Prepare for the SSAT Upper Level Math Test in 7 Days

2019

A Quick Study Guide with Two Full-Length SSAT Upper Level Math Practice Tests

Reza Nazari & Ava Ross

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By

Reza Nazari & Ava Ross

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Description

Prepare for the SSAT Upper Level Math Test in 7 Days, which reflects the 2019 and 2020 test guidelines and topics, incorporates the best method and the right strategies to help you hone your math skills, overcome your exam anxiety, and boost your confidence -- and do your best to defeat SSAT Upper Level Math test quickly. This quick study guide contains only the most important and critical math concepts a student will need in order to succeed on the SSAT Upper Level Math test. Math concepts in this book break down the topics, so the material can be quickly grasped. Examples are worked step–by–step to help you learn exactly what to do.

This SSAT Upper Level Math new edition has been updated to duplicate questions appearing on the most recent SSAT Upper Level Math tests. It contains easy–to–read essential summaries that highlight the key areas of the SSAT Upper Level Math test. You only need to spend about 3 – 5 hours daily in your 7–day period in order to achieve your goal. After reviewing this book, you will have solid foundation and adequate practice that is necessary to fully prepare for the SSAT Upper Level Math.

Prepare for the SSAT Upper Level Math Test in 7 Days is for all SSAT Upper Level 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 SSAT Upper Level Math tests are provided on Days 29 and 30 to refine your Math skills.

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

- Content 100% aligned with the 2019-2020 SSAT Upper Level test
- Written by SSAT Upper Level Math tutors and test experts
- Complete coverage of all SSAT Upper Level Math concepts and topics which you will be tested
- Step-by-step guide for all SSAT Upper Level Math topics
- Dynamic design and easy-to-follow activities
- Over 1,500 additional SSAT Upper Level math practice questions in both multiple-choice and grid-in formats with answers grouped by topic, so you can focus on your weak areas
- 2 full-length practice tests (featuring new question types) with detailed answers

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

Prepare for the SSAT Upper Level Math Test in 7 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).

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
– GRE 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.

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Day 1: Fundamental and Building Blocks

Math Topics that you'll learn today:

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

"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

Step-by-step guide:

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

Examples:

1) Simplify $\frac{12}{20}$. To simplify $\frac{12}{20}$, find a number that both 12 and 20 are divisible by. Both are divisible by 4. Then: $\frac{12}{20} = \frac{12\div4}{20\div4} = \frac{3}{5}$

2) Simplify $\frac{64}{80}$. To simplify $\frac{64}{80}$, find a number that both 64 and 80 are divisible by. Both are divisible by 8 and 16. Then: $\frac{64}{80} = \frac{64\div8}{80\div8} = \frac{8}{10}$, 8 and 10 are divisible by 2, then: $\frac{8}{10} = \frac{4}{5}$ or $\frac{64}{80} = \frac{64\div16}{80\div16} = \frac{4}{5}$

Adding and Subtracting Fractions

Step-by-step guide:

- ✓ 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:

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

Examples:

1) Calculate. $\frac{4}{5}-\frac{3}{5}=$

For "like" fractions, subtract the numerators and write the answer over the common denominator. Then: $\frac{4}{5}-\frac{3}{5}=\frac{1}{5}$

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

For "unlike" fractions, find equivalent fractions with the same denominator before you can add or subtract fractions with different denominators. Use this formula: $\frac{a}{b}-\frac{c}{d}=\frac{ad-cb}{bd}$

$\frac{2}{3}-\frac{1}{2}=\frac{(2)(2)-(1)(3)}{3\times 2}=\frac{4-3}{6}=\frac{1}{6}$

Multiplying and Dividing Fractions

Step-by-step guide:

- ✓ 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!

Examples:

1) Multiplying fractions. $\frac{5}{6}\times\frac{3}{4}=$

Multiply the top numbers and multiply the bottom numbers.

$\frac{5}{6}\times\frac{3}{4}=\frac{5\times 3}{6\times 4}=\frac{15}{24}$, simplify: $\frac{15}{24}=\frac{15\div 3}{24\div 3}=\frac{5}{8}$

2) Dividing fractions. $\frac{1}{4}\div\frac{2}{3}=$

Keep first fraction, change division sign to multiplication, and flip the numerator and denominator of the second fraction. Then: $\frac{1}{4}\times\frac{3}{2}=\frac{1\times 3}{4\times 2}=\frac{3}{8}$

Adding Mixed Numbers

Step-by-step guide:

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

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

Examples:

1) Add mixed numbers. $1\frac{3}{4}+2\frac{3}{8}=$

Rewriting our equation with parts separated, $1+\frac{3}{4}+2+\frac{3}{8}$, Solving the whole number parts $1+2=3$, Solving the fraction parts $\frac{3}{4}+\frac{3}{8}$, and rewrite to solve with the equivalent fractions. $\frac{6}{8}+\frac{3}{8}=\frac{9}{8}=1\frac{1}{8}$, then Combining the whole and fraction parts $3+1+\frac{1}{8}=4\frac{1}{8}$

