The Ultimate Step by Step Guide

to Preparing for the STAAR Grade 8 Math Test

Test taker's #1 Choice

STAAR Grade 8 Math 2022

for Beginners

Reza Nazari

✓ Recommended by Test Prep Experts

STAAR Grade 8
Math for Beginners

The Ultimate Step by Step Guide to Preparing for the STAAR Math Test

By

Reza Nazari

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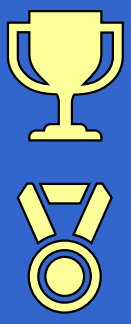
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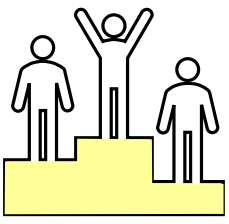
Welcome to
STAAR Grade 8 Math Prep 2022

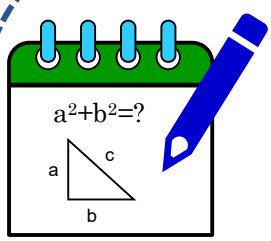


Thank you for choosing Effortless Math for your STAAR Grade 8 Math test preparation and congratulations on making the decision to prepare for the STAAR Grade 8 test! It's a remarkable move you are taking, one that shouldn't be diminished in any capacity. That's why you need to use every tool possible to ensure you succeed on the test with the highest possible score, and this extensive study guide is one such tool.

This study guide will help you prepare for (and even ACE) the STAAR Grade 8 test's math section. As test day draws nearer, effective preparation becomes increasingly more important. Thankfully, you have this comprehensive study guide to help you get ready for the test. With this guide, you can feel confident that you will be more than ready for the STAAR Grade 8 Math test when the time comes.

First and foremost, it is important to note that this book is a study guide and not a textbook. It is best read from cover to cover. Every lesson of this "self-guided math book" was carefully developed to ensure that you are making the most effective use of your time while preparing for the test. This up-to-date guide reflects the 2022 test guidelines and will put you on the right track to hone your math skills, overcome exam anxiety, and boost your confidence, so that you can have your best to succeed on the STAAR Grade 8 Math test.

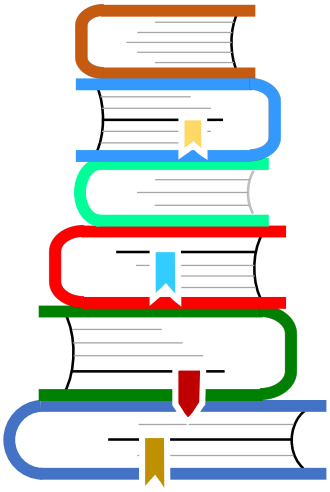




This study guide will:

- ☑ Explain the format of the STAAR Grade 8 Math test.
- ☑ Describe specific test-taking strategies that you can use on the test.
- ☑ Provide STAAR Grade 8 Math test-taking tips.
- ☑ Review all STAAR Grade 8 Math concepts and topics you will be tested on.
- ☑ Help you identify the areas in which you need to concentrate your study time.
- ☑ Offer exercises that help you develop the basic math skills you will learn in each section.
- ☑ Give **2 realistic and full-length practice tests** (featuring new question types) with detailed answers to help you measure your exam readiness and build confidence.

This resource contains everything you will ever need to succeed on the STAAR Grade 8 Math test. You'll get in-depth instructions on every math topic as well as tips and techniques on how to answer each question type. You'll also get plenty of practice questions to boost your test-taking confidence.



In addition, in the following pages you'll find:

- **How to Use This Book Effectively** – This section provides you with step-by-step instructions on how to get the most out of this comprehensive study guide.
- **How to study for the STAAR Grade 8 Math Test** – A six-step study program has been developed to help you make the best use of this book and prepare

for your STAAR Grade 8 Math test. Here you'll find tips and strategies to guide your study program and help you understand STAAR Grade 8 Math and how to ace the test.

- **STAAR Grade 8 Math Review** – Learn everything you need to know about the STAAR Grade 8 Math test.
- **STAAR Grade 8 Math Test-Taking Strategies** – Learn how to effectively put these recommended test-taking techniques into use for improving your STAAR Grade 8 Math score.
- **Test Day Tips** – Review these tips to make sure you will do your best when the big day comes.

