AFOQT

Math Workbook

The Most Comprehensive Review for the Math Section of the AFOQT

2018

10
Full-Length AFOQT
Math Practice Exams

2,500 +
Math problems
with answers

A comprehensive
review of everything
on FAOQT Math

Second Edition

Reza Nazari & Ava Ross

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Math Workbook for AFOQT 2018

The Most Comprehensive Review for the Math Section of the AFOQT

Second Edition

By

Reza Nazari

& Ava Ross

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Description

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

This comprehensive workbook with over 2,500 Math questions and 10 complete Arithmetic and Mathematics Knowledge tests is all you need to fully prepare for the AFOQT Math test. It will help you learn everything you need to ace the math section of the AFOQT.

Effortless Math unique study program provides you with an in−depth focus on the math portion of the exam, helping you master the math skills that students find the most troublesome.
This workbook contains most common sample questions that are most likely to appear in the mathematics section of the AFOQT.

Inside the pages of this comprehensive Workbook, 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
- A fun, interactive and concrete learning process
- Targeted, skill−building practices
- Fun exercises that build confidence
- 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
- 10 Complete AFOQT Math Practice Tests that reflect the format and question types on AFOQT

Effortless Math AFOQT Workbook is an incredibly useful tool for those who want to review all topics being covered on the AFOQT test. It efficiently and effectively reinforces learning outcomes through engaging questions and repeated practice, helping you to quickly master basic Math skills.



About the Author

Reza Nazari is the author of more than 100 Math learning books including:

- Math for Super Smart Students: Fifth Graders and Older by Reza Nazari

- Math and Critical Thinking Challenges: For the Middle and High School Student

- Effortless Math Education Workbooks

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.

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Contents

Description 2
All Mathematics Formulas You Must Know! 12
Mathematics Formula Sheet 13
CHAPTER 1: Whole Numbers 30
1–1 Place Value 31
1–2 Comparing Numbers 32
1–3 Rounding 33
1–5 Whole Number Multiplication and Division 35
1–6 Rounding and Estimates 36
Answers of Worksheets – Chapter 1 37
Chapter 2: Fractions and Decimals 39
2–1 Simplifying Fractions 40
2–2 Adding and Subtracting Fractions 41
2–3 Multiplying and Dividing Fractions 42
2–4 Adding and Subtracting Mixed Numbers 43
2–5 Multiplying and Dividing Mixed Numbers 44
2–6 Adding and Subtracting Decimals 45
2–7 Multiplying and Dividing Decimals 46
2–8 Converting Between Fractions, Decimals and Mixed Numbers 47
2–9 Rounding Numbers 48
2–10 Factoring Numbers 49
2–11 Prime Factorization 50
2–12 Greatest Common Factor 51
2–13 Least Common Multiple 52
2–14 Divisibility Rules 53
Answers of Worksheets – Chapter 2 54
Chapter 3: Real Numbers and Integers 60

3–1 Adding and Subtracting Integers....61
3–2 Multiplying and Dividing Integers....62
3–3 Ordering Integers and Numbers....63
3–4 Arrange, Order, and Comparing Integers....64
3–5 Order of Operations....65
3–6 Mixed Integer Computations....66
3–7 Absolute Value....67
3–8 Integers and Absolute Value....68
3–9 Classifying Real Numbers Venn Diagram....69
3−10 Classifying Numbers....70
Answers of Worksheets – Chapter 3....70
Chapter 4: Proportions and Ratios....75
4–1 Writing Ratios....76
4–2 Simplifying Ratios....77
4–3 Proportional Ratios....78
4–4 Create a Proportion....79
4–5 Similar Figures....80
4–6 Similar Figure Word Problems....80
4–7 Simple and Compound Interest....82
4–8 Complete the Ratio Table....83
4−9 Write Each Ratio in Simplest Form....84
4–10 Ratio and Rates Word Problems....85
Answers of Worksheets – Chapter 4....86
Chapter 5: Percent....90
5–1 Converting Between Percents, Fractions, and Decimals....91
5–2 Table of Common Percent....92
5–3 Percentage Calculations....93
5–4 Find What Percentage a Number Is of Another....94

5–5 Find a Percentage of a Given Number 95
5–6 Percent Problems 96
5–7 Percent of Increase and Decrease 97
5–8 Markup, Discount, and Tax 98
Answers of Worksheets – Chapter 5 99
Chapter 6: Algebraic Expressions 102
6–1 Expressions and Variables 103
6–2 Simplifying Variable Expressions 104
6–3 The Distributive Property 105
6–4 Translate Phrases into an Algebraic Statement 106
6–5 Evaluating One Variable 107
6–6 Evaluating Two Variables 108
6–7 Combining like Terms 109
6–8 Simplifying Polynomial Expressions 110
Answers of Worksheets – Chapter 6 111
Chapter 7: Equations 114
7–1 One–Step Equations 115
7–2 One–Step Equation Word Problems 116
7–3 Two–Step Equations 117
7–4 Two–Step Equation Word Problems 118
7–5 Multi–Step Equations 119
Answers of Worksheets – Chapter 7 120
Chapter 8: Systems of Equations 122
8–1 Solving Systems of Equations by Graphing 123
8–2 Solving Systems of Equations by Substitution 124
8–3 Solving Systems of Equations by Elimination 125
8–4 Systems of Equations Word Problems 126
Answers of Worksheets – Chapter 8 127

