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# HSPT Math Study Guide 2020-2021

## A Comprehensive Review and Step-By-Step Guide to Preparing for the HSPT Math

Recommended by Test Prep Experts




Reza Nazari & Ava Ross

# HSPT Math Study Guide 2020 - 2021

*A Comprehensive Review and Step-By-Step Guide to Preparing for the HSPT Math*

**By**

Reza Nazari & Ava Ross

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Reza Nazari & Ava Ross

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**ISBN:** 978-1-64612-317-9

**Published by: Effortless Math Education**

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## Description

***HSPT Math Study Guide***, which reflects the 2020 - 2021 test guidelines, is designed by top HSPT Math instructors and test prep experts to help test takers succeed on the HSPT Math Test. The updated version of this comprehensive HSPT Math preparation book includes Math lessons, extensive exercises, sample HSPT Math questions, and quizzes with answers and detailed solutions to help you hone your math skills, overcome your exam anxiety, boost your confidence—and do your best to ace the HSPT exam on test day. Upon completion of this perfect HSPT Math prep book, you will have a solid foundation and sufficient practice to ace the HSPT Math test.

Not only does this all-inclusive prep book offer everything you will ever need to prepare for the HSPT Math test, but it also contains two complete and realistic HSPT Math tests that reflect the format and question types on the HSPT to help you check your exam-readiness and identify where you need more practice.

***HSPT Math Study Guide*** contains many exciting and unique features to help you prepare for the HSPT Math test, including:

- ✓ Content 100% aligned with the 2020 HSPT® test
- ✓ Written by HSPT Math instructors and test experts
- ✓ Complete coverage of all HSPT Math concepts and topics which you will be tested
- ✓ Step-by-step guide for all HSPT Math topics
- ✓ Abundant Math skill building exercises to help test-takers approach different question types that might be unfamiliar to them
- ✓ Exercises on different HSPT Math topics such as integers, percent, equations, polynomials, exponents and radicals
- ✓ 2 full-length practice tests (featuring new question types) with detailed answers

This HSPT Math prep book and other Effortless Math Education books are used by thousands of students each year to help them review core content areas, brush-up in math, discover their strengths and weaknesses, and achieve their best scores on the HSPT test.

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| **Name:** …… | **Date:** …… |
|---|---|

| **Topic** | **Multiplying and Dividing Decimals** | |
|---|---|---|
| **Notes** | For Multiplication:<br>✓ Ignore the decimal point and set up and multiply the numbers as you do with whole numbers.<br>✓ Count the total number of decimal places in both factors.<br>✓ Place the decimal point in the product.<br><br>For Division:<br>✓ If the divisor is not a whole number, move decimal point to right to make it a whole number. Do the same for dividend.<br>✓ Divide similar to whole numbers. | |
| **Examples** | ***Find the product***. $1.2 \times 2.3 =$<br>Set up and multiply the numbers as you do with whole numbers. Line up the numbers: $\overset{12}{\times\ 23}$ → Multiply: $\frac{\overset{12}{\times 23}}{276}$ → Count the total number of decimal places in both of the factors. There are two decimal digits. Then: $1.2 \times 2.3 = 2.76$<br><br>***Find the quotient.*** $5.6 \div 0.8 =$<br>The divisor is not a whole number. Multiply it by $10$ to get $8$. → $0.8 \times 10 = 8$<br>Do the same for the dividend to get $56$ → $5.6 \times 10 = 56$<br>Now, divide: $56 \div 8 = 7$. The answer is $7$. | |
| **Your Turn!** | 1) $1.13 \times 0.7 =$ | 2) $48.8 \div 8 =$ |
| | 3) $0.9 \times 0.68 =$ | 4) $66.8 \div 0.2 =$ |
| | 5) $0.18 \times 0.5 =$ | 6) $37.2 \div 100 =$ |