2) Add mixed numbers. $1\frac{2}{3}+4\frac{1}{6}=$

Rewriting our equation with parts separated, $1+\frac{2}{3}+4+\frac{1}{6}$, Solving the whole number parts $1+4=5$, Solving the fraction parts $\frac{2}{3}+\frac{1}{6}$, and rewrite to solve with the equivalent fractions. $\frac{2}{3}+\frac{1}{6}=\frac{5}{6}$, then Combining the whole and fraction parts $5+\frac{5}{6}=5\frac{5}{6}$

Subtracting Mixed Numbers

Step-by-step guide:

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

- ✓ Subtract the whole number of second mixed number from whole number of the first mixed number.
- ✓ Subtract the second fraction from the first one.
- ✓ Find the Least Common Denominator (LCD) if necessary.
- ✓ Add the result of whole numbers and fractions.
- ✓ Write your answer in lowest terms.

Examples:

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

Rewriting our equation with parts separated, $5+\frac{2}{3}-2-\frac{1}{4}$

Solving the whole number parts $5-2=3$, Solving the fraction parts, $\frac{2}{3}-\frac{1}{4}=\frac{8-3}{12}=\frac{5}{12}$

Combining the whole and fraction parts, $3+\frac{5}{12}=3\frac{5}{12}$

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

Rewriting our equation with parts separated, $3+\frac{4}{5}-1-\frac{1}{2}$

Solving the whole number parts $3-1=2$, Solving the fraction parts, $\frac{4}{5}-\frac{1}{2}=\frac{3}{10}$

Combining the whole and fraction parts, $2+\frac{3}{10}=2\frac{3}{10}$

Multiplying Mixed Numbers

Step-by-step guide:

- ✓ Convert the mixed numbers to improper fractions. (improper fraction is a fraction in which the top number is bigger than bottom number)
- ✓ Multiply fractions and simplify if necessary. $a\frac{c}{b}=a+\frac{c}{b}=\frac{ab+c}{b}$

Examples:

1) Multiply mixed numbers. $3\frac{2}{3}\times 2\frac{1}{2}=$

Converting mixed numbers to fractions, $3\frac{2}{3}=\frac{11}{3}$ and $2\frac{1}{2}=\frac{5}{2}$.

$\frac{11}{3}\times\frac{5}{2}$, Applying the fractions formula for multiplication, $\frac{11\times5}{3\times2}=\frac{55}{6}=9\frac{1}{6}$

2) Multiply mixed numbers. $4\frac{3}{5}\times 2\frac{1}{3}=$

Converting mixed numbers to fractions, $\frac{23}{5}\times\frac{7}{3}$, Applying the fractions formula for multiplication, $\frac{23\times7}{5\times3}=\frac{161}{15}=10\frac{11}{15}$

Dividing Mixed Numbers

Step-by-step guide:

- ✓ Convert the mixed numbers to improper fractions.
- ✓ Divide fractions and simplify if necessary.

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

Examples:

1) Find the quotient. $2\frac{1}{2} \div 1\frac{1}{5} =$

Converting mixed numbers to fractions, $\frac{5}{2} \div \frac{6}{5}$, Applying the fractions formula for multiplication, $\frac{5\times5}{2\times6} = \frac{25}{12} = 2\frac{1}{12}$

2) Find the quotient.$4\frac{3}{4} \div 3\frac{4}{5} =$

Converting mixed numbers to fractions, $\frac{19}{4} \div \frac{19}{5}$, Applying the fractions formula for multiplication, $\frac{19\times5}{4\times19} = \frac{95}{76} = 1\frac{1}{4}$

Rounding Decimals

Step-by-step guide:

- ✓ We can round decimals to a certain accuracy or number of decimal places. This is used to make calculation easier to do and results easier to understand, when exact values are not too important.
- ✓ First, you'll need to remember your place values: For example:

$$\mathbf{12.4567}$$

1: tens	2: ones	4: tenths
5: hundredths	6: thousandths	7: tens thousandths

- ✓ To round a decimal, find the place value you'll round to.
- ✓ Find the digit to the right of the place value you're rounding to. If it is 5 or bigger, add 1 to the place value you're rounding to and remove all digits on its right side. If the digit to the right of the place value is less than 5, keep the place value and remove all digits on the right.

Examples:

1) Round 2.1837 to the thousandth place value.

   First look at the next place value to the right, (tens thousandths). It's 7 and it is greater than 5. Thus add 1 to the digit in the thousandth place.

   Thousandth place is 3. $\rightarrow 3 + 1 = 4$, then, the answer is 2.184

2) 2.1837 rounded to the nearest hundredth.

   First look at the next place value to the right of thousandths. It's 3 and it is less than 5, thus remove all the digits to the right. Then, the answer is 2.18.

Adding and Subtracting Decimals

Step-by-step guide:

- ✓ Line up the numbers.
- ✓ Add zeros to have same number of digits for both numbers if necessary.
- ✓ Add or subtract using column addition or subtraction.