Effortless Math's STAAR Grade 8 Online Center

Effortless Math Online STAAR Grade 8 Center offers a complete study program, including the following:

- ✓ Step-by-step instructions on how to prepare for the STAAR Grade 8 Math test
- ✓ Numerous STAAR Grade 8 Math worksheets to help you measure your math skills
- ✓ Complete list of STAAR Grade 8 Math formulas
- ✓ Video lessons for all STAAR Grade 8 Math topics
- ✓ Full-length STAAR Grade 8 Math practice tests
- ✓ And much more…

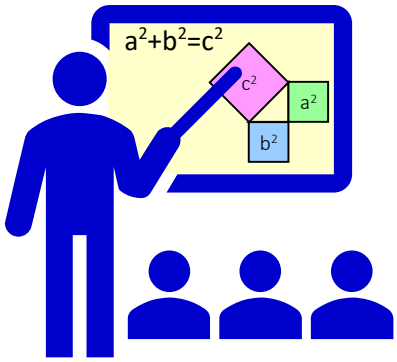
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Visit effortlessmath.com/STAAR to find your online STAAR Grade 8 Math resources.

How to Use This Book Effectively

Look no further when you need a study guide to improve your math skills to succeed on the math portion of the STAAR Grade 8 test. Each chapter of this comprehensive guide to the STAAR Grade 8 Math will provide you with the knowledge, tools, and understanding needed for every topic covered on the test.

It's imperative that you understand each topic before moving onto another one, as that's the way to guarantee your success. Each topic provides you with examples and a step-by-step guide of every concept to better understand the content that will be on the test. To get the best possible results from this book:



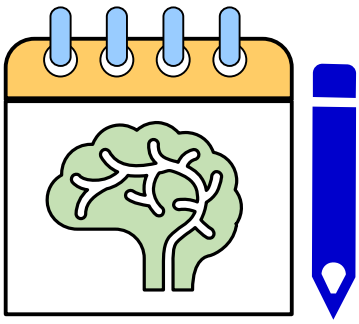
- **Begin studying long before your test date**. This provides you ample time to learn the different math concepts. The earlier you begin studying for the test, the sharper your skills will be. Do not procrastinate! Provide yourself with plenty of time to learn the concepts and feel comfortable that you understand them when your test date arrives.
- **Practice consistently**. Study STAAR Grade 8 Math concepts at least 20 to 30 minutes a day. Remember, slow and steady wins the race, which can be applied to preparing for the STAAR Grade 8 Math test. Instead of cramming to tackle everything at once, be patient and learn the math topics in short bursts.
- Whenever you get a math problem wrong, **mark it off, and review it later** to make sure you understand the concept.
- Start each session by **looking over the previous material.**
- Once you've reviewed the book's lessons, **take the practice test at the back of the book** to gauge your level of readiness. Then, review your results. Read detailed answers and solutions for each question you missed.
- **Take another practice test** to get an idea of how ready you are to take the actual exam. Taking the practice tests will give you the confidence you need on test day. Simulate the STAAR Grade 8 testing environment by sitting in a quiet room free from distraction. Make sure to clock yourself with a timer.

How to Study for the STAAR Grade 8 Math Test

Studying for the STAAR Grade 8 Math test can be a really daunting and boring task. What's the best way to go about it? Is there a certain study method that works better than others? Well, studying for the STAAR Grade 8 Math can be done effectively. The following six-step program has been designed to make preparing for the STAAR Grade 8 Math test more efficient and less overwhelming.

Step 1 - Create a study plan
Step 2 - Choose your study resources
Step 3 - Review, Learn, Practice
Step 4 - Learn and practice test-taking strategies
Step 5 - Learn the STAAR Grade 8 Test format and take practice tests
Step 6 - Analyze your performance

STEP 1: Create a Study Plan



It's always easier to get things done when you have a plan. Creating a study plan for the STAAR Grade 8 Math test can help you to stay on track with your studies. It's important to sit down and prepare a study plan with what works with your life, work, and any other obligations you may have. Devote enough time each day to studying. It's also a great idea to break down each section of the exam into blocks and study one concept at a time.

It's important to understand that there is no "right" way to create a study plan. Your study plan will be personalized based on your specific needs and learning style.

