SSAT Middle Level Math Prep 2020

A Comprehensive Review and Step-By-Step Guide to Preparing for the SSAT Middle Level Math Test

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By

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Description

SSAT Middle Level Math Prep 2020, which reflects the 2020 SSAT Middle Level test guidelines, provides students with the confidence and math skills they need to ace the SSAT Middle Level Math test. This comprehensive Prep book with hundreds of examples, over 2,500 sample questions, and two full length SSAT Middle Level Math tests is all you will ever need to fully prepare for the SSAT Middle Level Math. It will help you hone your math skills, overcome your exam anxiety, and boost your confidence -- and do your best to succeed on the SSAT Middle Level Math Test.

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 incorporate the most effective method and the right strategies to prepare for the SSAT Middle Level Math test successfully. ***SSAT Middle Level Math Prep 2020*** is a breakthrough in Math learning — offering a winning formula and the most powerful methods for learning basic Math topics confidently.

The surest way to succeed on SSAT Middle Level Math Test is with intensive practice in every math topic tested--and that's what you will get in ***SSAT Middle Level Math Prep 2020***. Each chapter of this focused format has a comprehensive review created by Test Prep experts that goes into detail to cover all of the content likely to appear on the SSAT Middle Level Math test. Not only does this all-inclusive workbook offer everything you will ever need to conquer SSAT Middle Level Math test, it also contains two full-length and realistic STAAR 7 Math tests that reflect the format and question types on the SSAT Middle Level to help you check your exam-readiness and identify where you need more practice.

Inside the pages of this comprehensive prep 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 2020 SSAT Middle Level test
- Written by SSAT Middle Level Math tutors and test experts
- Complete coverage of all SSAT Middle Level Math concepts and topics which you will be tested
- Step-by-step guide for all SSAT Middle Level Math topics
- Over 2,500 additional SSAT Middle 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
- Abundant Math skill building exercises to help test-takers approach different question types that might be unfamiliar to them
- 2 full-length practice tests (featuring new question types) with detailed answers

SSAT Middle Level Math Prep 2020 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.

Powers of Products and Quotients

Step-by-step guide:

- ✓ For any nonzero numbers a and b and any integer x, $(ab)^x = a^x \times b^x$.

Example:

1) Simplify. $(6x^2y^4)^2 =$

Use Exponent's rules: $(x^a)^b = x^{a\times b}$

$(6x^2y^4)^2 = (6)^2(x^2)^2(y^4)^2 = 36x^{2\times 2}y^{4\times 2} = 36x^4y^8$

2) Simplify. $(\frac{5x}{2x^2})^2 =$

First cancel the common factor: $x \rightarrow (\frac{5x}{2x^2})^2 = (\frac{5}{2x})^2$

Use Exponent's rules: $(\frac{a}{b})^c = \frac{a^c}{b^c}$

Then: $(\frac{5}{2x})^2 = \frac{5^2}{(2x)^2} = \frac{25}{4x^2}$

Simplify.

1) $(x^2y^6)^2 =$

2) $(x^3 \times y)^2 =$

3) $(2x^5y^3)^2 =$

4) $(3x^3y^6)^2 =$

5) $(4x^5y^6)^3 =$

6) $(5x \times 2y^5)^2 =$

7) $(\frac{3x}{x^2})^3 =$

8) $\left(\frac{x^2y^3}{x^2y^2}\right)^3 =$

9) $\left(\frac{16x}{4x^6}\right)^2 =$

10) $\left(\frac{2x^5}{x^2y^2}\right)^2 =$

11) $\left(\frac{xy^2}{x^2y^3}\right)^{-2} =$

12) $\left(\frac{8xy^2}{x^3}\right)^2 =$

Zero and Negative Exponents

Step-by-step guide:

- ✓ A negative exponent simply means that the base is on the wrong side of the fraction line, so you need to flip the base to the other side. For instance, "x^{-2}" (pronounced as "ecks to the minus two") just means "x^2" but underneath, as in $\frac{1}{x^2}$.

