ACT Math in 30 Days

The Ultimate Crash Course to Preparing for the ACT Math Test

Dynamic design and easy-to-follow activities

A fun, interactive and concrete learning process

Targeted, skill-building practices

Reza Nazari & Ava Ross

Let's Keep in Touch

Follow Us Online

Visit US at

www.EffortlessMath.com

https://www.facebook.com/Effortlessmath

https://goo.gl/2B6qWW

Online Math Lessons

It's easy! Here's how it works.

1- Request a FREE introductory session.

2- Meet a Math tutor online.

3- Start Learning Math in Minutes.

Send Email to: info@EffortlessMath.com

www.EffortlessMath.com

… So Much More Online!

- **FREE Math lessons**
- **More Math learning books!**
- **Online Math Tutors**

Looking for an Online Math Tutor?

Send Email to: info@EffortlessMath.com

ACT Math in 30 Days

The Ultimate Crash Course to Preparing for the ACT Math Test

By

Reza Nazari & Ava Ross

Copyright © 2018

Reza Nazari & Ava Ross

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Ac, without permission of the author.

All inquiries should be addressed to:

info@effortlessMath.com

www.EffortlessMath.com

ISBN-13: 978-1721175772

ISBN-10: 1721175776

Published by: Effortless Math Education

www.EffortlessMath.com

Description

The goal of this book is simple. It will help you incorporate the best method and the right strategies to prepare for the ACT Math FAST and EFFECTIVELY.

ACT Math in 30 Days helps you learn all Math topics that you will need to pass the ACT Math test. You only need to spend about 90–120 minutes daily in your 30–day period in order to pass the test. This book with 2 complete ACT tests is all you will ever need to fully prepare for the ACT Math.

ACT Math in 30 Days provides students with the confidence and math skills they need to succeed on the ACT Math, providing a solid foundation of basic Math topics with abundant exercises for each topic. It is designed to address the needs of ACT test takers who must have a working knowledge of basic Math.

Whether you are intimidated by math, or even if you were the first to raise your hand in the Math classes, this book can help you accelerate the learning process and put you on the right track.

Inside the pages of this comprehensive book, students can learn basic math operations in a structured manner with a complete study program to help them understand essential math skills. It also has many exciting features, including:

- Dynamic design and easy–to–follow activities
- Step–by–step guide for all Math topics
- Targeted, skill–building practices
- A fun, interactive and concrete learning process
- Math topics are grouped by category, so you can focus on the topics you struggle on
- All solutions for the exercises are included, so you will always find the answers
- 2 Complete ACT Math Practice Tests that reflect the format and question types on ACT

ACT Math in 30 Days is for all ACT Math test takers. It is a breakthrough in Math learning — offering a winning formula and the most powerful methods for learning basic Math topics

confidently. Each section offers step–by–step instruction and helpful hints, with a few topics being tackled each day. Two complete REAL ACT Math tests are provided on Days 29 and 30 to refine your Math skills.

Effortlessly and confidently follow the step–by–step instructions in this book to prepare for the ACT Math in a short period of time.

ACT Math in 30 Days is the only book you'll ever need to master Basic Math topics! It can be used as a self–study course – you do not need to work with a Math tutor. (It can also be used with a Math tutor).

You'll be surprised how fast you master the Math topics covering on ACT Math Test.

Ideal for self–study as well as for classroom usage.



About the Author

Reza Nazari is the author of more than 100 Math learning books including:
– Math and Critical Thinking Challenges: For the Middle and High School Student
– HiSET Math in 30 Days.
– ASVAB Math Workbook 2018 – 2019
– Effortless Math Education Workbooks
– and many more Mathematics books …

Reza is also an experienced Math instructor and a test–prep expert who has been tutoring students since 2008. Reza is the founder of Effortless Math Education, a tutoring company that has helped many students raise their standardized test scores—and attend the colleges of their dreams. Reza provides an individualized custom learning plan and the personalized attention that makes a difference in how students view math.

To ask questions about Math, you can contact Reza via email at:
reza@EffortlessMath.com

Find Reza's professional profile at:
goo.gl/zoC9rJ

Contents

Day 1: Fractions 14
Simplifying Fractions 15
Adding and Subtracting Fractions 16
Multiplying and Dividing Fractions 17
Adding and Subtracting Mixed Numbers 18
Multiplying and Dividing Mixed Numbers 19
Answers of Worksheets – Day 1 20
Day 2: Decimals 23
Comparing Decimals 24
Rounding Decimals 25
Adding and Subtracting Decimals 26
Multiplying and Dividing Decimals 27
Converting Between Fractions, Decimals and Mixed Numbers 28
Answers of Worksheets – Day 2 29
Day 3: Factoring Numbers 31
Factoring Numbers 32
Greatest Common Factor 33
Least Common Multiple 34
Adding and Subtracting Integers 35
Multiplying and Dividing Integers 36
Answers of Worksheets – Day 3 37
Day 4: Order of Operations 39
Ordering Integers and Numbers 40
Arrange, Order, and Comparing Integers 41
Order of Operations 42
Mixed Integer Computations 43
Absolute Value 44
Integers and Absolute Value 45
Answers of Worksheets – Day 4 47
Day 5: Ratios 49
Writing Ratios 50

