

7 North Dakota NDSA

Grade 7 Math Practice Tests



7 PRINTED TESTS + 2 ONLINE TESTS

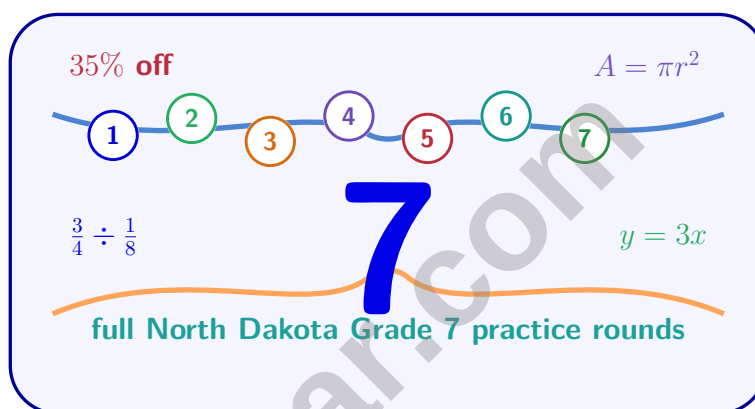


**Standards Aligned Problem Solving
For Comprehensive Assessment Programs**



8 North Dakota NDSA Grade 7 Math Practice Tests

A careful review of North Dakota Grade 7 ratios, percent change, expressions, geometric construction, circle graphs, and probability



Eight complete 40-question Grade 7 NDSA practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, North Dakota Grade 7 Problem Solver!

Eight focused rounds for sharper NDSA math thinking

This book gives you seven full Grade 7 NDSA math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, and explain your thinking with care.

Your North Dakota Practice Promise

I will read every question carefully, choose a strategy that fits, write enough work to prove my answer, and use corrections as training for the next test.

Read

Model

Verify

How to Use This Book

An eight-session plan for confident Grade 7 review

1. **Warm up with the review pages.** Notice the big ideas before starting the tests.
2. **Complete one test at a time.** Treat each 40-question round like a real practice session.
3. **Show your reasoning.** Jot a proportion, equation, diagram, number line, or quick estimate when it helps.
4. **Correct actively.** Rework missed items before reading the explanation.
5. **Choose the next target.** After each test, name one skill and one habit to improve.

North Dakota review rhythm: Work a test, score it, study your misses, then come back ready for the next round with one clear goal.



What Is Inside?

Eight NDSA tests, 280 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Tests 4–6	Expressions, equations, inequalities, scale drawings, geometry, and multi-step problem solving.
Tests 7–8	Statistics, probability, mixed review, stamina, and choosing efficient strategies.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.



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- 1) Which step has an error in solving $\frac{1}{2}x + 6 = 10$?

Step	Equation
Start	$\frac{1}{2}x + 6 = 10$
Step 1	$\frac{1}{2}x = 16$
Step 2	$x = 32$

- ☐ A. No error; all correct
 ☐ C. Error in Step 2; should be $x = 8$
☐ B. Error in Step 1; should be $\frac{1}{2}x = 4$
☐ D. Errors in both steps
- 2) A simulation consists of rolling a die and flipping a coin, recording both results. This is the compound event. How many equally likely outcomes are in the sample space?
- ☐ A. 6
 ☐ C. 12
☐ B. 8
 ☐ D. 36
- 3) A freelance designer charges a base project fee of \$200 plus a 10% usage fee on all client revenue from the design. If the client generates \$1,500 in revenue, what is the total amount owed?
- ☐ A. \$200
 ☐ C. \$150
☐ B. \$1,700
 ☐ D. \$350
- 4) Rosario puts \$900 in a savings account earning 8% annual compound interest. The balance for years 0, 1, 2, and 3 is shown below.