Follow these guidelines to create an effective study plan for your STAAR Grade 8 Math test:

Adding Mixed Numbers

Use the following steps for adding mixed numbers:

- Add whole numbers of the mixed numbers.
- Add the fractions of the mixed numbers.
- Find the Least Common Denominator (LCD) if necessary.
- Add whole numbers and fractions.
- Write your answer in lowest terms.

Examples:

Example 1. Add mixed numbers. $2\frac{1}{2}+1\frac{2}{3}=$

Solution: Let's rewriting our equation with parts separated, $2\frac{1}{2}+1\frac{2}{3}=2+\frac{1}{2}+1+\frac{2}{3}$.
Now, add whole number parts: $2+1=3$
Add the fraction parts $\frac{1}{2}+\frac{2}{3}$. Rewrite to solve with the equivalent fractions. $\frac{1}{2}+\frac{2}{3}=\frac{3}{6}+\frac{4}{6}=\frac{7}{6}$. The answer is an improper fraction (numerator is bigger than denominator). Convert the improper fraction into a mixed number: $\frac{7}{6}=1\frac{1}{6}$. Now, combine the whole and fraction parts: $3+1\frac{1}{6}=4\frac{1}{6}$

Example 2. Find the sum. $1\frac{3}{4}+2\frac{1}{2}=$

Solution: Rewriting our equation with parts separated, $1+\frac{3}{4}+2+\frac{1}{2}$. Add the whole number parts:
$1+2=3$. Add the fraction parts: $\frac{3}{4}+\frac{1}{2}=\frac{3}{4}+\frac{2}{4}=\frac{5}{4}$
Convert the improper fraction into a mixed number: $\frac{5}{4}=1\frac{1}{4}$.
Now, combine the whole and fraction parts: $3+1\frac{1}{4}=4\frac{1}{4}$

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Subtracting Mixed Numbers

Use these steps for subtracting mixed numbers.

- Convert mixed numbers into improper fractions. $a\frac{c}{b} = \frac{ab+c}{b}$
- Find equivalent fractions with the same denominator for unlike fractions. (fractions with different denominators)
- Subtract the second fraction from the first one. $\frac{a}{b} - \frac{c}{d} = \frac{ad-b}{bd}$
- Write your answer in lowest terms.
- If the answer is an improper fraction, convert it into a mixed number.

Examples:

Example 1. Subtract. $2\frac{1}{3} - 1\frac{1}{2} =$

Solution: Convert mixed numbers into fractions: $2\frac{1}{3} = \frac{2\times3+1}{3} = \frac{7}{3}$ and $1\frac{1}{2} = \frac{1\times2+1}{2} = \frac{3}{2}$

These two fractions are "unlike" fractions. (they have different denominators). Find equivalent fractions with the same denominator. Use this formula: $\frac{a}{b} - \frac{c}{d} = \frac{ad-\mathrm{b}c}{bd}$

$\frac{7}{3} - \frac{3}{2} = \frac{(7)(2)-(3)(3)}{3\times2} = \frac{14-9}{6} = \frac{5}{6}$

Example 2. Find the difference. $3\frac{4}{7} - 2\frac{3}{4} =$

Solution: Convert mixed numbers into fractions: $3\frac{4}{7} = \frac{3\times7+4}{7} = \frac{25}{7}$ and $2\frac{3}{4} = \frac{2\times4+3}{4} = \frac{11}{4}$

Then: $3\frac{4}{7} - 2\frac{3}{4} = \frac{25}{7} - \frac{11}{4} = \frac{(25)(4)-(11)(7)}{7\times4} = \frac{23}{28}$

Multiplying Mixed Numbers

Use the following steps for multiplying mixed numbers:

- Convert the mixed numbers into fractions. $a\frac{c}{b} = a + \frac{c}{b} = \frac{ab+c}{b}$
- Multiply fractions. $\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$
- Write your answer in lowest terms.
- If the answer is an improper fraction (numerator is bigger than denominator), convert it into a mixed number.