Example:

1) Evaluate. $(\frac{2}{3})^{-2} =$

Use Exponent's rules: $\frac{1}{x^b} = x^{-b} \rightarrow (\frac{2}{3})^{-2} = \frac{1}{(\frac{2}{3})^2} = \frac{1}{\frac{2^2}{3^2}}$

Now use fraction rule: $\frac{1}{\frac{b}{c}} = \frac{c}{b} \rightarrow \frac{1}{\frac{2^2}{3^2}} = \frac{3^2}{2^2} = \frac{9}{4}$

2) Evaluate. $(\frac{4}{5})^{-3} =$

Use Exponent's rules: $\frac{1}{x^b} = x^{-b} \rightarrow (\frac{4}{5})^{-3} = \frac{1}{(\frac{4}{5})^3} = \frac{1}{\frac{4^3}{5^3}}$

Now use fraction rule: $\frac{1}{\frac{b}{c}} = \frac{c}{b} \rightarrow \frac{1}{\frac{4^3}{5^3}} = \frac{5^3}{4^3} = \frac{125}{64}$

Evaluate the following expressions.

1) $3^{-2} =$

2) $2^{-3} =$

3) $5^{-3} =$

4) $4^{-3} =$

5) $6^{-3} =$

6) $8^{-2} =$

7) $5^{-4} =$

8) $10^{-2} =$

9) $(\frac{1}{5})^{-1}$

10) $(\frac{1}{4})^{-2} =$

11) $(\frac{1}{5})^{-3} =$

12) $(\frac{3}{4})^{-2} =$

Negative Exponents and Negative Bases

Step-by-step guide:

- ✓ Make the power positive. A negative exponent is the reciprocal of that number with a positive exponent.
- ✓ The parenthesis is important!
- ✓ 5^{-2} is not the same as $(-5)^{-2}$

$$(-5)^{-2} = -\frac{1}{5^2} \text{ and } (-5)^{-2} = +\frac{1}{5^2}$$

Example:

1) Simplify. $(\frac{5a}{6c})^{-2} =$

Use Exponent's rules: $\frac{1}{x^b} = x^{-b} \rightarrow (\frac{5a}{6c})^{-2} = \frac{1}{(\frac{5a}{6c})^2} = \frac{1}{\frac{5^2a^2}{6^2c^2}}$

Now use fraction rule: $\frac{1}{\frac{b}{c}} = \frac{c}{b} \rightarrow \frac{1}{\frac{5^2a^2}{6^2c^2}} = \frac{6^2c^2}{5^2a^2}$

Then: $\frac{^2c^2}{5^2a^2} = \frac{36c^2}{25a^2}$

2) Simplify. $(\frac{2x}{3yz})^{-3} =$

Use Exponent's rules: $\frac{1}{x^b} = x^{-b} \rightarrow (\frac{2x}{3yz})^{-3} = \frac{1}{(\frac{2x}{3yz})^3} = \frac{1}{\frac{2^3x^3}{3^3y^3z^3}}$

Now use fraction rule: $\frac{1}{\frac{b}{c}} = \frac{c}{b} \rightarrow \frac{1}{\frac{2^3x^3}{3^3y^3z^3}} = \frac{3^3y^3z^3}{2^3x^3} = \frac{27\ ^3z^3}{8x^3}$

Simplify.

1) $2x^{-2}y^{-3} =$

2) $3x^{-5}y^{-2} =$

3) $6a^{-3}b^{-5} =$

4) $7x^4y^{-3} =$

5) $-\frac{9}{x^{-4}} =$

6) $\frac{12b}{-9\ ^{-5}} =$

7) $\frac{16ab}{a^{-2}b^{-3}} =$

8) $\frac{15n^{-2}}{20p^{-3}} =$

9) $\frac{16ab^{-5}}{4c^{-2}} =$

10) $(\frac{5x}{2y})^{-2} =$

11) $(-\frac{2x}{3yz})^{-4} =$

12) $\frac{5a\ ^{-3}}{-3c^{-2}} =$

13) $(-\frac{x^5}{x^3})^{-2} =$

Scientific Notation

Step-by-step guide:

- ✓ It is used to write very big or very small numbers in decimal form.
- ✓ In scientific notation all numbers are written in the form of:

$$m \times 10^n$$

Decimal notation	Scientific notation
5	5×10^0
$-25{,}000$	-2.5×10^4
0.5	5×10^{-1}
$2{,}122.456$	$2{,}122456 \times 10^{-3}$

Example:

1) Write $\mathbf{0.00015}$ in scientific notation.