Examples:

1) Add. $2.5 + 1.24 =$

   First line up the numbers: $\begin{array}{r} 2.5 \\ +\ 1.24 \\ \hline \end{array}$ → Add zeros to have same number of digits for both numbers. $\begin{array}{r} 2.50 \\ +\ 1.24 \\ \hline \end{array}$, Start with the hundredths place. $0 + 4 = 4$, $\begin{array}{r} 2.50 \\ +\ 1.24 \\ \hline 4 \end{array}$, Continue with tenths place. $5 + 2 = 7$, $\begin{array}{r} 2.50 \\ +\ 1.24 \\ \hline .74 \end{array}$. Add the ones place. $2 + 1 = 3$, $\begin{array}{r} 2.50 \\ +\ 1.24 \\ \hline 3.74 \end{array}$

2) Subtract decimals. $4.67 - 2.15 = \begin{array}{r} 4.67 \\ -\ 2.15 \\ \hline \end{array}$

   Start with the hundredths place. $7 - 5 = 2$, $\begin{array}{r} 4.67 \\ -\ 2.15 \\ \hline 2 \end{array}$, continue with tenths place. $6 - 1 = 5$ $\begin{array}{r} 4.67 \\ -\ 2.15 \\ \hline .52 \end{array}$, subtract the ones place. $4 - 2 = 2$, $\begin{array}{r} 4.67 \\ -\ 2.15 \\ \hline 2.52 \end{array}$.

Multiplying and Dividing Decimals

Step-by-step guide:

For Multiplication:

- ✓ Ignore the decimal point and set up and multiply the numbers as you do with whole numbers.
  Count the total number of decimal places in both of the factors.
  Place the decimal point in the product.
  For Division:
- ✓ If the divisor is not a whole number, move decimal point to right to make it a whole number. Do the same for dividend.
- ✓ Divide similar to whole numbers.

Examples:

1) Find the product. $0.50 \times 0.20 =$

Set up and multiply the numbers as you do with whole numbers. Line up the numbers: $\frac{50}{\times\ 20}$, Start with the ones place → $50 \times 0 = 0$, $\frac{50}{\times 20}{0}$, Continue with other digits → $50 \times 2 = 100$, $\frac{50}{\times 20}{1{,}000}$, Count the total number of decimal places in both of the factors. (4). Then Place the decimal point in the product.

Then: $\frac{0.50}{\times\ 0.20}{0.1000} \rightarrow 0.50 \times 0.20 = 0.1$

2) Find the quotient. $1.20 \div 0.2 =$

The divisor is not a whole number. Multiply it by 10 to get 2. Do the same for the dividend to get 12.

Now, divide: $12 \div 2 = 6$. The answer is 6.

Day 1 Practices

Simplify each fraction.

1) $\frac{27}{54} =$

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

3) $\frac{42}{56} =$

4) $\frac{30}{120} =$

5) $\frac{36}{48} =$

6) $\frac{18}{27} =$

Find the sum or difference.

7) $\frac{12}{19} + \frac{7}{19} =$

8) $\frac{2}{4} + \frac{3}{9} =$

9) $\frac{3}{5} + \frac{2}{3} =$

10) $\frac{3}{7} + \frac{2}{3} =$

11) $\frac{1}{2} - \frac{1}{3} =$

12) $\frac{8}{10} - \frac{4}{6} =$

Find the answers.

13) $\frac{3}{6} \times \frac{6}{8} =$

14) $\frac{1}{5} \times \frac{1}{3} =$

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

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

17) $\frac{1}{5} \times \frac{1}{4} =$

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

Calculate.

19) $5\frac{1}{2} + 2\frac{1}{3} =$

20) $8\frac{1}{2} - 3\frac{1}{2} =$

21) $5\frac{3}{8} + 3\frac{1}{8} =$

22) $6\frac{1}{2} - 3\frac{1}{4} =$

23) $1\frac{3}{7} - 1\frac{3}{14} =$

24) $7\frac{5}{12} + 2\frac{3}{4} =$

Find the answers.

25) $4\frac{1}{3} \times 2\frac{1}{5} =$

26) $3\frac{1}{2} \times 3\frac{1}{4} =$

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

28) $2\frac{1}{2} \times 1\frac{2}{9} =$

29) $3\frac{4}{7} \div 2\frac{3}{5} =$

30) $7\frac{2}{3} \div 2\frac{2}{3} =$

Round each decimal to the nearest whole number.

31) 23.48

32) 8.7

33) 14.47

34) 7.5

35) 3.92

36) 56.8

Find the sum or difference.

37) $34.13 - 14.45 =$

38) $37.25 + 22.47 =$

39) $75.50 + 20.78 =$

40) $58.67 - 46.39 =$

41) $73.47 + 14.25 =$

42) $69.99 - 54.61 =$

Find the product and quotient.

43) $0.6 \times 0.3 =$

44) $4.6 \div 0.2 =$

45) $1.25 \times 0.5 =$

46) $0.72 \div 0.2 =$

47) $1.92 \times 0.8 =$

48) $0.52 \div 0.4 =$