Examples:

Example 1. Multiply. $4\frac{1}{2} \times 2\frac{2}{5} =$

Solution: Convert mixed numbers into fractions, $4\frac{1}{2} = \frac{4\times2+1}{2} = \frac{9}{2}$ and $2\frac{2}{5} = \frac{2\times5+2}{5} = \frac{12}{5}$. Apply the fractions rule for multiplication: $\frac{9}{2} \times \frac{12}{5} = \frac{9\times12}{2\times5} = \frac{108}{10} = \frac{54}{5}$
The answer is an improper fraction. Convert it into a mixed number. $\frac{54}{5} = 10\frac{4}{5}$

Example 2. Multiply. $3\frac{2}{3} \times 2\frac{5}{6} =$

Solution: Converting mixed numbers into fractions, $3\frac{2}{3} \times 2\frac{5}{6} = \frac{11}{3} \times \frac{17}{6}$
Apply the fractions rule for multiplication: $\frac{11}{3} \times \frac{17}{6} = \frac{11\times17}{3\times6} = \frac{187}{18} = 10\frac{7}{18}$

Example 3. Find the product. $5\frac{1}{4} \times 3\frac{3}{8} =$

Solution: Convert mixed numbers to fractions: $5\frac{1}{4} = \frac{21}{4}$ and $3\frac{3}{8} = \frac{27}{8}$. Multiply two fractions:

$\frac{21}{4} \times \frac{27}{8} = \frac{21\times27}{4\times8} = \frac{567}{32} = 17\frac{23}{32}$

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Dividing Mixed Numbers

Use the following steps for dividing mixed numbers:

- Convert the mixed numbers into fractions. $a\frac{c}{b} = a + \frac{c}{b} = \frac{ab+c}{b}$
- Divide fractions: Keep, Change, Flip: Keep the first fraction, change the division sign to multiplication, and flip the numerator and denominator of the second fraction. Then, solve! $\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{a \times d}{b \times c}$
- Write your answer in lowest terms.
- If the answer is an improper fraction (numerator is bigger than denominator), convert it into a mixed number.

Examples:

Example 1. Solve. $2\frac{1}{3} \div 1\frac{1}{2}$

Solution: Convert mixed numbers into fractions: $2\frac{1}{3} = \frac{2\times3+1}{3} = \frac{7}{3}$ and $1\frac{1}{2} = \frac{1\times2+1}{2} = \frac{3}{2}$
Keep, Change, Flip: $\frac{7}{3} \div \frac{3}{2} = \frac{7}{3} \times \frac{2}{3} = \frac{7\times2}{3\times3} = \frac{14}{9}$. The answer is an improper fraction. Convert it into a mixed number: $\frac{14}{9} = 1\frac{5}{9}$

Example 2. Solve. $3\frac{3}{4} \div 2\frac{2}{5}$

Solution: Convert mixed numbers to fractions, then solve:
$3\frac{3}{4} \div 2\frac{2}{5} = \frac{15}{4} \div \frac{12}{5} = \frac{15}{4} \times \frac{5}{12} = \frac{75}{48} = 1\frac{9}{16}$

Example 3. Solve. $2\frac{4}{5} \div 1\frac{2}{3}$

Solution: Converting mixed numbers to fractions: $2\frac{4}{5} \div 1\frac{2}{3} = \frac{14}{5} \div \frac{5}{3}$
Keep, Change, Flip: $\frac{14}{5} \div \frac{5}{3} = \frac{14}{5} \times \frac{3}{5} = \frac{14\times3}{5\times5} = \frac{42}{25} = 1\frac{17}{25}$

Chapter 1: Practices

Simplify each fraction.

1) $\frac{2}{8} =$

2) $\frac{5}{15} =$

3) $\frac{10}{90} =$

4) $\frac{12}{16} =$

5) $\frac{25}{45} =$

6) $\frac{42}{54} =$

7) $\frac{48}{60} =$

8) $\frac{52}{169} =$

Find the sum or difference.

9) $\frac{3}{10} + \frac{2}{10} =$

10) $\frac{4}{9} - \frac{1}{9} =$

11) $\frac{2}{3} + \frac{6}{15} =$

12) $\frac{17}{24} - \frac{5}{8} =$

13) $\frac{7}{54} - \frac{1}{9} =$

14) $\frac{4}{5} - \frac{1}{6} =$

15) $\frac{6}{7} - \frac{3}{8} =$

16) $\frac{2}{13} + \frac{1}{4} =$

Find the products or quotients.

17) $\frac{2}{9} \div \frac{4}{3} =$

18) $\frac{14}{5} \div \frac{28}{35} =$

19) $\frac{9}{25} \times \frac{5}{27} =$

20) $\frac{65}{72} \times \frac{12}{15} =$

Find the sum.