| **Name:** …… | **Date:** …… |
|---|---|

| **Topic** | **Multiplying and Dividing Decimals - Answers** | |
|---|---|---|
| **Notes** | For Multiplication:<br>✓ Ignore the decimal point and set up and multiply the numbers as you do with whole numbers.<br>✓ Count the total number of decimal places in both factors.<br>✓ Place the decimal point in the product.<br><br>For Division:<br>✓ If the divisor is not a whole number, move decimal point to right to make it a whole number. Do the same for dividend.<br>✓ Divide similar to whole numbers. | |
| **Examples** | ***Find the product***. $1.2 \times 2.3 =$<br>Set up and multiply the numbers as you do with whole numbers. Line up the numbers: $\overset{12}{\times 23}$ → Multiply: $\frac{\overset{12}{\times 23}}{276}$ → Count the total number of decimal places in both of the factors. There are two decimal digits. Then: $1.2 \times 2.3 = 2.76$<br><br>***Find the quotient***. $5.6 \div 0.8 =$<br>The divisor is not a whole number. Multiply it by $10$ to get $8$. → $0.8 \times 10 = 8$<br>Do the same for the dividend to get $56$ → $5.6 \times 10 = 56$<br>Now, divide: $56 \div 8 = 7$. The answer is $7$. | |
| **Your Turn!** | 1) $1.13 \times 0.7 = 0.791$ | 2) $48.8 \div 8 = 6.1$ |
| | 3) $0.9 \times 0.68 = 0.612$ | 4) $66.8 \div 0.2 = 334$ |
| | 5) $0.18 \times 0.5 = 0.09$ | 6) $37.2 \div 100 = 0.372$ |

| **Name:** …….. | **Date:** …… |
|---|---|

| **Topic** | **Adding and Subtracting Integers** | |
|---|---|---|
| **Notes** | ✓ Integers include: zero, counting numbers, and the negative of the counting numbers. $\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$<br>✓ Add a positive integer by moving to the right on the number line.<br>✓ Add a negative integer by moving to the left on the number line. Subtract an integer by adding its opposite. | |
| **Examples** | ***Solve***. $(4) - (-8) =$<br>Keep the first number and convert the sign of the second number to its opposite. (change subtraction into addition. Then: $(4) + 8 = 12$<br>***Solve***. $42 + (12 - 26) =$<br>First subtract the numbers in brackets, $12 - 26 = -14$<br>Then: $42 + (-14) =$ → change addition into subtraction: $42 - 14 = 28$ | |
| **Your Turn!** | 1) $-(15) + 12 =$ | 2) $(-2) + (-10) + 18 =$ |
| | 3) $(-13) + 7 =$ | 4) $3 - (-7) + 14 =$ |
| | 5) $(-7) + (-8) =$ | 6) $16 - (-4 + 8) =$ |
| | 7) $4 + (-15) + 2 =$ | 8) $-(22) - (-4) + 8 =$ |

| **Name:** …… | **Date:** …… |
|---|---|

| **Topic** | **Adding and Subtracting Integers - Answers** | |
|---|---|---|
| **Notes** | ✓ Integers include: zero, counting numbers, and the negative of the counting numbers. $\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$<br>✓ Add a positive integer by moving to the right on the number line.<br>✓ Add a negative integer by moving to the left on the number line.<br>Subtract an integer by adding its opposite. | |
| **Examples** | ***Solve***. $(4) - (-8) =$<br>Keep the first number and convert the sign of the second number to its opposite. (change subtraction into addition. Then: $(4) + 8 = 12$<br>***Solve.*** $42 + (12 - 26) =$<br>First subtract the numbers in brackets, $12 - 26 = -14$<br>Then: $42 + (-14) =$ → change addition into subtraction: $42 - 14 = 28$ | |
| **Your Turn!** | 1) $-(15) + 12 = -3$ | 2) $(-2) + (-10) + 18 = 6$ |
| | 3) $(-13) + 7 = -6$ | 4) $3 - (-7) + 14 = 24$ |
| | 5) $(-7) + (-8) = -15$ | 6) $16 - (-4 + 8) = 12$ |
| | 7) $4 + (-15) + 2 = -9$ | 8) $(-22) - (-4) + 8 = -10$ |

