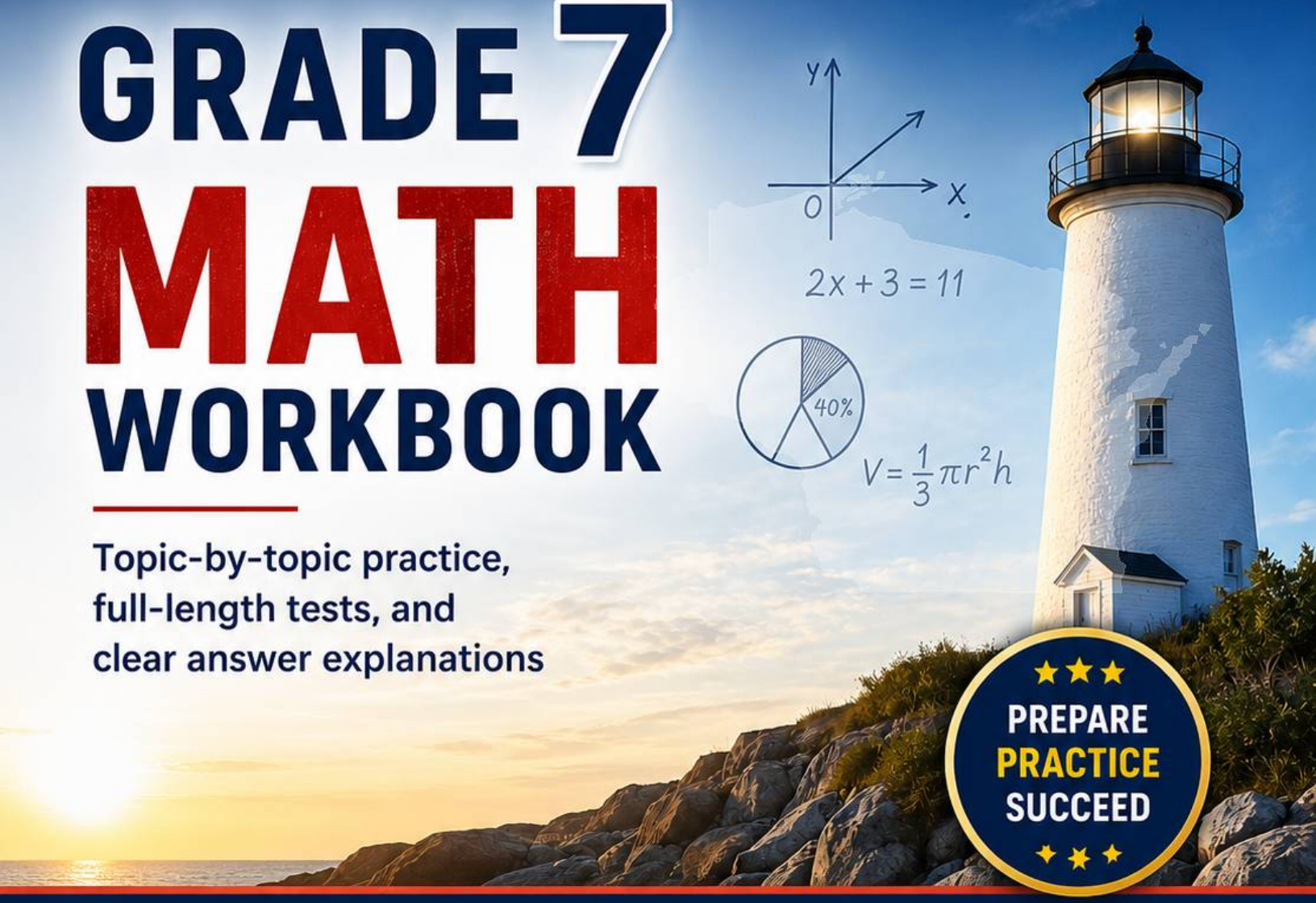
WISCONSIN FORWARD

GRADE 7 MATH WORKBOOK

Topic-by-topic practice, full-length tests, and clear answer explanations



TOPIC-BY-TOPIC PRACTICE
Build skills and strengthen concepts

FULL-LENGTH TESTS
Realistic practice to build confidence

CLEAR ANSWER EXPLANATIONS
Understand every step and improve

Wisconsin FORWARD

Grade 7

Math Workbook

Topic-by-topic practice, full-length tests, and clear answer explanations

7

Built for steady Grade 7 progress

Integers, ratios, percents, expressions, geometry, statistics, and probability

80 Topic Worksheets

2 Full-Length Tests

Answer Explanations



Reza Nazari

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7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers
7.NS.A.2d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats

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. (M)
7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units
7.RP.A.2	Recognize and represent proportional relationships between quantities
7.RP.A.3	Use proportional relationships to solve multi-step ratio and percent problems
7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin
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 by 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 $(1, r)$ where r is the unit rate.