Year	Balance
0	\$900
1	\$972
2	\$1,049.76
3	\$1,133.74

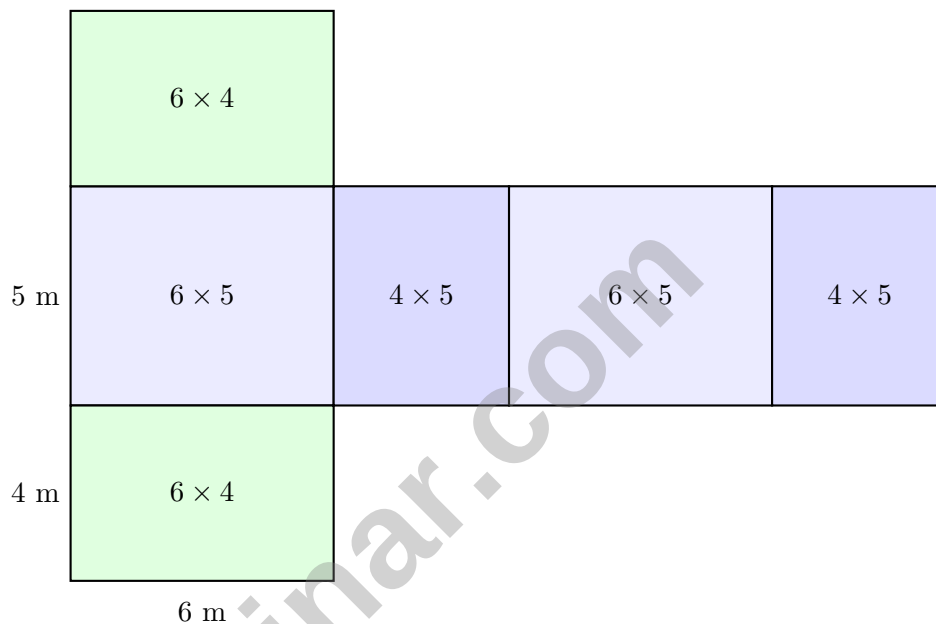
Which year shows the balance first exceeding \$1,000?

- ☐ A. Year 1
 ☐ C. Year 3
☐ B. Year 4
 ☐ D. Year 2



- 5) A bank account has a balance of $-\$75$ (overdrawn). To bring it to zero, you must deposit:

- ☐ A. \$75 ☐ C. $-\$75$
☐ B. \$150 ☐ D. \$0



- 6)
- A net shows the unfolded faces of a rectangular prism. Based on the labeled dimensions, what is the surface area?

- ☐ A. 148 m^2 ☐ C. 200 m^2
☐ B. 160 m^2 ☐ D. 240 m^2

- 7) A student evaluates $2x + 3y$ when $x = -4$ and $y = 2$, and writes: " $2(-4) + 3(2) = -8 + 6 = -2$." Is this correct?

- ☐ A. No, the error is in the multiplication of $2x$ ☐ C. No, negative times positive is positive
☐ B. No, the error is in the addition step ☐ D. Yes, the answer is -2



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8) Simplify: $12x - 7x + 3x$

☐ A. $8x$

☐ C. $2x$

☐ B. $22x$

☐ D. $12x$

9) Factor: $6ab - 9b + 3b$

☐ A. $3b(2a - 2)$

☐ C. $b(6a - 9 + 3)$

☐ B. $3(2ab - 3b + b)$

☐ D. $3b(2a)$

10) A company randomly samples 200 customers from its database of 50,000 customers to estimate customer satisfaction. What is the population in this scenario?

☐ A. The 200 customers surveyed

☐ C. All potential customers of the

☐ B. The 50,000 customers in the database

☐ D. The survey responses

11) Which division expression equals 2?

☐ A. $\frac{1}{3} \div \frac{1}{3}$

☐ C. $\frac{4}{7} \div \frac{2}{7}$

☐ B. $\frac{2}{5} \div \frac{4}{5}$

☐ D. $\frac{3}{8} \div \frac{3}{4}$

12) A student finds an error in her work. She wrote $-5 \times 4 = -20$, but then incorrectly concluded the answer was $+20$. What was her mistake?

☐ A. She multiplied incorrectly; should be -20 .

☐ C. She multiplied correctly but then flipped the sign.

☐ B. She forgot to apply the sign rule for multiplication.

☐ D. The negative sign should apply only to the 4, not the result.



- 1) A bag contains 3 red marbles and 5 blue marbles. What is the probability of drawing a red marble first, WITHOUT replacing it, then drawing a blue marble?