| **Name:** …….. | **Date:** …… |
|---|---|

| **Topic** | **Multiplying and Dividing Integers** | |
|---|---|---|
| **Notes** | Use following rules for multiplying and dividing integers:<br>✓ (negative) × (negative) = positive<br>✓ (negative) ÷ (negative) = positive<br>✓ (negative) × (positive) = negative<br>✓ (negative) ÷ (positive) = negative<br>✓ (positive) × (positive) = positive<br>✓ (positive) ÷ (negative) = negative | |
| **Examples** | ***Solve***. $2 \times (14 - 17) =$<br>First subtract the numbers in brackets, $14 - 17 = -3 \rightarrow (2) \times (-3) =$<br>Now use this rule: (positive) × (negative) = negative<br>$(2) \times (-3) = -6$<br><br>***Solve***. $(-7) + (-36 \div 4) =$<br>First divide $-36$ by $4$ , the numbers in brackets, using this rule:<br>(negative) ÷ (positive) = negative<br>Then: $-36 \div 4 = -9$. Now, add $-7$ and $-9$:<br>$(-7) + (-9) = -7 - 9 = -16$ | |
| **Your Turn!** | 1) $(-7) \times 6 =$ | 2) $(-63) \div (-7) =$ |
| | 3) $(-11) \times (-3) =$ | 4) $81 \div (-9) =$ |
| | 5) $(15 - 12) \times (-7) =$ | 6) $(-12) \div (3) =$ |
| | 7) $4 \times (-9) =$ | 8) $(8) \div (-2) =$ |

| **Name:** …… | **Date:** …… |
|---|---|

| **Topic** | **Multiplying and Dividing Integers - Answers** | |
|---|---|---|
| **Notes** | Use following rules for multiplying and dividing integers:<br>✓ (negative) × (negative) = positive<br>✓ (negative) ÷ (negative) = positive<br>✓ (negative) × (positive) = negative<br>✓ (negative) ÷ (positive) = negative<br>✓ (positive) × (positive) = positive<br>✓ (positive) ÷ (negative) = negative | |
| **Examples** | ***Solve***. $2 \times (14 - 17) =$<br>First subtract the numbers in brackets, $14 - 17 = -3 \rightarrow (2) \times (-3) =$<br>Now use this rule: (positive) × (negative) = negative<br>$(2) \times (-3) = -6$<br><br>***Solve.*** $(-7) + (-36 \div 4) =$<br>First divide $-36$ by $4$ , the numbers in brackets, using this rule:<br>(negative) ÷ (positive) = negative<br>Then: $-36 \div 4 = -9$. Now, add $-7$ and $-9$:<br>$(-7) + (-9) = -7 - 9 = -16$ | |
| **Your Turn!** | 1) $(-7) \times 6 =$ $-42$ | 2) $(-63) \div (-7) = 9$ |
| | 3) $(-11) \times (-3) = 33$ | 4) $81 \div (-9) = -9$ |
| | 5) $(15 - 12) \times (-7) = -21$ | 6) $(-12) \div (3) = -4$ |
| | 7) $4 \times (-9) = -36$ | 8) $(8) \div (-2) = -4$ |

| **Name:** …….. | **Date:** …… |
|---|---|

| **Topic** | **Order of Operation** | |
|---|---|---|
| **Notes** | When there is more than one math operation, use PEMDAS:<br>(to memorize this rule, remember the phrase "Please Excuse My Dear Aunt Sally")<br>✓ Parentheses<br>✓ Exponents<br>✓ Multiplication and Division (from left to right)<br>✓ Addition and Subtraction (from left to right) | |
| **Examples** | ***Calculate***. $(18-26)\div(2^4\div 4)=$<br>First simplify inside parentheses: $(-8)\div(16\div 4)=(-8)\div(4)$<br>Then: $(-8)\div(4)=-2$<br>***Solve***. $(-5\times 7)-(18-3^2)=$<br>First calculate within parentheses: $(-5\times 7)-(18-3^2)=(-35)-(18-9)$<br>Then: $(-35)-(18-9)=-35-9=-44$ | |
| **Your Turn!** | 1) $(11\times 4)\div(5+6)=$ | 2) $(30\div 5)+(17-8)=$ |
| | 3) $(-9)+(5\times 6)+14=$ | 4) $(-10\times 5)\div(2^2+1)=$ |
| | 5) $[-16(32\div 2^3)]\div 8=$ | 6) $(-7)+(72\div 3^2)+12=$ |
| | 7) $[16(32\div 2^3)]-4^2=$ | 8) $4^3+(-5\times 2^5)+5=$ |

