y = mx + b

x^2 + 5x + 6 = 0

ARKANSAS ATLAS

sqrt(x)

7th GRADE MATH



MADE RIDICULOUSLY SIMPLE

A Comprehensive 7th Grade Math Study Guide to Acing the ATLAS Test

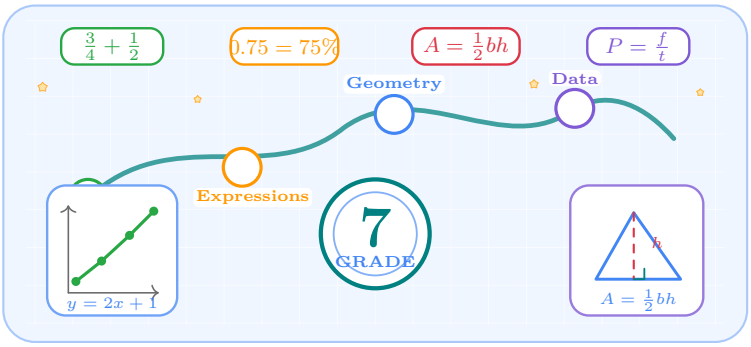
- COVERS ALL 7TH GRADE MATH STANDARDS
- EASY-TO-UNDERSTAND LESSONS & EXAMPLES
- PRACTICE QUESTIONS WITH DETAILED EXPLANATIONS
- TEST-TAKING STRATEGIES & TIPS
- BUILD CONFIDENCE. IMPROVE SCORES. SUCCEED!

LEARN SMART. PRACTICE MORE. ACE THE ATLAS!

Arkansas ATLAS

7th Grade Math Made Ridiculously Simple

A Comprehensive 7th Grade Math Study Guide to Acing the ATLAS Test



Reza Nazari

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7.GM.1	Describe the proportional relationship between the circumference and diameter of a circle
7.GM.2	Use area and circumference formulas of a circle to solve real-world and mathematical problems
7.GM.3	Apply the formulas for the volume and surface area of right rectangular prisms, rectangular pyramids, triangular prisms, and triangular pyramids to solve real-world and mathematical problems
7.GM.4	Describe the two-dimensional figure that results from slicing a three-dimensional figure parallel and perpendicular to the base
7.GM.5	Solve multi-step problems involving supplementary, complementary, vertical, and adjacent angles to include solving for an unknown angle in a figure
7.GM.6	Calculate the scale factor, compute the actual lengths from the scale in a drawing, and reproduce a scale drawing using another scale

7.NCC | Arkansas

Grade 7 expectations grouped under 7.NCC.

7.NCC.1	Represent addition and subtraction of rational numbers in real-world contexts using a variety of forms
7.NCC.2	Model and describe additive inverse in real-world situations to show opposite quantities combine to make 0
7.NCC.3	Demonstrate in real-world contexts the distance between two rational numbers on the number line as the absolute value of their differences
7.NCC.4	Convert a rational number in fraction form to decimal form and recognize that the decimal form of a rational number terminates in 0s or eventually repeats
7.NCC.5	Interpret the products and quotients of rational numbers by describing real-world contexts
7.NCC.6	Apply properties of operations as strategies to fluently add, subtract, multiply, and divide rational numbers
7.NCC.7	Use addition and subtraction with rational numbers in any form to solve multi-step problems in real-world and mathematical contexts
7.NCC.8	Use multiplication and division with rational numbers in any form to solve multi-step problems in real-world and mathematical contexts
7.NCC.9	Apply operations with rational numbers involving the order of operations, involving nested grouping symbols

7.PR | Arkansas

Grade 7 expectations grouped under 7.PR.