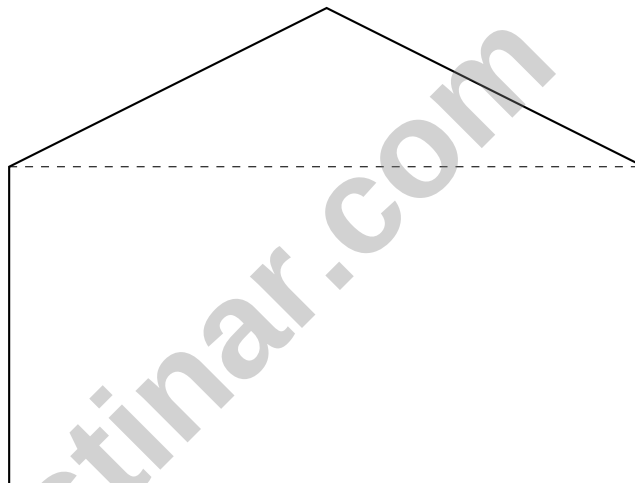
☐ A. $\frac{3}{8} \cdot \frac{5}{8}$
☐ B. $\frac{3}{8} \cdot \frac{4}{7}$

☐ C. $\frac{15}{56}$
☐ D. $\frac{15}{64}$

- 2) Simplify: $-3(x + 2) - 2x$.

☐ A. $-3x - 6 - 2x = -5x - 6$
☐ B. $-5x - 2$

☐ C. $x - 6$
☐ D. $-5x + 6$



3)

A pentagon-shaped region can be decomposed into a trapezoid (parallel sides 12 units and 12 units, height 6 units) and a triangle (base 6 units, height 3 units). What is the total area?

☐ A. 50 sq units
☐ B. 63 sq units

☐ C. 72 sq units
☐ D. 81 sq units



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4) A rectangular prism has length $\frac{1}{2}$ m, width $\frac{1}{3}$ m, and height 2 m. What is the volume?

☐ A. 1 m^3

☐ B. $\frac{2}{3} \text{ m}^3$

☐ C. $\frac{1}{3} \text{ m}^3$

☐ D. $\frac{1}{6} \text{ m}^3$

5) In a circle, two sectors have central angles: Sector X has a central angle of 40° , and Sector Y has a central angle of 80° . How does Sector Y 's area compare to Sector X 's area?

☐ A. Sector Y is half the size☐ B. Sector Y is the same size☐ C. Sector Y is twice the size☐ D. Cannot be determined

6) A rectangular prism has dimensions $9 \text{ in} \times 3 \text{ in} \times 6 \text{ in}$. What is the surface area?

☐ A. 54 in^2

☐ B. 108 in^2

☐ C. 198 in^2

☐ D. 324 in^2

7) Evaluate $2a + 3b$ when $a = 5$ and $b = 2$.

☐ A. 20

☐ B. 13

☐ C. 16

☐ D. 10

8) Simplify: $5p + 2q + 3p - q + 4q$

☐ A. $8p + 5q$

☐ B. $8p + 6q$

☐ C. $5p + 2q$

☐ D. $12pq$

9) What is the correct factorization of $-6m + 18$?

☐ A. $6(-m + 3)$

☐ B. $-6(m - 3)$

☐ C. $-6(m + 3)$

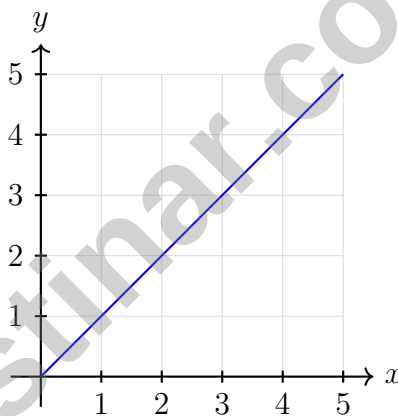
☐ D. $6(m - 3)$



- 1) The diagram below shows the steps to expand $3(x + 2)$. What should replace the question mark?

$$\begin{array}{ccc} 3(x + 2) & & \\ \downarrow & & \\ 3 \cdot x & + & 3 \cdot 2 \\ \downarrow & & \\ 3x & + & ? \end{array}$$

- ☐ A. 2 ☐ C. 5
☐ B. 3 ☐ D. 6
- 2) Which graph represents a proportional relationship?



- ☐ A. Only if $x > 0$ ☐ C. Cannot determine from graph
☐ B. No, line does not go through origin ☐ D. Yes, line goes through origin

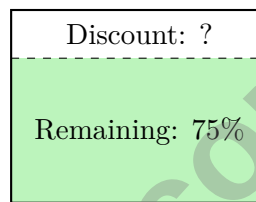


3) What is 0.45 as a percent?