Simplifying Ratios 51
Proportional Ratios 52
Complete the Ratio Table 53
Write Each Ratio in Simplest Form 54
Answers of Worksheets – Day 5 55
Day 6: Proportions 58
Create a Proportion 59
Similar Figures 60
Similar Figure Word Problems 61
Simple Interest 62
Ratio and Rates Word Problems 63
Answers of Worksheets – Day 6 64
Day 7: Percentage and Expressions 65
Percentage Calculations 66
Converting Between Percent, Fractions, and Decimals 67
Percent Problems 68
Markup, Discount, and Tax 69
Expressions and Variables 70
Simplifying Variable Expressions 71
Answers of Worksheets – Day 7 72
Day 8: Evaluating Variables 74
Simplifying Polynomial Expressions 75
Translate Phrases into an Algebraic Statement 76
The Distributive Property 77
Evaluating One Variable 78
Evaluating Two Variables 79
Combining like Terms 80
Answers of Worksheets – Day 8 81
Day 9: Equations and Inequalities 83
One–Step Equations 84
Two–Step Equations 85
Multi–Step Equations 86

One–Step Inequalities 87
Two–Step Inequalities 88
Multi–Step Inequalities 89
Answers of Worksheets – Day 9 90
Day 10: Graphing Lines, Midpoint and Distance 92
Finding Slope 93
Graphing Lines Using Slope–Intercept Form 94
Writing Linear Equations 95
Graphing Linear Inequalities 96
Finding Midpoint 97
Finding Distance of Two Points 98
Answers of Worksheets – Day 10 99
Day 11: Polynomials 103
Classifying Polynomials 104
Writing Polynomials in Standard Form 105
Simplifying Polynomials 106
Adding and Subtracting Polynomials 107
Answers of Worksheets – Day 11 108
Day 12: Monomials and Polynomials Operations 110
Multiplying Monomials 111
Multiplying and Dividing Monomials 112
Multiplying a Polynomial and a Monomial 113
Multiplying Binomials 114
Factoring Trinomials 115
Operations with Polynomials 116
Answers of Worksheets – Day 12 117
Day 13: Quadratic and System of Equations 119
Solve a Quadratic Equation 120
Solving Systems of Equations by Substitution 121
Solving Systems of Equations by Elimination 122
Systems of Equations Word Problems 123
Answers of Worksheets – Day 13 124

Day 14: Quadratic Functions 125
Graphing quadratic functions in standard form 126
Graphing quadratic functions in vertex form 127
Solving quadratic equations by factoring 128
Use the quadratic formula and the discriminant 129
Solve quadratic inequalities 130
Answers of Worksheets – Day 14 131
Day 15: Complex Numbers 135
Adding and subtracting complex numbers 136
Multiplying and dividing complex numbers 137
Graphing complex numbers 138
Rationalizing imaginary denominators 139
Answers of Worksheets – Day 15 140
Day 16: Exponents 142
Multiplication Property of Exponents 143
Division Property of Exponents 144
Powers of Products and Quotients 145
Zero and Negative Exponents 146
Negative Exponents and Negative Bases 147
Writing Scientific Notation 148
Answers of Worksheets – Day 16 149
Day 17: Square Roots and Functions Operations 151
Square Roots 152
Relations and functions 153
Function notation 154
Adding and subtracting functions 155
Multiplying and dividing functions 156
Composition of functions 157
Answers of Worksheets – Day 17 158
Day 18: Triangles 160
The Pythagorean Theorem 161
Area of Triangles 162

Perimeter of Polygons 163
Area and Circumference of Circles 164
Area of Squares, Rectangles, and Parallelograms 165
Area of Trapezoids 166
Volume of Cubes 167
Answers of Worksheets – Day 18 169
Day 19: Volume and Surface Area 171
Volume of Rectangle Prisms 172
Surface Area of Cubes 173
Surface Area of a Rectangle Prism 174
Volume of a Cylinder 175
Surface Area of a Cylinder 176
Answers of Worksheets – Day 19 177
Day 20: Logarithms 178
Rewriting logarithms 179
Evaluating logarithms 180
Properties of logarithms 181
Natural logarithms 182
Solving exponential equations requiring logarithms 183
Solving logarithmic equations 184
Answers of Worksheets – Day 20 185
Day 21: Matrices 187
Adding and subtracting matrices 188
Matrix multiplication 189
Finding determinants of a matrix 190
Finding inverse of a matrix 191
Matrix equations 192
Answers of Worksheets – Day 21 194
Day 22: Statistics 197
Mean, Median, Mode, and Range of the Given Data 198
Bar Graph 199
Box and Whisker Plots 200