First, move the decimal point to the right so that you have a number that is between 1 and 10. Then: $N = 1.5$

Second, determine how many places the decimal moved in step 1 by the power of 10.

Then: 10^{-4} → When the decimal moved to the right, the exponent is negative.

Then: $0.00015 = 1.5 \times 10^{-4}$

2) Write $\mathbf{9.5 \times 10^{-5}}$ in standard notation.

10^{-5} → When the decimal moved to the right, the exponent is negative.

Then: $9.5 \times 10^{-5} = 0.000095$

Write each number in scientific notation.

1) $15{,}000{,}000 =$
2) $67{,}000 =$
3) $0.000819 =$
4) $0.00092 =$

Write each number in standard notation.

5) $4.5 \times 10^3 =$
6) $8 \times 10^{-4} =$
7) $6 \times 10^{-1} =$
8) $9 \times 10^{-2} =$

Square Roots

Step-by-step guide:

- ✓ A square root of x is a number r whose square is: $r^2 = x$

  r is a square root of x.

Example:

1) Find the square root of $\sqrt{169}$.

   First factor the number: $169 = 13^2$, Then: $\sqrt{169} = \sqrt{13^2}$

   Now use radical rule: $\sqrt[n]{a^n} = a$

   Then: $\sqrt{13^2} = 13$

2) Evaluate. $\sqrt{9} \times \sqrt{25} =$

   First factor the numbers: $9 = 3^2$ and $25 = 5^2$

   Then: $\sqrt{9} \times \sqrt{25} = \sqrt{3^2} \times \sqrt{5^2}$

   Now use radical rule: $\sqrt[n]{a^n} = a$, Then: $\sqrt{3^2} \times \sqrt{5^2} = 3 \times 5 = 15$

Evaluate.

1) $\sqrt{16} \times \sqrt{4} =$ _____

2) $\sqrt{9} \times \sqrt{49} =$ _____

3) $\sqrt{4} \times \sqrt{8} =$ _____

4) $\sqrt{9} \times \sqrt{6} =$ _____

5) $\sqrt{25} \times \sqrt{5} =$ _____

6) $\sqrt{6} \times \sqrt{6} =$ _____

7) $\sqrt{5} + \sqrt{5} =$ _____

8) $\sqrt{12} + \sqrt{12} =$ _____

9) $3\sqrt{6} - 2\sqrt{6} =$ _____

10) $3\sqrt{5} \times 2\sqrt{5} =$ _____

11) $6\sqrt{8} \times 2\sqrt{8} =$ _____

12) $6\sqrt{4} - \sqrt{16} =$ _____

Answers – Chapter 7

Multiplication Property of Exponents

1) $8x^3$
2) $5x^6$
3) $24x^9$
4) $18x^3y$
5) $8x^7y^4$
6) $45x^4y^{13}$
7) $25x^4y^8$
8) $21x^{15}y^4$
9) $56x^{13}y^8$
10) $36x^9y^5$
11) $24x^{10}y^{15}$
12) $81x^{23}y^{23}$

Division Property of Exponents

1) $\frac{1}{5}$
2) $\frac{1}{2x}$
3) $5x$
4) $\frac{3}{2x^3}$
5) $\frac{6x^5}{y^3}$
6) $\frac{18y}{x^4}$
7) $\frac{8x^7}{3y}$
8) $5x^2y^9$
9) $\frac{7}{2x^3y^3}$
10) $\frac{5}{x^4}$
11) $\frac{5}{x^4y}$
12) $\frac{y}{5}$

Powers of Products and Quotients

1) x^4y^{12}
2) x^6y^2
3) $4x^{10}y^6$
4) $9x^6y^{12}$
5) $64x^{15}y^{18}$
6) $100x^2y^{10}$
7) $\frac{27}{x^3}$
8) y^3
9) $\frac{16}{x^{10}}$
10) $\frac{4x^6}{y^4}$
11) x^2y^2
12) $\frac{64y^{10}}{x^4}$

Zero and Negative Exponents

1) $\frac{1}{9}$
2) $\frac{1}{8}$
3) $\frac{1}{125}$
4) $\frac{1}{64}$
5) $\frac{1}{216}$
6) $\frac{1}{64}$
7) $\frac{1}{625}$
8) $\frac{1}{100}$
9) 5
10) 16
11) 125
12) $\frac{16}{9}$