7.PR.1	Determine the unit rate (constant of proportionality) from tables, graphs, equations, diagrams, or verbal descriptions of proportional relationships
7.PR.2	Calculate unit rates in real-world contexts that include complex fractions
7.PR.3	Solve multi-step ratio and percent problems in a real-world context, including percent error and percent increase and decrease
7.PR.4	Determine whether two quantities represent proportional relationships by using equivalent ratios in a table and by graphing on a coordinate plane
7.PR.5	Compare two different proportional relationships represented in different forms
7.PR.6	Create equations in the form ofy=mxfrom tables, verbal descriptions, or graphs
7.PR.7	Given a graph with a proportional relationship, explain the meaning of a point (x,y) on the graph, including the origin (0,0) and the unit rate (1,r)

7.SP | Arkansas

Grade 7 expectations grouped under 7.SP.

7.SP.1	Interpret data displayed in a histogram and box plot to answer questions about the data
7.SP.2	Recognize, create, and interpret categorical data in a circle graph
7.SP.3	Graph two numerical data sets and compare their variability
7.SP.4	Select an appropriate measure(s) of center or variability and draw valid comparative inferences for two data sets
7.SP.5	Distinguish between a random and non-random sample
7.SP.6	Use a random sampling of a population to draw valid inferences and generalizations of populations
7.SP.7	Determine the sample space of a simple experiment and use the sample space to determine the theoretical probability of a given set of outcomes

7.SP.8	Recognize that probabilities in a simple experiment can be qualitative descriptors of likelihood: impossible (0), unlikely, neither likely nor unlikely, likely, or certain (1)
7.SP.9	Determine experimental probabilities in simple experiments and represent as fractions, decimals, and percents
7.SP.10	Use theoretical probability of an event in a simple experiment to predict the number of times that an event will occur for a large number of experiments

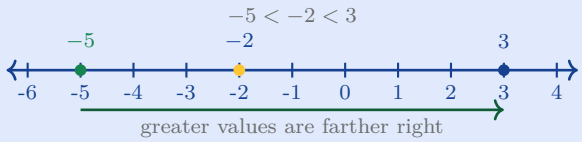
1.3 Comparing and Ordering Integers 7.NCC.3

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

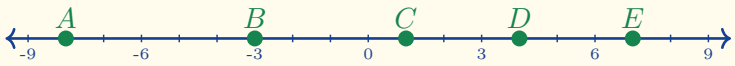
16. Five students competed in a math quiz bowl where correct answers earn points and incorrect answers lose points. Their final net scores were: -16, 8, -4, -21, and 5. Order the scores from *lowest to highest* and identify the student with the best score and the student with the worst score. Then find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

feet. Order the animals from *shallowest* to *deepest* depth. How much deeper is the sperm whale than the shark? _____

18. Five points are plotted on the number line shown here. Identify the integer at each point, then list the points in order from least to greatest. Which point has the greatest absolute value?



_____

1.4 Adding Integers

7.NCC.6

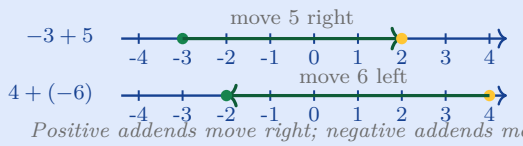
Think of adding integers as combining movements on a number line—or combining gains and losses in everyday life. Here is the key: when both numbers share the same sign, they move in the same direction, so you add the absolute values and keep that sign. When the signs are different, the numbers pull in opposite directions; you subtract the smaller absolute value from the larger one and keep the sign of whichever was stronger. You will also meet **zero pairs** (additive inverses), which show why a positive and its matching negative cancel out completely. Master these two rules and integer addition will feel natural every time.

Key Concepts & Quick Review

Same signs: Add the absolute values; keep the common sign. **Example:** $(-5)+(-8)=-(5+8)=-13$

Different signs: Subtract the smaller $|\cdot|$ from the larger; keep the sign of the larger $|\cdot|$.
Example: $(-9)+4=-(9-4)=-5$

Additive inverse: $a+(-a)=0$ **Identity:** $a+0=a$



Positive addends move right; negative addends move left.

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