A Fun, Interactive and Concrete Learning Process

Grade 8

STAAR Mathematics Workbook

2018 - 2019

A Comprehensive Review and Step-by-Step Guide to Preparing for the STAAR Math Test

- Targeted, skill-building practices
- Step-by-Step guide for all Math topics
- 2 Complete STAAR Math Practice Tests

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

Grade 8 STAAR Mathematics Workbook 2018 – 2019

A Comprehensive Review and Step–by–Step Guide to

Preparing for the STAAR 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: 978-1717111623

ISBN-10: 1717111629

Published by: Effortless Math Education

www.EffortlessMath.com

Description

Grade 8 STAAR Mathematics Workbook is full of specific and detailed material that will be key to succeeding on the STAAR Math. It's filled with the critical math concepts a student will need in order to do well on the test. Math concepts in this book break down the topics, so the material can be quickly grasped. Examples are worked step–by–step, so you learn exactly what to do.

This comprehensive Math workbook brings together everything a student needs to know for the STAAR Math section. It is designed to address the needs of STAAR test takers who must have a working knowledge of basic Math. It contains most common sample questions that are most likely to appear in the mathematics section of the STAAR. This book leaves no stones unturned!

STAAR Mathematics Workbook with over 2,500 sample questions and 2 complete STAAR tests is all a student needs to fully prepare for the STAAR Math. It will help the student learns everything they need to ace the math section of the STAAR.

This workbook includes practice test questions. It contains easy–to–read essential summaries that highlight the key areas of the STAAR Math test. Effortless Math test study guide reviews the most important components of the STAAR Math test. Anyone planning to take the STAAR Math test should take advantage of the review material and practice test questions contained in this study guide.

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 STAAR Math Practice Tests that reflect the format and question types on STAAR

STAAR Mathematics Workbook is the ideal prep solution for any student who wants to prepare for the STAAR test. It efficiently and effectively reinforces learning outcomes through engaging questions and repeated practice, helping students to quickly master basic Math skills.

Effortless Math books have helped thousands of students prepare for standardized tests and achieve their education and career goals. This is done by setting high standards and preparing the best quality Mathematics learning books, and this book is no exception. It is the perfect study aid for the STAAR Math test. The student will definitely be well prepared for the test with this comprehensive workbook!



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
– GED 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.

You can contact Reza via email at:
reza@EffortlessMath.com

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

Contents

Chapter 1: Arithmetic and Number Theory 11
1–1 Simplifying Fractions 12
1–2 Adding and Subtracting Fractions 13
1–3 Multiplying and Dividing Fractions 14
1–4 Adding and Subtracting Mixed Numbers 15
1–5 Multiplying and Dividing Mixed Numbers 16
1–6 Adding and Subtracting Decimals 17
1–7 Multiplying and Dividing Decimals 18
1–8 Converting Between Fractions, Decimals and Mixed Numbers 19
1–9 Rounding Numbers 20
1–10 Factoring Numbers 21
1–11 Prime Factorization 22
1–12 Greatest Common Factor 23
1–13 Least Common Multiple 24
1–14 Divisibility Rules 25
1–15 Classify Numbers 26
Answers of Worksheets – Chapter 1 27
Chapter 2: Real Numbers and Integers 33
2–1 Adding and Subtracting Integers 34
2–2 Multiplying and Dividing Integers 35
2–3 Ordering Integers and Numbers 36
2–4 Arrange, Order, and Comparing Integers 37
2–5 Order of Operations 38
2–6 Mixed Integer Computations 39
2–7 Absolute Value 40
2–8 Integers and Absolute Value 41
Answers of Worksheets – Chapter 2 42
Chapter 3: Proportions and Ratios 45
3–1 Writing Ratios 46
3–2 Simplifying Ratios 47