Chapter 9: Inequalities 129
9–1 Graphing Single–Variable Inequalities 130
9–2 One–Step Inequalities 131
9–3 Two–Step Inequalities 132
9–4 Multi–Step Inequalities 133
Answers of Worksheets – Chapter 9 134
Chapter 10: Linear Functions 136
10–1 Finding Slope 137
10–2 Graphing Lines Using Slope–Intercept Form 138
10–3 Graphing Lines Using Standard Form 139
10–4 Writing Linear Equations 140
10–5 Graphing Linear Inequalities 141
10–6 Finding Midpoint 142
10–7 Finding Distance of Two Points 143
Answers of Worksheets – Chapter 10 144
Chapter 11: Polynomials 150
10–1 Classifying Polynomials 151
10–2 Writing Polynomials in Standard Form 152
10–3 Simplifying Polynomials 153
11–4 Adding and Subtracting Polynomials 154
11–5 Multiplying Monomials 155
11–6 Multiplying and Dividing Monomials 156
11–7 Multiplying a Polynomial and a Monomial 157
11–8 Multiplying Binomials 158
11–9 Factoring Trinomials 159
11–10 Operations with Polynomials 160
Answers of Worksheets – Chapter 11 161
Chapter 12: Exponents and Radicals 165

12–1 Multiplication Property of Exponents 166
12–2 Division Property of Exponents 167
12–3 Powers of Products and Quotients 168
12–4 Zero and Negative Exponents 169
12–5 Negative Exponents and Negative Bases 170
12–6 Writing Scientific Notation 171
12–7 Square Roots 172
Answers of Worksheets – Chapter 12 173
Chapter 13: Geometry 176
13−1 The Pythagorean Theorem 177
13−2 Classifying Triangles and Quadrilaterals 177
13−3 Area of Triangles 178
13−4 Perimeter of Polygons 180
13−5 Area and Circumference of Circles 181
13−6 Area of Squares, Rectangles, and Parallelograms 182
13−7 Area of Trapezoids 183
Answers of Worksheets – Chapter 13 184
Chapter 14: Solid Figures 186
14−1 Volume of Cubes 187
14−2 Volume of Rectangle Prisms 188
14−3 Surface Area of Cubes 189
14−4 Surface Area of a Prism 190
14−5 Volume of a Cylinder 191
14−6 Surface Area of a Cylinder 192
Answers of Worksheets – Chapter 14 193
Chapter 15: Statistics 194
15−1 Mean, Median, Mode, and Range of the Given Data 195
15−2 Bar Graph 196

15−3 Box and Whisker Plots 197
15−4 Stem−And−Leaf Plot 197
15−5 The Pie Graph or Circle Graph 199
15−6 Scatter Plots 199
15−7 Probability Problems 201
15−8 Measurement 202
Answers of Worksheets – Chapter 15 203
AFOQT Math Practice Tests 208
Test 1 Arithmetic Reasoning 209
Test 1 Mathematics Knowledge 216
Test 2 Arithmetic Reasoning 222
Test 2 Mathematics Knowledge 229
Test 3 Arithmetic Reasoning 235
Test 3 Mathematics Knowledge 241
Test 4 Arithmetic Reasoning 247
Test 4 Mathematics Knowledge 253
Test 5 Arithmetic Reasoning 259
Test 5 Mathematics Knowledge 265
Test 6 Arithmetic Reasoning 271
Test 6 Mathematics Knowledge 277
Test 7 Arithmetic Reasoning 283
Test 7 Mathematics Knowledge 290
Test 8 Arithmetic Reasoning 296
Test 8 Mathematics Knowledge 302
Test 9 Arithmetic Reasoning 308
Test 9 Mathematics Knowledge 314
Test 10 Arithmetic Reasoning 320
Test 10 Mathematics Knowledge 326

FAOQT Practice Tests Answer Keys..... 332

All Mathematics Formulas You Must Know!

Taking the AFOQT with only a few weeks or even few days to study? First and foremost, you should understand that the 2018 AFOQT Arithmetic and Mathematics Knowledge sections do not provide a list of basic formulas that will be required to know for the test. This means that you will need to be able to recall many math formulas on the AFOQT.

Below you will find a list of all Math formulas you MUST have learned before test day, as well as some explanations for how to use them and what they mean. Keep this list around for a quick reminder when you forget one of the formulas.

Review them all, then take a look at the math topics to begin applying them!

Mathematics Formula Sheet

Place Value

The value of the place, or position, of a digit in a number.
Example: In 456, the 5 is in "tens" position.

