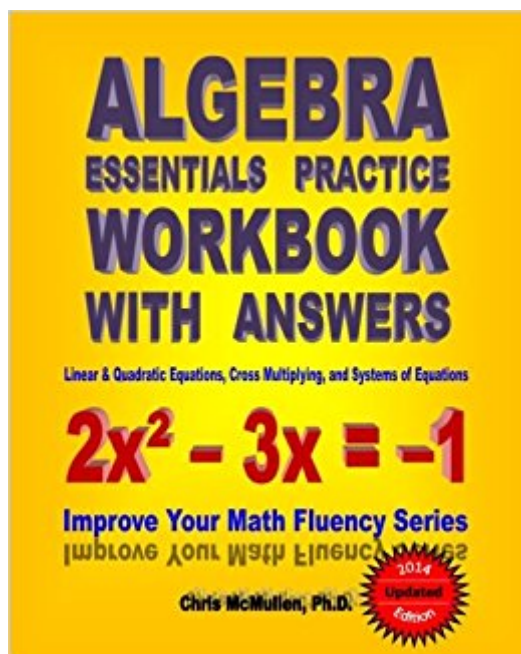


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# Algebra Essentials Practice Workbook With Answers: Linear & Quadratic Equations, Cross Multiplying, And Systems Of Equations: Improve Your Math Fluency Series



## Synopsis

**UPDATED EDITION:** The new edition includes these updates: The updated edition numbers the questions and answers. This helps to easily find the correct answers in the back of the book. 100% of the answers to the updated edition have been independently verified both by computer and by an international math whiz. **AUTHOR:** Chris McMullen earned his Ph.D. in physics from Oklahoma State University and currently teaches physics at Northwestern State University of Louisiana. He developed the Improve Your Math Fluency series of workbooks to help students become more fluent in basic math skills. **CONTENTS:** This Algebra Essentials Practice Workbook with Answers provides ample practice for developing fluency in very fundamental algebra skills - in particular, how to solve standard equations for one or more unknowns. These algebra 1 practice exercises are relevant for students of all levels - from grade 7 thru college algebra. This workbook is conveniently divided up into seven chapters so that students can focus on one algebraic method at a time. Skills include solving linear equations with a single unknown (with a separate chapter dedicated toward fractional coefficients), factoring quadratic equations, using the quadratic formula, cross multiplying, and solving systems of linear equations. Not intended to serve as a comprehensive review of algebra, this workbook is instead geared toward the most essential algebra skills. An introduction describes how parents and teachers can help students make the most of this workbook. Students are encouraged to time and score each page. In this way, they can try to have fun improving on their records, which can help lend them confidence in their math skills. **PRACTICE:** With no pictures, this workbook is geared strictly toward learning the material and developing fluency through practice. **EXAMPLES:** Each section begins with a few pages of instructions for how to solve the equations followed by a few examples. These examples should serve as a useful guide until students are able to solve the problems independently. **ANSWERS:** Answers to 100% of the exercises are tabulated at the back of the book. This helps students develop confidence and ensures that students practice correct techniques, rather than practice making mistakes. All answers from the updated edition have been verified both by computer and independently by an international math whiz. **PHOTOCOPIES:** The copyright notice permits parents/teachers who purchase one copy or borrow one copy from a library to make photocopies for their own children/students only. This is very convenient if you have multiple children/students or if a child/student needs additional practice. **NOTE:** The answer key uses standard form. Fractions are expressed as reduced fractions and perfect squares are factored out of squareroots. For example, if you receive an answer of 1 over root 8, the answer key will instead show root 2 over 4; both answers are the same, but the answer key uses standard form.

## Book Information

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## Customer Reviews

Question: Are pages 51-55 missing answers? Answer: No, they are not. Pages 51-55 are the introduction of Chapter 3, which includes instructions and examples. There are no exercises on those pages.

Question: Should the answer to page 56, problem 9 be  $\sqrt{7/5}$ ? Answer: Actually, that's the same as the answer listed if you rationalize the denominator.

Question: Could you please check the answer to page 32, exercise 5? Answer: Even better, I will work out the solution for you so that you can follow along.

$$-x/5 - 3x/2 = -x/5 + 5/3$$

Add  $x/5$  to both sides to separate the variable terms (with  $x$ ) from the constant term ( $5/3$ ).

$$-3x/2 = 5/3$$

Multiply both sides by 2.

$$-3x = 10/3$$

Divide both sides by -3.

$$x = -10/9$$

The answer listed in the back of the book is  $-10/9$ . You can also verify this answer with an online algebra solver, such as [Mathematica](#) offers.