Stem–And–Leaf Plot 201
The Pie Graph or Circle Graph 202
Scatter Plots 203
Answers of Worksheets – Day 22 204
Day 23: Probability and Combinations 207
Probability of Simple Events 208
Factorials 209
Permutations 210
Combination 211
Answers of Worksheets – Day 23 212
Day 24: Trigonometric Functions 214
Sketch each angle in standard position 215
Finding co–terminal angles and reference angles 216
Evaluating each trigonometric 217
Writing each measure in radians 218
Answers of Worksheets – Day 24 219
Day 25: Trigonometric Functions 221
Writing each measure in degrees 222
Missing sides and angles of a right triangle 223
Arc length and sector area 224
Trig ratios of general angles 225
Answers of Worksheets – Day 25 226
Day 26: Conic Sections 227
Finding the Equation of a Parabola 228
Finding the Focus, Vertex, and Directrix of a Parabola 229
Writing the Standard Form of a Circle 230
Finding the Center and the Radius of Circles 231
Writing the standard equation of each ellipse 232
Answers of Worksheets – Day 26 233
Day 27: Conic Sections 235
Finding the Foci, Vertices, and Co– Vertices of Ellipses 236
Finding the Vertices, Co– Vertices, Foci, and Asymptotes of a Hyperbola 237

Writing the Equation of a Hyperbola in Standard Form 238
Classifying a Conic Section (in Standard Form) 239
Classifying a Conic Section (Not in Standard Form) 240
Answers of Worksheets – Day 27 241
Day 28: Sequences and Series 244
Arithmetic Sequences 245
Geometric Sequences 246
Comparing Arithmetic and Geometric Sequences 247
Finite Geometric Series 248
Infinite Geometric Series 249
Answers of Worksheets – Day 28 250
Day 29: Time to Test 252
ACT Mathematics Practice Test Answers and Explanations 275
Day 30: A Realistic ACT Math Test 291
ACT Mathematics Practice Test Answers and Explanations 312

Day 1: Fractions

Math Topics that you'll learn today:

- ✓ Simplifying Fractions
- ✓ Adding and Subtracting Fractions
- ✓ Multiplying and Dividing Fractions
- ✓ Adding and Subtracting Mixed Numbers
- ✓ Multiplying and Dividing Mixed Numbers

"A Man is like a fraction whose numerator is what he is and whose denominator is what he thinks of himself. The larger the denominator, the smaller the fraction." –Tolstoy

Simplifying Fractions

Helpful Hints

- Evenly divide both the top and bottom of the fraction by 2, 3, 5, 7, ... etc.
- Continue until you can't go any further.

Example:

$$\frac{4}{12} = \frac{2}{6} = \frac{1}{3}$$

Simplify the fractions.

1) $\frac{22}{36}$

2) $\frac{8}{10}$

3) $\frac{12}{18}$

4) $\frac{6}{8}$

5) $\frac{13}{39}$

6) $\frac{5}{20}$

7) $\frac{16}{36}$

8) $\frac{18}{36}$

9) $\frac{20}{50}$

10) $\frac{6}{54}$

11) $\frac{45}{81}$

12) $\frac{21}{28}$

13) $\frac{35}{56}$

14) $\frac{52}{64}$

15) $\frac{13}{65}$

16) $\frac{44}{77}$

17) $\frac{21}{42}$

18) $\frac{15}{36}$

19) $\frac{9}{24}$

20) $\frac{20}{80}$

21) $\frac{25}{45}$

Adding and Subtracting Fractions

Helpful Hints

- For "like" fractions (fractions with the same denominator), add or subtract the numerators and write the answer over the common denominator.
- Find equivalent fractions with the same denominator before you can add or subtract fractions with different denominators.
- Adding and Subtracting with the same denominator:

$$\frac{a}{b}+\frac{c}{b}=\frac{a+c}{b}$$

$$\frac{a}{b}-\frac{c}{b}=\frac{a-c}{b}$$

Adding and Subtracting fractions with different denominators:

$$\frac{a}{b}+\frac{c}{d}=\frac{ad+cb}{bd}$$

$$\frac{a}{b}-\frac{c}{d}=\frac{ad-cb}{bd}$$

Add fractions.

1) $\frac{2}{3}+\frac{1}{2}$

2) $\frac{3}{5}+\frac{1}{3}$

3) $\frac{5}{6}+\frac{1}{2}$

4) $\frac{7}{4}+\frac{5}{9}$

5) $\frac{2}{5}+\frac{1}{5}$

6) $\frac{3}{7}+\frac{1}{2}$

7) $\frac{3}{4}+\frac{2}{5}$

8) $\frac{2}{3}+\frac{1}{5}$

9) $\frac{16}{25}+\frac{3}{5}$

Subtract fractions.

10) $\frac{4}{5}-\frac{2}{5}$

11) $\frac{3}{5}-\frac{2}{7}$

12) $\frac{1}{2}-\frac{1}{3}$

13) $\frac{8}{9}-\frac{3}{5}$

14) $\frac{3}{7}-\frac{3}{14}$

15) $\frac{4}{15}-\frac{1}{10}$

16) $\frac{3}{4}-\frac{13}{18}$

17) $\frac{5}{8}-\frac{2}{5}$

18) $\frac{1}{2}-\frac{1}{9}$