- ☐ A. 4.5% ☐ C. 0.45%
- ☐ B. 450% ☐ D. 45%

4) Lily spends \$1 200 per month on living expenses. Her net monthly income is \$1 800. How much does she have left for savings and discretionary spending?

- ☐ A. \$400 ☐ C. \$600
- ☐ B. \$500 ☐ D. \$800



Original: \$120

5)

A percent bar shows that 75% of the original price remains after a discount. The original price is \$120. What is the percent discount?

- ☐ A. 20% ☐ C. 75%
- ☐ B. 30% ☐ D. 25%

6) A fitness center wants to know about its members' exercise habits. It surveys members only during evening hours when most people are at the gym. What is this sampling bias called?

- ☐ A. Stratified bias ☐ C. Measurement bias
- ☐ B. Selection bias ☐ D. Convenience sampling



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North Dakota State Assessment Grade 7 Practice Test Answer Keys

How to use this section with a Grade 7 student:

1. check the answer first and circle any item that needs another look
2. retry the problem with fresh work before reading the explanation
3. write one short lesson learned from each missed or guessed item

A strong review routine turns every correction into a sharper plan for the next North Dakota State Assessment practice test.



Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** (7.EE.3-7.EE.4) Correct: Subtract 6: $\frac{1}{2}x = 4$ (not 16). Multiply by 2: $x = 8$ (not 32). Both steps contain errors.
- 2) **Choice C is correct.** (7.SP.5-7.SP.8) Die outcomes: 6 (rolling 1, 2, 3, 4, 5, 6). Coin outcomes: 2 (heads or tails). Total compound outcomes: $6 \times 2 = 12$ distinct pairs (e.g., H1, H2, H3, ..., H6, T1, T2, ..., T6).
- 3) **Choice D is correct.** (7.RP.3) Usage fee = $0.10 \times 1500 = \$150$. Total = $200 + 150 = \$350$.
- 4) **Choice D is correct.** (7.RP.3) From the table, year 1 gives \$972 (below \$1,000) and year 2 gives \$1,049.76 (first to exceed \$1,000).
- 5) **Choice A is correct.** (7.NS.1-7.NS.3) To cancel out a debt of -75 , you must add $+75$. Their sum is zero: $-75 + 75 = 0$.
- 6) **Choice A is correct.** (7.G.4-7.G.6) From the net, dimensions are $6 \text{ m} \times 4 \text{ m} \times 5 \text{ m}$. $SA = 2(6 \cdot 4 + 6 \cdot 5 + 4 \cdot 5) = 2(24 + 30 + 20) = 2(74) = 148 \text{ m}^2$.
- 7) **Choice D is correct.** (7.EE.1-7.EE.2) The work is correct: $2(-4) + 3(2) = -8 + 6 = -2$.
- 8) **Choice A is correct.** (7.EE.1) Combine coefficients: $(12 - 7 + 3)x = 8x$.
- 9) **Choice A is correct.** (7.EE.1-7.EE.2) GCF of $6ab$, $9b$, and $3b$ is $3b$. Factor: $6ab - 9b + 3b = 3b(2a - 3 + 1) = 3b(2a - 2)$.
- 10) **Choice B is correct.** (7.SP.1-7.SP.4) The population is the entire group being studied, which is the complete database of 50,000 customers. The sample is the 200 randomly selected customers.
- 11) **Choice C is correct.** (7.NS.1-7.NS.3) $\frac{4}{7} \div \frac{2}{7} = \frac{4}{7} \times \frac{7}{2} = \frac{4}{2} = 2$.
- 12) **Choice C is correct.** (7.NS.1-7.NS.3) $-5 \times 4 = -20$ is correct (negative times positive is negative). Her error was reversing the sign to $+20$ after the multiplication, which is incorrect.
- 13) **Choice C is correct.** (7.EE.4a) Initial fee is \$2.50, and mileage is \$1.50 per mile. Equation: $1.50m + 2.50 = 13.00$.
- 14) **The correct answer is -17 .** (7.NS.1-7.NS.3) After descending: $0 - 25 = -25$. After ascending 8 meters: $-25 - (-8) = -25 + 8 = -17$. She is 17 meters below sea level.
- 15) **Choice B is correct.** (7.EE.4a) Distribute: $7x + 7 = 49$. Subtract 7: $7x = 42$. Divide by 7: $x = 6$.
- 16) **Choice C is correct.** (7.EE.4b) Multiply both sides by 3: $x \geq 6$. The inequality sign stays the same because we multiply by a positive.
- 17) **The correct answer is 1.5.** (7.RP.1-7.RP.3) The unit rate is $6 \div 4 = 1.5$.
- 18) **Choice C is correct.** (7.G.1-7.G.5) Actual dimensions: $15 \text{ m} \times 9 \text{ m}$. The scale factor is 3 (linear), so area scale is $3^2 = 9$. Drawing area: $5 \times 3 = 15 \text{ cm}^2$. Actual area: $15 \times 9 = 135 \text{ m}^2$.
- 19) **Choice B is correct.** (7.G.1-7.G.5) The ratio of areas equals the square of the ratio of corresponding lengths. The cut is at height 4 cm out of 12 cm, so the ratio is $\frac{4}{12} = \frac{1}{3}$. Squaring: $\left(\frac{1}{3}\right)^2 = \frac{1}{9}$.
- 20) **The correct answer is A,D.** (7.RP.1-7.RP.3) True: A ($2 \times 40 = 80 \text{ cm}$) and D (area scales by $(40)^2 = 1600$, so $3 \times 1600 = 4800 \text{ cm}^2$). False: B (should be cm, not m); C (area scales quadratically); E (area scales by 1600, not 40).
- 21) **Choice A is correct.** (7.G.1-7.G.5) Complementary angles sum to 90° : $90 - 41 = 49^\circ$.
- 22) **Choice A is correct.** (7.G.1-7.G.5) Reflection over $y = x$ uses the rule $(x, y) \rightarrow (y, x)$, swapping the coordinates: $(2, 5) \rightarrow (5, 2)$.
- 23) **Choice C is correct.** (7.G.1-7.G.5) Scale factor = $\frac{4.5}{3} = 1.5$. Base of Trapezoid 2 = $8 \times 1.5 = 12 \text{ ft}$.
- 24) **Choice C is correct.** (7.G.4-7.G.6) Distance = circumference = $2\pi r = 2 \times 3.14 \times 0.5 = 3.14 \text{ m}$.
- 25) **Choice A is correct.** (7.G.4-7.G.6) $A = \pi r^2 = 3.14 \times \left(\frac{1}{2}\right)^2 = 3.14 \times 0.25 = 0.785 \text{ m}^2$.
- 26) **Choice C is correct.** (7.G.4-7.G.6) $V = \pi r^2 h \approx 3.14 \times 2.25 \times 11 \approx 77.715 \text{ ft}^3$.
- 27) **Choice B is correct.** (7.SP.5-7.SP.8) Total coins = $2 + 3 + 5 = 10$. Non-penny coins = $2 + 3 = 5$. $P(\text{not penny}) = \frac{5}{10} = \frac{1}{2}$.
- 28) **Choice B is correct.** (7.SP.5-7.SP.8) First spinner: 3 outcomes; second spinner: 2 outcomes. Total: $3 \times 2 = 6$ outcomes.



