Od5R
3.5	SlopeIntercept Form	PLmuZCPhWPt-cR9nhDJcByg3_HALa8sSwp
3.6	PointSlope Form	PLmuZCPhWPt-eTTovr5Y8TossT7tMqR43W
3.7	Standard Form	PLmuZCPhWPt-dXhmAoys9lNZg0c3U77LBw
3.8	Horizontal Vertical Parallel and Perpendicular Lines	PLmuZCPhWPt-dG-XwuV-W9d_U79oIF6z-R
3.9	Summary of Graphing Lines	PLmuZCPhWPt-dSIb9W3SsQGsoWCmjMihcY
4.1	Solving Systems of Linear Equations by Graphing	PLmuZCPhWPt-c8HMsuhb9oJTIJBEvrrZiH
4.2	Substitution	PLmuZCPhWPt-e7mzn96IqkqKBOOrcpG8Cw

4.3	Elimination	PLmuZCPhWPt-fKef6hvJEdOKX6tbUUh2K2
4.4	Systems of Linear Equations Chapter Review	PLmuZCPhWPt-fpvaVC7ZcWuFb7MjW8alTX
5.1	Adding and Subtracting Polynomials	PLmuZCPhWPt-fU6NluIfNnsbsnRi9Ril6M
5.2	Introduction to Exponent Rules	PLmuZCPhWPt-frT2IoPCYbXFHCp1OgGRzi
5.3	Dividing by a Monomial	PLmuZCPhWPt-ctMJkDhYZdH-wRbE0WDzAE
5.4	Multiplying Polynomials	PLmuZCPhWPt-eCbs7JZnacBJj2YUTmRxY1
5.5	Special Cases of Multiplying Polynomials	PLmuZCPhWPt-dZn2tR8c6JV0K-vIjwNrjG
5.6	More Exponent Rules	PLmuZCPhWPt-ecqkbveP7LK1cSKRgOtT4T
6.1	Square and nth Root Properties	PLmuZCPhWPt-flbQmCojUofDfyHSDrpt72
6.2	Rationalizing the Denominator	PLmuZCPhWPt-de_Yf-bVkayBcK5f4h-Ui6
6.3	Radical Expressions and Rational Exponents	PLmuZCPhWPt-d_Q_tIMxBoteIjEIP9zYa6
6.4	Solving Radical Equations	PLmuZCPhWPt-fmrTSt4H_bqf4X088uLVCn
7.1	Solving Quadratic Equations by Using a Square Root	PLmuZCPhWPt-ckSOcZGhTRgy2QCT1Hzsp3
7.2	The Quadratic Formula	PLmuZCPhWPt-dvXvemkv2B4YtnK-s2WCh9
7.3	Complex Solutions to Quadratic Equations	PLmuZCPhWPt-fS8g36sebsN9ECG3i1XSa9
7.4	Solving Equations in General	PLmuZCPhWPt-fbxkbMVRiul2TSS_c4iJCu
8.1	Scientific Notation	PLmuZCPhWPt-fl8UfHkt0R0ZJW1P8c66tF
8.2	Unit Conversion	PLmuZCPhWPt-dw7L8cAsmxjAYg0NVWjDmz
8.3	Geometry Formulas	PLmuZCPhWPt-dld86yGJDqktWW3R_aTQOi
8.4	Geometry Applications	PLmuZCPhWPt-dsYI3mxkwqJduiUexKE3ST
9.1	Review of Graphing	PLmuZCPhWPt-fDPXHolXtPbE2VV8svBRZK
9.2	Key Features of Quadratic Graphs	PLmuZCPhWPt-cwQC_hjL7F5fID0o1zyT0l
9.3	Graphing Quadratic Expressions	PLmuZCPhWPt-fRIJjq-3_he5nEf9TMNPmi
9.4	Graphically Solving Equations and Inequalities	PLmuZCPhWPt-faerrmbkVAxVHrwHYjfnUB
10.1	Factoring Out the Common Factor	PLfPh0EsBc0yIIJk5TgiNzpTktexDYGi_h
10.2	Factoring by Grouping	PLfPh0EsBc0yJjfJ70IFN5oMWg8i6AgAsm
10.3	Factoring Trinomials with Leading Coefficient One	PLfPh0EsBc0yIMQWceuZ3CJzFW8JF8DlwJ
10.4	Factoring Trinomials with a Nontrivial Leading Coefficient	PLfPh0EsBc0yJ5xvcIDWbYew7SsretPyX_
10.5	Factoring Special Polynomials	PLfPh0EsBc0yJxPyMPH6CgUy-R-VvRlwpK
10.6	Factoring Strategies	PLfPh0EsBc0yLm5QkivDOJfubiKHn1d-_t
10.7	Solving Quadratic Equations by Factoring	PLfPh0EsBc0yIyYh6GTj-BgwXXeBxQCq1L
11.1	Function Basics	PLfPh0EsBc0yLcsn7Lr-wbUA8Z3HtmrqNE
11.2	Domain and Range	PLfPh0EsBc0yKPhf9L6-xXch3hA8w8h0Wa
11.3	Using Technology to Explore Functions	PLfPh0EsBc0yJpvlJzHp8UtF4zMEo_RcIy
11.4	Simplifying Expressions with Function Notation	PLfPh0EsBc0yL6Wtjo_0vJ9y3VjNEXwExp
11.5	Technical Definition of a Function	PLfPh0EsBc0yJTQoQ1HGtUvLcvMZPLTxr6
12.1	Introduction to Rational Functions	PLfPh0EsBc0yJ3vBv_N3gze7uhA7on5UB6
12.2	Multiplication and Division of Rational Expressions	PLfPh0EsBc0yJGfb3TKGVTJdRN8gtADFON
12.3	Addition and Subtraction of Rational Expressions	PLfPh0EsBc0yJjmrYW1TtOzdGWE5wkx2nr
12.4	Complex Fractions	PLfPh0EsBc0yIlPrs4FG1oeB4oFsnfYOJs
12.5	Solving Rational Equations	PLfPh0EsBc0yIt9yY2Tx_q7ZUVRE892Lc2