3–3 Proportional Ratios 48
3–4 Create a Proportion 49
3–5 Similar Figures 50
3–6 Similar Figure Word Problems 51
3–7 Simple Interest 52
3–8 Ratio and Rates Word Problems 53
Answers of Worksheets – Chapter 2 54
Chapter 4: Percent 57
4–1 Converting Between Percent, Fractions, and Decimals 58
4–2 Percentage Calculations 59
4–3 Find What Percentage a Number Is of Another 60
4–4 Find a Percentage of a Given Number 61
4–5 Percent Problems 62
4–6 Percent of Increase and Decrease 63
4–7 Markup, Discount, and Tax 64
Answers of Worksheets – Chapter 4 65
Chapter 5: Algebraic Expressions 68
5–1 Expressions and Variables 69
5–2 Simplifying Variable Expressions 70
5–3 The Distributive Property 71
5–4 Translate Phrases into an Algebraic Statement 72
5–5 Evaluating One Variable 73
5–6 Evaluating Two Variables 74
5–7 Combining like Terms 75
5–8 Simplifying Polynomial Expressions 76
Answers of Worksheets – Chapter 5 77
Chapter 6: Equations 80
6–1 One–Step Equations 81
6–2 One–Step Equation Word Problems 82
6–3 Two–Step Equations 83
6–4 Two–Step Equation Word Problems 84

6–5 Multi–Step Equations 85
Answers of Worksheets – Chapter 6 86
Chapter 7: Systems of Equations 88
7–1 Solving Systems of Equations by Graphing 89
7–2 Solving Systems of Equations by Substitution 90
7–3 Solving Systems of Equations by Elimination 91
7–4 Systems of Equations Word Problems 92
Answers of Worksheets – Chapter 7 93
Chapter 8: Inequalities 94
8–1 Graphing Single – Variable Inequalities 95
8–2 One–Step Inequalities 96
8–3 Two–Step Inequalities 97
8–4 Multi–Step Inequalities 98
Answers of Worksheets – Chapter 8 99
Chapter 9: Linear Functions 102
9–1 Finding Slope 103
9–2 Graphing Lines Using Slope–Intercept Form 104
9–3 Graphing Lines Using Standard Form 105
9–4 Writing Linear Equations 106
9–5 Graphing Linear Inequalities 107
9–6 Finding Midpoint 108
9–7 Finding Distance of Two Points 109
9–8 Slope and Rate of Change 110
9–9 Find the Slope, x–intercept and y–intercept 111
9–10 Write an Equation from a Graph 112
9–11 Slope–intercept Form 113
9–12 Point–slope Form 114
9–13 Equations of Horizontal and Vertical Lines 115
9–14 Equation of Parallel or Perpendicular Lines 116
Answers of Worksheets – Chapter 9 117
Chapter 10: Monomials and Polynomials 124

10–1 Classifying Polynomials 125
10–2 Writing Polynomials in Standard Form 126
10–3 Simplifying Polynomials 127
10–4 Add and Subtract monomials 128
10–5 Multiplying Monomials 129
10–6 Multiplying and Dividing Monomials 130
10 – 7 GCF of Monomials 131
10–8 Powers of monomials 132
10–9 Multiplying a Polynomial and a Monomial 133
10–10 Multiplying Binomials 134
10–11 Factoring Trinomials 135
Answers of Worksheets – Chapter 12 136
Chapter 11: Exponents and Radicals 140
11–1 Multiplication Property of Exponents 141
11–2 Division Property of Exponents 142
11–3 Powers of Products and Quotients 143
11–4 Zero and Negative Exponents 144
11–5 Negative Exponents and Negative Bases 145
11–6 Writing Scientific Notation 146
11–7 Square Roots 147
Answers of Worksheets – Chapter 11 148
Chapter 12: Plane Figures 151
12–1 Transformations: Translations, Rotations, and Reflections 152
12–2 The Pythagorean Theorem 153
12–3 Area of Triangles 154
12–4 Perimeter of Polygons 155
12–5 Area and Circumference of Circles 156
12 –6 Area of Squares, Rectangles, and Parallelograms 157
12–7Area of Trapezoids 158
Answers of Worksheets – Chapter 12 159
Chapter 13: Solid Figures 162

