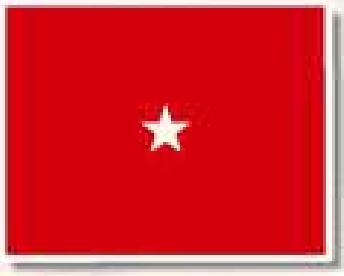
y = mx + b

x^2 + 5x + 6 = 0

WYOMING WY-TOPP

7th GRADE MATH

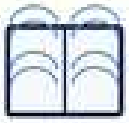


MADE RIDICULOUSLY SIMPLE

A Comprehensive 7th Grade Math Study Guide to Acing the WY-TOPP Test



COVERS ALL 7TH GRADE MATH STANDARDS



EASY-TO-UNDERSTAND LESSONS & EXAMPLES



PRACTICE QUESTIONS WITH DETAILED EXPLANATIONS



TEST-TAKING STRATEGIES & TIPS



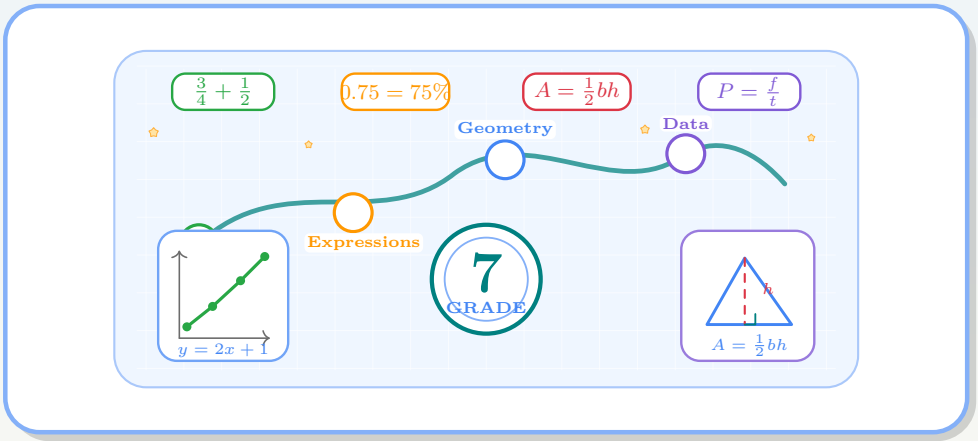
BUILD CONFIDENCE. IMPROVE SCORES. SUCCEED!

LEARN SMART. PRACTICE MORE. ACE THE WY-TOPP!

Wyoming WY-TOPP

7th Grade Math Made Ridiculously Simple

A Comprehensive 7th Grade Math Study Guide to Acing the WY-TOPP Test



Reza Nazari

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7.EE.D.4C	Write and solve two-step linear inequalities. Graph the solution set on a number line and interpret its meaning
7.EE.D.4D	Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities

7.G | Geometry

Draw, construct, and describe geometric figures and solve problems involving angle, area, and volume

7.G.E	Draw, construct, and describe geometrical figures and describe the relationships between them
7.G.E.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing
7.G.E.2	Draw geometric shapes with given conditions using a variety of tools (e.g., ruler and protractor, or technology). Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle
7.G.E.3	Describe the two-dimensional figures that result from slicing three-dimensional figures parallel to the base, as in plane sections of right rectangular prisms and right rectangular pyramids
7.G.F	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume
7.G.F.4	Investigate the concept of circles
7.G.F.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure
7.G.F.6	Solve real-world and mathematical problems involving:
7.G.F.4A	Demonstrate an understanding of the proportional relationships between diameter, radius, and circumference of a circle
7.G.F.4B	Understand that pi is defined by the constant of proportionality between the circumference and diameter
7.G.F.4C	Given the formulas for circumference and area of circles, solve real-world and mathematical problems
7.G.F.6A	area and surface area of objects composed of triangles and quadrilaterals

7.G.F.6B	volume of objects composed only of right prisms having triangular or quadrilateral bases

7.NS | The Number System

Apply operations with rational numbers including integers, fractions, and decimals

7.NS.B	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers
7.NS.B.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers
7.NS.B.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers
7.NS.B.3	Solve real-world and mathematical problems involving the four arithmetic operations with rational numbers
7.NS.B.1A	Describe situations in which opposite quantities combine to make zero (the additive identity)
7.NS.B.1B	Understand thatp+qrepresents the distance |q| frompwhose placement is determined by the sign ofq. Interpret sums of rational numbers by describing real-world contexts
7.NS.B.1C	Show that a number and its opposite have a sum of 0 (are additive inverses)
7.NS.B.1D	Understand subtraction of rational numbers as adding the additive inverse,p–q=p+ (–q). Apply this principal in real-world contexts
7.NS.B.1E	Apply properties of addition as strategies to add and subtract rational numbers
7.NS.B.2A.1	Understand that the multiplicative inverse of a number is its reciprocal and their product is equal to one (the multiplicative identity)
7.NS.B.2A.2	Understand positive and negative sign rules for multiplying rational numbers. Interpret products of rational numbers by describing real-world contexts
7.NS.B.2B	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers is a rational number. Recognize that ifpandqare integers then –(p/q) = (–p)/q=p/(–q). Interpret quotients of rational numbers by describing real-world contexts
7.NS.B.2C	Apply properties of multiplication (commutative, associative, distributive, or properties of identity and inverse elements) to multiply and divide rational numbers

7.NS.B.2D	Convert a rational number to a decimal. Recognize that rational numbers can be written as fractions or decimal numbers that terminate or repeat