| **Name:** …… | **Date:** …… |
|---|---|

| **Topic** | **Order of Operation - Answers** | |
|---|---|---|
| **Notes** | When there is more than one math operation, use PEMDAS:<br>(to memorize this rule, remember the phrase "Please Excuse My Dear Aunt Sally")<br>✓ Parentheses<br>✓ Exponents<br>✓ Multiplication and Division (from left to right)<br>✓ Addition and Subtraction (from left to right) | |
| **Examples** | ***Calculate.*** $(18-26)\div(2^4\div 4)=$<br>First simplify inside parentheses: $(-8)\div(16\div 4)=(-8)\div(4)$<br>Then: $(-8)\div(4)=-2$<br>***Solve***. $(-5\times 7)-(18-3^2)=$<br>First calculate within parentheses: $(-5\times 7)-(18-3^2)=(-35)-(18-9)$<br>Then: $(-35)-(18-9)=-35-9=-44$ | |
| **Your Turn!** | 1) $(11\times 4)\div(5+6)=4$ | 2) $(30\div 5)+(17-8)=15$ |
| | 3) $(-9)+(5\times 6)+14=$<br>35 | 4) $(-10\times 5)\div(2^2+1)=-10$ |
| | 5) $[-16(32\div 2^3)]\div 8=$<br>$-8$ | 6) $(-7)+(72\div 3^2)+12=13$ |
| | 7) $[16(32\div 2^3)]-4^2=$<br>48 | 8) $4^3+(-5\times 2^5)+5=-91$ |

| **Name:** …….. | **Date:** …… |
|---|---|

| **Topic** | **Integers and Absolute Value** | |
|---|---|---|
| **Notes** | ✓ The absolute value of a number is its distance from zero, in either direction, on the number line. For example, the distance of $9$ and $-9$ from zero on number line is $9$.<br>✓ Absolute value is symbolized by vertical bars, as in $\lvert x\rvert$. | |
| **Example** | ***Calculate***. $\lvert 8-5\rvert \times \lvert 12-16\rvert =$<br>First calculate $\lvert 8-5\rvert$, $\rightarrow \lvert 8-5\rvert = \lvert 3\rvert$, the absolute value of $3$ is $3$, $\lvert 3\rvert = 3$<br>$8 \times \lvert 12-16\rvert =$<br>Now calculate $\lvert 12-16\rvert$, $\rightarrow \lvert 12-16\rvert = \lvert -4\rvert$, the absolute value of $-4$ is $4$, $\lvert -4\rvert = 4$. Then: $3 \times 4 = 12$ | |
| **Your Turn!** | 1) $11 - \lvert 4-13\rvert =$ | 2) $14 - \lvert 12-19\rvert - \lvert 9\rvert =$ |
| | 3) $\lvert 21\rvert - \frac{\lvert -25\rvert}{5} =$ | 4) $\lvert 30\rvert + \frac{\lvert -49\rvert}{7} =$ |
| | 5) $\frac{\lvert 7\times -8\rvert}{4} \times \frac{\lvert -12\rvert}{2} =$ | 6) $\frac{\lvert 10\times -6\rvert}{5} \times \lvert -9\rvert =$ |
| | 7) $\frac{\lvert -20\rvert}{5} \times \frac{\lvert -36\rvert}{6} =$ | 8) $\lvert -30+6\rvert \times \frac{\lvert -9\times 4\rvert}{12} =$ |