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Hi, Thoughtful Reader!

◇ A strong Grade 7 test taker is also a strong reader. You practiced turning words, tables, graphs, and diagrams into math decisions. ◇

★ **Remember this:** That skill grows each time you slow down enough to ask what the problem is really telling you and what it is really asking for. This version gave you 7 opportunities to rehearse test-day habits. ★

Reader-to-Solver Skills

- **Circle the Ask:** Make the target visible.
- **Sort Information:** Separate useful facts from extra words.
- **Match Units:** Keep quantities connected.
- **Answer Fully:** Include the value and what it means.

Grade 7 test-day tip: After solving, reread only the final question. Make sure your answer matches it exactly.

If you want to share something or ask a question, please email me at jay@testinar.com.

Jay Daie

Your Reading-and-Math Helper

Practice Today. Succeed Tomorrow!

This book includes **7** full-length Math practice tests and **2** online tests to help Grade 7 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.



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2 Online Practice Tests

 Detailed Answer Explanations



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Stronger Math Skills

Build a solid foundation through targeted practice and review.



Better Problem Solving

Develop logical thinking and effective solution strategies.



Deeper Understanding

Reinforce key concepts with clear explanations and meaningful practice.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Achieve Success

Build confidence and perform your best on test day.

TOPICS COVERED

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- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Geometry
- ✓ Percents & Decimals
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ Algebraic Thinking
- ✓ And More!



PRACTICE
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY



2 ONLINE TESTS

Use these two additional online practice tests for extra review after the printed tests in this book.



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