21) $2\frac{1}{5} + 1\frac{2}{5} =$

22) $5\frac{1}{9} + 2\frac{7}{9} =$

23) $2\frac{3}{4} + 1\frac{1}{8} =$

24) $2\frac{2}{7} + 4\frac{1}{21} =$

25) $5\frac{3}{5} + 1\frac{4}{9} =$

26) $3\frac{3}{11} + 4\frac{6}{7} =$

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Find the difference.

27) $5\frac{1}{3} - 4\frac{2}{3} =$

28) $4\frac{7}{10} - 1\frac{3}{10} =$

29) $3\frac{1}{3} - 2\frac{2}{9} =$

30) $6\frac{1}{2} - 3\frac{1}{3} =$

31) $4\frac{3}{4} - 2\frac{1}{28} =$

32) $4\frac{2}{7} - 3\frac{1}{6} =$

33) $5\frac{3}{10} - 3\frac{3}{4} =$

34) $6\frac{9}{20} - 2\frac{1}{3} =$

Find the products.

35) $1\frac{1}{2} \times 2\frac{3}{7} =$

36) $1\frac{3}{4} \times 1\frac{3}{5} =$

37) $4\frac{1}{2} \times 1\frac{5}{6} =$

38) $1\frac{2}{7} \times 3\frac{1}{5} =$

39) $2\frac{1}{5} \times 5\frac{1}{2} =$

40) $2\frac{1}{2} \times 4\frac{4}{5} =$

41) $3\frac{1}{5} \times 4\frac{1}{2} =$

42) $4\frac{9}{10} \times 4\frac{1}{2} =$

Solve.

43) $1\frac{1}{3} \div 1\frac{2}{3} =$

44) $2\frac{1}{4} \div 1\frac{1}{2} =$

45) $5\frac{1}{3} \div 3\frac{1}{2} =$

46) $3\frac{2}{7} \div 1\frac{1}{8} =$

47) $4\frac{1}{5} \div 2\frac{2}{3} =$

48) $1\frac{2}{3} \div 1\frac{3}{8} =$

49) $4\frac{1}{2} \div 2\frac{2}{3} =$

50) $1\frac{2}{11} \div 1\frac{1}{8} =$

Chapter 1: Answers

1) $\frac{1}{4}$
2) $\frac{1}{3}$
3) $\frac{1}{9}$
4) $\frac{3}{4}$
5) $\frac{5}{9}$
6) $\frac{7}{9}$
7) $\frac{4}{5}$
8) $\frac{4}{13}$
9) $\frac{1}{2}$
10) $\frac{1}{3}$
11) $\frac{16}{15} = 1\frac{1}{15}$
12) $\frac{1}{12}$
13) $\frac{1}{54}$
14) $\frac{19}{30}$
15) $\frac{27}{56}$
16) $\frac{21}{52}$
17) $\frac{1}{6}$
18) $\frac{7}{2} = 3\frac{1}{2}$
19) $\frac{1}{15}$
20) $\frac{13}{18}$
21) $3\frac{3}{5}$
22) $7\frac{8}{9}$
23) $3\frac{7}{8}$
24) $6\frac{1}{3}$
25) $7\frac{2}{45}$
26) $8\frac{10}{77}$
27) $\frac{2}{3}$
28) $3\frac{2}{5}$
29) $1\frac{1}{9}$
30) $3\frac{1}{6}$
31) $2\frac{5}{7}$
32) $1\frac{5}{42}$
33) $1\frac{11}{20}$
34) $4\frac{7}{60}$
35) $3\frac{9}{14}$
36) $2\frac{4}{5}$
37) $8\frac{1}{4}$
38) $4\frac{4}{35}$
39) $12\frac{1}{10}$
40) 12
41) $14\frac{2}{5}$
42) $22\frac{1}{20}$
43) $\frac{4}{5}$
44) $1\frac{1}{2}$
45) $1\frac{11}{21}$
46) $2\frac{58}{63}$
47) $1\frac{23}{40}$
48) $1\frac{7}{33}$
49) $1\frac{11}{16}$
50) $1\frac{5}{99}$

CHAPTER

2 Decimals

Math topics that you'll learn in this chapter:



- ☑ Comparing Decimals
- ☑ Rounding Decimals
- ☑ Adding and Subtracting Decimals
- ☑ Multiplying and Dividing Decimals
- ☑ Converting Repeating Decimals to fractions