13.1	Overview of Graphing	PLfPh0EsBc0yLCKilC2b2doXUwO7Iaejzt
13.2	Quadratic Graphs and Vertex Form	PLfPh0EsBc0yKv88MN_pGzCC_I_tA5KjA5
13.3	Completing the Square	PLfPh0EsBc0yLkOWZ4nwq5wUzgAp9Wy6vj
13.4	Absolute Value Equations	PLfPh0EsBc0yLxr9gbK4dvy688zkCvMRi7
13.5	Solving Mixed Equations	PLfPh0EsBc0yL0f4Jvs-xY3VFQ3SMIo0Ja
13.6	Compound Inequalities	PLfPh0EsBc0yIJ7nSw6k49Z3QiZQKXjYOR
13.7	Solving Inequalities Graphically	PLfPh0EsBc0yJnRjOAWdQp1TjzF7VemI58
A.1	Arithmetic with Negative Numbers	PLmuZCPhWPt-e9_xhC4FMku8Ri3nf13iHa
A.2	Fractions and Fraction Arithmetic	PLmuZCPhWPt-cNFDYv4AQQ7sYONKbQZafq
A.3	Absolute Value and Square Root	PLmuZCPhWPt-d526tx6oZEdA39w3uUo5iS
A.4	Percentages	PLmuZCPhWPt-fEXjhLrvFaKIv4f0tgQg1W
A.5	Order of Operations	PLmuZCPhWPt-eUvbTLRaIcVzyJ6eCaSqTr
A.6	Set Notation and Types of Numbers	PLmuZCPhWPt-cae4qO6BTDpKi7RCO-bgtp

The videos feature PCC instructors working through examples on screen. You can download PDFs with these same examples, with space provided as in the videos. A common use for this is to ask students to complete these "video lecture notes" as they watch the videos. The Part 1 and Part 2 zip files include two large PDFs (one with module breakpoints for a ten-week course and one without) and also .tex files. The Part 3 zip file includes an individual PDF for each video lecture playlist.