13–1 Volume of Cubes and Rectangle Prisms 163
13–2 Surface Area of Cubes 164
13–3 Surface Area of a Prism 165
13–4 Volume of Pyramids and Cones 166
13–5 Surface Area of Pyramids and Cones 167
Answers of Worksheets – Chapter 13 168
Chapter 14: Statistics 169
14–1 Mean, Median, Mode, and Range of the Given Data 170
14–2 First Quartile, Second Quartile and Third Quartile of the Given Data 171
14–3 Bar Graph 172
14 – 4 Box and Whisker Plots 173
14–5 Stem–And–Leaf Plot 174
14–6 The Pie Graph or Circle Graph 175
14–7 Scatter Plots 176
Answers of Worksheets – Chapter 14 177
Chapter 15: Probability 181
15–1 Probability of Simple Events 182
15–2 Experimental Probability 183
15–3 Independent and Dependent Events Word Problems 184
15–4 Factorials 185
15–5 Permutations 186
15–6 Combination 187
Answers of Worksheets – Chapter 15 188
STAAR Practice Test 1 191
STAAR Practice Test 2 212
STAAR Practice Tests Answer Keys 229

Chapter 1: Arithmetic and Number Theory

1–1 Simplifying Fractions

1–2 Adding and Subtracting Fractions

1–3 Multiplying and Dividing Fractions

1–4 Adding and Subtracting Mixed Numbers

1–5 Multiplying and Dividing Mixed Numbers

1–6 Adding and Subtracting Decimals

1–7 Multiplying and Dividing Decimals

1–8 Converting Between Fractions, Decimals and Mixed Numbers

1–9 Rounding Numbers

1–10 Factoring Numbers

1–11 Prime Factorization

1–12 Greatest Common Factor

1–13 Least Common Multiple

1–14 Divisibility Rules

1–15 Classify Numbers

1–1 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) $\frac{25}{45}$

1–2 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) $\frac{1}{2}-\frac{1}{9}$

1–3 Multiplying and Dividing Fractions

Helpful Hints

- **Multiplying fractions:** multiply the top numbers and multiply the bottom numbers.
- **Dividing fractions:** Keep, Change, Flip Keep first fraction, change division sign to multiplication, and flip the numerator and denominator of the second fraction. Then, solve!

Example:

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

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

Multiplying fractions. Then simplify.

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

2) $\frac{3}{4} \times \frac{2}{3}$

3) $\frac{2}{5} \times \frac{3}{7}$

4) $\frac{3}{8} \times \frac{1}{3}$

5) $\frac{3}{5} \times \frac{2}{5}$

6) $\frac{7}{9} \times \frac{1}{3}$

7) $\frac{2}{3} \times \frac{3}{8}$

8) $\frac{1}{4} \times \frac{1}{3}$

9) $\frac{5}{7} \times \frac{7}{12}$

Dividing fractions.

10) $\frac{2}{9} \div \frac{1}{4}$

11) $\frac{1}{2} \div \frac{1}{3}$

12) $\frac{6}{11} \div \frac{3}{4}$

13) $\frac{11}{14} \div \frac{1}{10}$

14) $\frac{3}{5} \div \frac{5}{9}$

15) $\frac{1}{2} \div \frac{1}{2}$

16) $\frac{3}{5} \div \frac{1}{5}$

17) $\frac{12}{21} \div \frac{3}{7}$

18) $\frac{5}{14} \div \frac{9}{10}$

1–4 Adding and Subtracting Mixed Numbers

Helpful Hints

Use the following steps for both adding and subtracting mixed numbers.