7.SP | Statistics and Probability

Use random sampling to draw inferences and develop probability models

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7.SP.A	Use random sampling to draw inferences about a population. (M)
7.SP.A.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences
7.SP.A.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be
7.SP.B	Draw informal comparative inferences about two populations. (M)
7.SP.B.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability
7.SP.B.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations
7.SP.C	Investigate chance processes and develop, use, and evaluate probability models. (M)
7.SP.C.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event
7.SP.C.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability

7.SP.C.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy
7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation
7.SP.C.7a	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events
7.SP.C.7b	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process
7.SP.C.8a	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs
7.SP.C.8b	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event
7.SP.C.8c	Design and use a simulation to generate frequencies for compound events

M.7 | Wisconsin

Grade 7 expectations grouped under M.7.

M.7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients
M.7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related
M.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies

✎ Practice Problems

Simplify each expression.

1. $-(-6) =$ _____

2. $-(-14) =$ _____

3. $-(-(-3)) =$ _____

4. $-(-(-(-8))) =$ _____

5. $-(-25) =$ _____

6. $-(-(-11)) =$ _____

7. $-(-(-(-5))) =$ _____

8. $-(-19) =$ _____

9. $-(-(-7)) =$ _____

10. $-(-(-(-20))) =$ _____

11. $-(-33) =$ _____

12. $-(-(-(-(-4)))) =$ _____

13. $-(-(-16)) =$ _____

14. $-(-(-(-9))) =$ _____

15. $-(-42) =$ _____

Study Tips

- ☞ Two negatives always cancel: $-(-n) = n$. Count the minus signs — even count gives positive, odd count gives negative.
- ☞ The opposite of zero is zero: $-(0) = 0$.
- ☞ On any number line, moving **left** decreases the value; moving **right** increases it.

✍ Word Problems

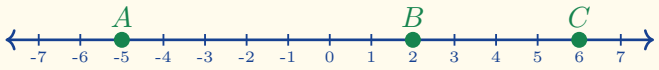
16. Marcus and his sister are playing a golf-themed board game where each player's score is tracked relative to par. Marcus's score is 5 strokes *under* par and his sister's score is 3 strokes *over* par. Write an integer for each score. In golf, the player with the *lower* score wins — who is winning, and by how many strokes? _____

17. A weather station records a high temperature of 12°F for one afternoon. That same night, the low temperature is the exact opposite of the afternoon high. During the early morning, the temperature drops an additional 7 degrees below the overnight low. Write an integer for the overnight low and for the early-morning temperature. By how many degrees did the temperature change from the afternoon high to the early-morning reading?

_____

18. Three points are plotted on the number line shown here. Identify the integer for each point, find the opposite of point B, and find the distance from point A to point C.

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1.2 Absolute Value

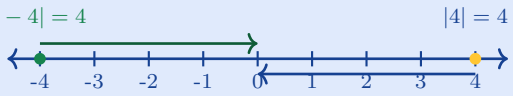
7.NS.A.1

Here is a simple but powerful idea: **absolute value** measures how far a number is from zero on the number line—not which side of zero it is on. That is why $|-7|$ and $|7|$ both equal 7; each sits exactly 7 units from zero. Because distance is never negative, an absolute value is always zero or positive. One common trap to watch for: if there is a minus sign outside the absolute-value bars, find the absolute value first, then apply the sign. Mastering this concept now will pay off every time you work with integer operations, distance, and real-world contexts like temperature change.

Key Concepts & Quick Review

Definition: $|n|$ = distance from n to 0 on the number line $\Rightarrow$ $|n| \geq 0$ always.

Rule: $|n| = n$ if $n \geq 0$; $|n| = -n$ if $n < 0$ **Key fact:** $|-n| = |n|$ (opposites have the same absolute value)



Absolute value is distance from zero.

Examples

① Evaluate $-|-9|$.

Think It Through: Work from the inside out. First find the absolute value: $|-9| = 9$ because -9 is 9 units from zero. Then look at the negative sign outside the bars and apply it after the absolute value is finished. That gives $-(9) = -9$. A negative sign outside absolute value bars does not disappear.

Answer: -9

② Two hikers leave camp (position 0 on a trail). Hiker A walks 11 *mi* east (+11) and Hiker B walks 11 *mi* west (−11). Use absolute value to compare the distances each hiker traveled. Then find $|+11| - |-11|$.

Think It Through: Absolute value tells distance from zero, so direction does not matter here. Hiker A traveled $|+11| = 11$ *mi* and Hiker B traveled $|-11| = 11$ *mi*. That means they are the same distance from camp even though they walked in opposite directions. Subtracting the two distances gives $11 - 11 = 0$.

Answer: *0; both hikers traveled equal distances*

Practice Problems

Evaluate each expression.

1. $|-8| =$ _____

2. $|15| =$ _____

3. $-|-7| =$ _____

4. $|-34| =$ _____

5. $-|12| =$ _____

6. $|0| =$ _____

7. $|-23| =$ _____

8. $-|-20| =$ _____

9. $|-45| =$ _____

10. $|7| - |-7| =$ _____

11. $|-13| + |-8| =$ _____

12. $|-6| \cdot |-4| =$ _____

13. $|-3|^2 =$ _____

14. $|8 - 15| =$ _____

15. $|-100| \div |-25| =$ _____

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

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