ORCCA_Part-1_Video_Lecture_Outlines_201904.zip

ORCCA_Part-2_Video_Lecture_Outlines_201904.zip

ORCCA_Part-3_Video_Lecture_Outlines_201904.zip

Contributed Ancillary Materials (Worksheets, Lecture Notes, Etc.)

Instructors using ORCCA (form PCC and elsewhere) are welcome and invited to share supporting materials here. PCC faculty can edit this page and add files. Additionally, anyone with materials to post can contact orcca-group@pcc.edu.

Contributor	Description	Download	License
Sharon Brewin	Student note packet	ORCCA Student Note packet.zip	CC BY 4.0
Kara Colley	Class notes, shifts worksheet	Kara Colley - M95 class notes, worksheets.zip	CC BY 4.0
Jeff Pettit	Group project assignments	Group Project Assignments.zip	CC BY 4.0
Laura Smoyer	Class notes, group work, problem sets, syllabus, schedule	Math 60 ORCCA Class Notes and Group Work.zip Math 60 ORCCA Problem Sets.zip Math 65 ORCCA Class Notes and Group Work.zip Math 65-ORCCA Problem Sets.zip Math 95 Smoyer Class Notes and Group Work.zip Math 95 Smoyer Problem Sets.zip Group Roles.docx	CC BY 4.0

Suggestions, Observations, and Other Feedback

We welcome any feedback from all users. Especially feedback that is specific enough that we can act upon to improve the book. If you would like to register an observations (anything from a trivial typo to wanting a section entirely rewritten), please use this form:

ORCCA edition 2 Feedback Form

Submissions are organized in a spreadsheet, and as volunteers have time, each submission is considered and acted upon in some way. Small things like a typo might be immediately corrected in the HTML eBook. Larger changes might be made, but need to wait until the next edition to be seen.

Background

In July 2016, PCC's strategic planning initiative awarded funding for math faculty to produce a complete OER for precollege algebra. The book has a working title of ORCCA (Open Resources for Community College Algebra).

At PCC, these materials will cover the sequence MTH 60/65 (or its alternatives MTH 61/62/63 or MTH 70) and MTH 95. The textbook is being written using PreTeXt, which provides

- an e-book, free to everyone
- a print book synchronized with the e-book, available for free as an electronic pdf, or for cost plus overhead at the PCC bookstore

- embedded online homework exercises using the online homework platform WeBWorK

Work began in summer of 2016.
The MTH 60 portion of the book was piloted by 11 PCC faculty in Fall 2017, 12 in Winter 2018, and 9 in Spring 2017.
The MTH 65 portion of the book was piloted by 7 PCC faculty in Winter 2018, and 9 in Spring 2017.
The MTH 95 portion of the book was piloted by 10 PCC faculty in Spring 2017.

Starting in Fall of 2018, all face-to-face sections of MTH 60/65 will use ORCCA. Online sections may choose to use ORCCA or a specified commercial textbook. For MTH 95, all sections may choose to use ORCCA or a specified commercial textbook.

The content of the early editions is driven by PCC's Course Content and Outcome Guides for these courses. The approach to the content is partly informed by the authors' understanding of how this content is currently taught at PCC, and partly informed by published research on improving student success at these levels. It is our hope that over time, ORCCA replaces the CCOG in the sense that it becomes the CCOG. Committee work that has been put into CCOG development and textbook searches in the past will instead be put into making this book suit our needs.

Over academic year 2018/9, PCC curriculum for these courses changed, and ORCCA changed along with them. This led to ORCCA's edition 2.

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Miscellaneous

In addition to Portland Community College, some faculty at the following institutions are known to be using ORCCA.

- Bridgewater State University
- Central Oregon Community College
- Emporia State University
- Lane Community College
- Oregon Coast Community College
- Piedmont College

ORCCA has been recognized by these institutions.

- AIM open Textbook Initiative
- MERLOT
- Open Textbook Library
- Online Learning Consortium

Contact

For questions about ORCCA, you may send a message to orcca-group@pcc.edu.