- Find the Least Common Denominator (LCD)
- Find the equivalent fractions for each mixed number.
- Add or subtract fractions after finding common denominator.
- Write your answer in lowest terms.

Example:

$1\frac{3}{4} + 2\frac{3}{8} = 4\frac{1}{8}$

$5\frac{2}{3} - 3\frac{2}{7} = 2\frac{8}{21}$

Add.

1) $4\frac{1}{2} + 5\frac{1}{2}$

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

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

4) $1\frac{1}{3} + 2\frac{2}{3}$

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

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

7) $1\frac{10}{11} + 1\frac{1}{3}$

8) $2\frac{3}{6} + 1\frac{1}{2}$

9) $5\frac{3}{5} + 5\frac{1}{5}$

10) $7 + \frac{1}{5}$

11) $1\frac{5}{7} + \frac{1}{3}$

12) $2\frac{1}{4} + 1\frac{2}{4}$

Subtract.

13) $4\frac{1}{2} - 3\frac{1}{2}$

14) $3\frac{3}{8} - 3\frac{1}{8}$

15) $6\frac{3}{5} - 5\frac{1}{5}$

16) $2\frac{1}{3} - 1\frac{2}{3}$

17) $6\frac{1}{6} - 5\frac{1}{2}$

18) $3\frac{1}{3} - 1\frac{1}{3}$

19) $2\frac{10}{11} - 1\frac{1}{3}$

20) $2\frac{1}{2} - 1\frac{1}{2}$

21) $6\frac{3}{5} - 2\frac{1}{5}$

22) $7\frac{2}{5} - 1\frac{1}{5}$

23) $2\frac{5}{7} - 1\frac{1}{3}$

24) $2\frac{1}{4} - 1\frac{1}{2}$

1–5 Multiplying and Dividing Mixed Numbers

Helpful Hints

1- Convert the mixed numbers to improper fractions.
2- Multiply or Divide fractions and simplify if necessary.

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

Example:

$2\frac{1}{3} \times 5\frac{3}{7} =$

$\frac{7}{3} \times \frac{38}{7} = \frac{38}{3} = 12\frac{2}{3}$

$4\frac{1}{4} \div 2\frac{2}{3} = 1\frac{19}{32}$

Find each product.

1) $1\frac{2}{3} \times 1\frac{1}{4}$
2) $1\frac{3}{5} \times 1\frac{2}{3}$
3) $1\frac{2}{3} \times 3\frac{2}{7}$
4) $4\frac{1}{8} \times 1\frac{2}{5}$
5) $2\frac{2}{5} \times 3\frac{1}{5}$
6) $1\frac{1}{3} \times 1\frac{2}{3}$
7) $1\frac{5}{8} \times 2\frac{1}{2}$
8) $3\frac{2}{5} \times 2\frac{1}{5}$
9) $2\frac{2}{3} \times 4\frac{1}{4}$
10) $2\frac{3}{5} \times 1\frac{2}{4}$
11) $1\frac{1}{3} \times 1\frac{1}{4}$
12) $3\frac{2}{5} \times 1\frac{1}{5}$

Find each quotient.

13) $2\frac{1}{5} \div 2\frac{1}{2}$
14) $2\frac{3}{5} \div 1\frac{1}{3}$
15) $3\frac{1}{6} \div 4\frac{2}{3}$
16) $1\frac{2}{3} \div 3\frac{1}{3}$
17) $4\frac{1}{8} \div 2\frac{2}{4}$
18) $3\frac{1}{2} \div 2\frac{3}{5}$
19) $3\frac{5}{9} \div 1\frac{2}{5}$
20) $2\frac{2}{7} \div 1\frac{1}{2}$
21) $3\frac{1}{5} \div 1\frac{1}{2}$
22) $4\frac{3}{5} \div 2\frac{1}{3}$
23) $6\frac{1}{6} \div 1\frac{2}{3}$
24) $2\frac{2}{3} \div 1\frac{1}{3}$