7.RP | Ratios and Proportional Relationships

Analyze proportional relationships and use them to solve problems

7.RP.A	Analyze proportional relationships and use them to solve real-world and mathematical problems
7.RP.A.1	Compute unit rates, including those involving complex fractions, with like or different units
7.RP.A.2	Recognize and represent proportional relationships between quantities
7.RP.A.3	Solve multistep real world and mathematical problems involving ratios and percentages
7.RP.A.2A	Decide whether two quantities in a table or graph are in a proportional relationship
7.RP.A.2B	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships
7.RP.A.2C	Represent proportional relationships with equations
7.RP.A.2D	Explain what a point (x,y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1,r) whereris the unit rate

7.SP | Statistics and Probability

Use random sampling to draw inferences and develop probability models

7.SP.G	Use random sampling to draw inferences about a population
7.SP.G.1	Solve real-world and mathematical problems involving:
7.SP.G.2	Draw inferences about a population by collecting multiple random samples of the same size to investigate variability in estimates of the characteristic of interest
7.SP.G.1A	Understand that a sample is a subset of a population

Study Tips

- ☞ Absolute value is **always** ≥ 0. It measures distance, and distance is never negative.
- ☞ A negative sign *outside* the bars is applied **after** taking the absolute value: $-|-5| = -(5) = -5$.
- ☞ Work from the inside out: simplify what is inside $|\cdot|$ first, then evaluate the absolute value, then apply any outside operations.

✍ Word Problems

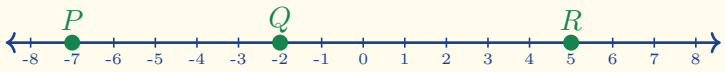
16. Two submarines depart from a dock at sea level (depth $= 0$). Submarine A dives to a depth of -340 feet and Submarine B dives to a depth of -180 feet. Use absolute value to determine which submarine is *closer* to the surface, and by exactly how many feet closer it is than the other submarine.

_____

17. Alena's bank account balance was \$0 on Sunday. By Monday evening her balance had dropped to $-\$47$. By Tuesday evening it had dropped further to $-\$62$. Use absolute value to state her Tuesday balance as a positive amount owed. Then determine by how many dollars her balance changed between Monday evening and Tuesday evening, and express that change as an absolute value.

_____

18. Three points P, Q, R are marked on the number line shown here. Find $|P|$, $|Q|$, and $|R|$. Then determine which point is farthest from zero, and compute $|P| + |R|$ (the total distance from zero of the two outer points).



_____

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1.3 Comparing and Ordering Integers

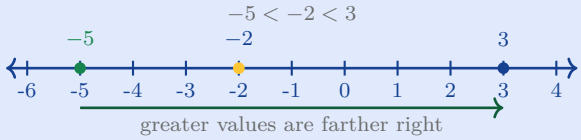
7.NS.B.1

The trick to comparing integers is to picture them on a number line. Numbers get larger as you move to the **right** and smaller as you move to the **left**. This is especially handy with negatives—for example, -3 is greater than -8 because -3 is closer to zero (farther right on the line). When a problem asks you to order integers from least to greatest, you are simply listing them in the same left-to-right order they appear on the number line. Once you have this picture in your head, symbols like $<$, $>$, and $=$ become second nature.

Key Concepts & Quick Review

Comparing: $a > b$ means a is to the **right** of b on the number line. $a < b$ means a is to the **left** of b.

Negatives rule: Among two negative integers, the one **closer to zero** is **greater**.
Ordering: list integers from least (leftmost) to greatest (rightmost).



Examples

① Compare -7 and -3. Write $<$, $>$, or $=$.

Think It Through: Put both numbers on a number line in your mind. The number -3 is closer to zero, so it sits to the right of -7. Numbers to the right are greater, and numbers to the left are smaller. Therefore $-7 < -3$.

Answer: $-7 < -3$

② Order from **least to greatest**: $4,\ -9,\ 2,\ -1,\ -6$.

Think It Through: Imagine placing all five integers on a number line. The farthest left is -9, then comes -6, then -1. After the negatives come the positives: 2 and then 4. Reading from left to right gives the order from least to greatest.

Answer: $-9 < -6 < -1 < 2 < 4$

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✎ Practice Problems

Write $<$, $>$, or $=$ in each box to make the statement true.

1. $-5 \square -2$ _____

2. $-8 \square -11$ _____

3. $7 \square -7$ _____

4. $-4 \square 0$ _____

5. $-15 \square -15$ _____

6. $-1 \square -100$ _____

7. $-9 \square 3$ _____

8. $|-6| \square 6$ _____

9. $-|-4| \square -4$ _____

10. $|-10| \square |-12|$ _____

11. $-20 \square -19$ _____

12. $0 \square -1$ _____

13. $-(-3) \square -3$ _____

14. $-|7| \square -7$ _____

15. $-25 \square -52$ _____

Study Tips

☞ Among two negative integers, the one with the **smaller absolute value** is **greater**: $-3 > -10$ because $3 < 10$.

☞ Any positive integer is always greater than any negative integer: $1 > -1{,}000{,}000$.

☞ When ordering a mixed set, negatives always come before zero, and zero comes before all positives.

✍ Word Problems

16. Five students competed in a math quiz bowl where correct answers earn points and incorrect answers lose points. Their final net scores were: -16, 8, -4, -21, and 5. Order the scores from *lowest to highest* and identify the student with the best score and the student with the worst score. Then find the range of scores (highest minus lowest).

_____

17. Four ocean animals are recorded at the following depths below the surface: a shark at -85 feet, a jellyfish at -12 feet, a sperm whale at -210 feet, and a yellowfin tuna at -47

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