Question: Can you show me how to solve exercise 10 on page 39? Answer: The section with fractions seems to draw many questions. All the more reason students need to practice this.

$$1 - 5x/2 = 3 - 2x$$

Add  $5x/2$  to both sides to get

$$1 = 3 - 2x + 5x/2$$

Write  $2x$  as  $4x/2$  so that you can combine the variable terms with a common denominator:

$$1 = 3 - 4x/2 + 5x/2$$

This simplifies to

$$1 = 3 + x/2$$

Isolate the unknown term by subtracting 3 from both sides:

$$-2 = x/2$$

Multiply both sides by 2 to get

$$-4 = x$$

**TIPS ON CHECKING YOUR ANSWERS:** There can be multiple ways of expressing the same answer. Here are a few examples: Student's answer =  $12/8$ . Listed answer =  $3/2$ . Both are the same. It's standard form to reduce fractions when possible, so the book lists  $3/2$  as the answer. The student's answer of  $12/8$  is

not technically incorrect. Student's answer =  $1/\sqrt{2}$ . Listed answer =  $\sqrt{2}/2$ . Both are the same. It's standard form to rationalize the denominator, so the book lists  $\sqrt{2}/2$  as the answer. Multiply both numerator and denominator by  $\sqrt{2}$  to go from  $1/\sqrt{2}$  to  $\sqrt{2}/2$ . Student's answer =  $\sqrt{12}$ . Listed answer =  $2\sqrt{3}$ . Both are the same. It's standard form to factor out perfect squares, so the book lists  $2\sqrt{3}$  as the answer.  $\sqrt{12} = \sqrt{3 \times 4} = \sqrt{3} \times \sqrt{4} = 2 \times \sqrt{3}$ . Students who don't reduce their fractions, factor out perfect squares, or rationalize their denominators may feel that the book's answer is incorrect, but that's not the case. Even some popular online equation solvers fail to rationalize the denominator, so a student who obtains  $1/\sqrt{2}$  as the answer and gets the same answer with an online equation solver might wonder if the book's answer of  $\sqrt{2}/2$  is incorrect. However, the book's answer is correct, and is also in standard form. There is a simple way to check your answers. Enter both expressions in your calculator and display the answer as a decimal. This way, you can see that both  $1/\sqrt{2}$  and  $\sqrt{2}/2$  equal 0.70710678... If you reduce your fractions, factor out perfect squares, and rationalize your denominators, this won't be an issue.

Chris McMullen is a physics instructor at Northwestern State University of Louisiana. He earned his Ph.D. in phenomenological high-energy physics (particle physics) from Oklahoma State University in 2002. Originally from California, he earned his Master's degree from California State University, Northridge, where his thesis was in the field of electron spin resonance. As a physics teacher, Dr. McMullen observed that many students lack fluency in fundamental math skills. In an effort to help students of all ages and levels master basic math skills, he has published this Improve Your Math Fluency Series of math workbooks on arithmetic, fractions, algebra, and trigonometry.

Book was received in a timely manner and in new condition. I haven't done algebra in over 10 years and this book really help me get into algebra again. The instructions are easy to understand and I enjoy working on the problems. I am now working on ALEKS online and I highly recommend that to everyone for all math skill levels and areas! It assesses where you are at and like this book, explains problems and then test you on those problems.

Absolutely fantastic book for any one struggling with Algebra!

I thought this book was quite good just because it had so many exercises. My intention was to brush up on my math because I was planning to go back to school soon. However, I found the exercises

too simplistic for my purpose as I was expecting something along the lines of college algebra. This is coming from someone who holds a bachelors in Electronics Engineering so in a way I suppose I expected the problems to be more sadistic as what I experience back in college. I passionately hate Fourier series/equations because of that trauma. Mind you though this book is great for high school students or those college freshmen wanting to brush up on basic algebra. If you have a math, engineering or science background this might not be what you need.

I got this for my 13 year old daughter who will be going into high school. She is good at math but I wanted to make sure she didn't lose any knowledge over the summer. She said that it was pretty easy and did about ten pages the first day. It's more of a review for her. I wanted it to be more of a challenge, but that's OK.

Great relearning algebra.

I love it, thanks.

Great workbook! Many different equations to solve!

Lots of great practice problems, so students can keep reviewing. Wish there were some word problems as well.

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