Comparing Numbers Signs

Equal to =
Less than <
Greater than >
Greater than or equal ≥
Less than or equal ≤

Rounding

Putting a number up or down to the nearest whole number or the nearest hundred, etc.
Example: 64 rounded to the nearest ten is 60, because 64 is closer to 60 than to 70.

Whole Number

The numbers {0, 1, 2, 3, …}

Estimates

Find a number close to the exact answer.

Decimals

is a fraction written in a special form. For example, instead of writing $\frac{1}{2}$ you can write 0.5.

Fractions

A number expressed in the form $\frac{a}{b}$

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 with the different denominator:

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

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

Multiplying and Dividing Fractions:

$$\frac{a}{b}\times\frac{c}{d}=\frac{a\times c}{b\times \mathrm{d}}$$

$$\frac{a}{b}\div\frac{c}{d}=\frac{\frac{a}{b}}{\frac{c}{d}}=\frac{ad}{bc}$$

Mixed Numbers

A number composed of a whole number and fraction

Example: $2\frac{2}{3}$

Converting between improper fractions and mixed numbers:

$$\mathrm{a}\frac{c}{b}=\mathrm{a}+\frac{c}{b}=\frac{ab\quad c}{b}$$

Factoring Numbers

Factor a number means to break it up into numbers that can be multiplied together to get the original number.

Example: 12 = 2 × 2 × 3

Greatest Common Factor

Multiply common prime factors

Example: 200 = 2 × 2 × 2 × 5 × 5

60 = 2 × 2 × 3 × 5

GCF (200, 60) = 2 × 2 × 5 = 20

Integers

{… , −3, −2, −1, 0, 1, 2, 3, …}

Includes: zero, counting numbers, and the negative of the counting numbers

Order of Operations

PEMDAS

(parentheses / exponents / multiply / divide / add / subtract)

Ratios

A ratio is a comparison of two numbers by division.

Example: 3: 5, or $\frac{3}{5}$

Percentages

use the following formula to find part, whole, or percent

part = $\frac{\text{percent}}{100}$ × whole

Percent of Change

$$\frac{\text{New Value}-\text{Old Value}}{Old\ Value} \times 100\ \%$$

Markup

Markup = selling price – cost

Markup rate = markup divided by the cost

Divisibility Rules

Divisibility means that you are able to divide a number evenly.

Example: 24 is divisible by 6, because 24 ÷ 6 = 4

Least Common Multiple

Check multiples of the largest number

Example: LCM (200, 60): 200 (no), 400 (no), 600 (yes!)

Real Numbers

All numbers that are on number line. Integers plus fractions, decimals, and irrationals (√2, √3, π, etc.)

Absolute Value

Refers to the distance of a number from 0, the distances are positive as absolute value of a number cannot be negative. $|-22| = 22$

$$|x| = \begin{cases} x & for\ x \geq 0 \\ -x & for\ x < 0 \end{cases}$$

$|x| < n \quad \Rightarrow \quad -n < x < n$

$|x| > n \quad \Rightarrow \quad x < -n \text{ or } x > n$

Proportional Ratios

A proportion means that two ratios are equal. It can be written in two ways:

$\frac{a}{b} = \frac{c}{d}$, a: b = c: d

Discount

Multiply the regular price by the rate of discount

Selling price =

original price – discount

Expressions and Variables

A variable is a letter that represents unspecified numbers. One may use a variable in the same manner as all other numbers:

Addition	2 + a	2 plus a
Subtraction	y – 3	y minus 3
Division	$\frac{4}{x}$	4 divided by x
Multiplication	5a	5 times a

Systems of Equations

Two or more equations working together.

example:

$-2x + 2y = 4$

$-2x + y = 3$

Functions

A function is a rule to go from one number (x) to another number (y), usually written y = f (x).

For any given value of x, there can only be one corresponding value y. If y = kx for some number k (example: f (x) = 0.5 x), then y is said to be directly proportional to x. If y = k/x (example: f (x) = 5/x), then y is said to be inversely proportional to x.

The graph of y = f (x h) + k is the translation of the graph of y = f (x) by (h, k) units in the plane. For example, y = f (x + 3) shifts the graph of f (x) by 3 units to the left.

Tax

To find tax, multiply the tax rate to the taxable amount (income, property value, etc.)

Distributive Property

a (b + c) = ab + ac

Polynomial

$P(x) = a_0x^n + a_1x^{n-1} + \ldots + a_{n-2}2x^2 + a_{n-1}x + an$

Equations

The values of two mathematical expressions are equal.

ax + b = c

Solving Systems of Equations by Substitution

Consider the system of equations

x – y = 1, –2x + y = 6

Substitute x = 1 – y in the second equation

–2(1–y) + y = 5 y = 2

Substitute y = 2 in x = 1 + y

X = 1 + 2 = 3

Solving Systems of Equations by Elimination

$$\begin{array}{r} \boldsymbol{x + 2y = 6} \\ + \ \boldsymbol{-x + y = 3} \\ \hline 3y = 9 \\ y = 3 \end{array}$$

x + 6 = 6

x = 0