

9

North Dakota

NDSA

GRADE 7

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

Program



9

**PRINTED
TESTS**



2

**ONLINE
TESTS**



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



BUILT FOR ACAP
Standards-Aligned



**STRENGTHEN
SKILLS**



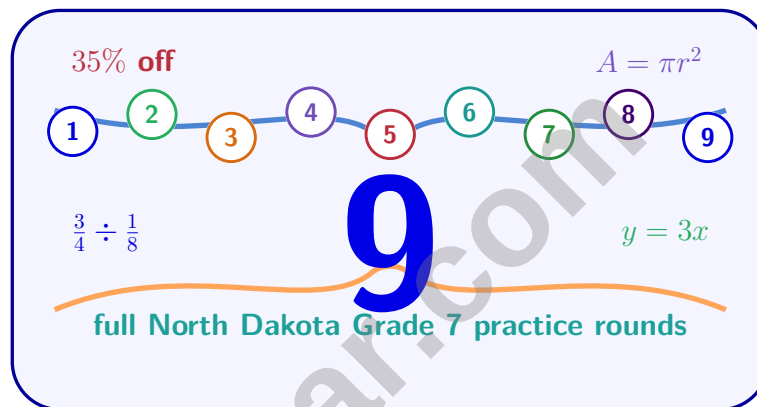
**SHARPEN
THINKING**



BE TEST-READY
Improve Performance

9 North Dakota NDSA Grade 7 Math Practice Tests

Standards-Aligned North Dakota Practice for Proportional Reasoning, Expressions, Geometry, Statistics, and Probability



Nine 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!

Nine focused rounds for sharper NDSA math thinking

This book gives you nine 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

A nine-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?

Nine NDSA tests, 360 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 7–9	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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For more practice
& answers

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1) Solve: $\frac{1}{2}x + 5 = 9$

☐ A. $x = 4$

☐ C. $x = 8$

☐ B. $x = 6$

☐ D. $x = 10$

- 2) Two rectangular prisms have the same base area of 25 cm^2 . The first has a height of 4 cm and the second has a height of 8 cm. By how much is the volume of the second greater than the first?

☐ A. 100 cm^3

☐ C. 50 cm^3

☐ B. 75 cm^3

☐ D. 25 cm^3

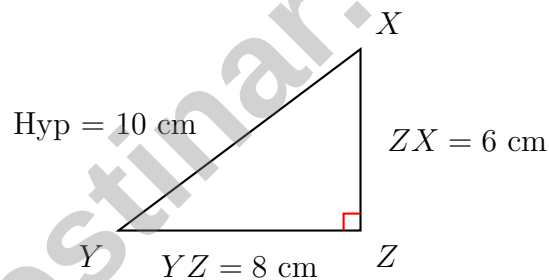
- 3) In a circle, how many different radii can you draw?

☐ A. 1

☐ C. Infinitely many

☐ B. 2

☐ D. 10



4)

A right triangle has legs of 6 cm and 8 cm. What is the length of the hypotenuse?

☐ A. 10 cm

☐ C. 14 cm

☐ B. 12 cm

☐ D. 15 cm



- 5) Three events have probabilities: Event A = $\frac{1}{2}$, Event B = 0.6, Event C = 55%. Which event is most likely?
- ☐ A. Event A ☐ C. Event C
- ☐ B. Event B ☐ D. Events A and C are equally likely
- 6) A geometric figure has an area of 48 square inches. If the figure is enlarged by a scale factor of 3, what is the new area?
- ☐ A. 144 square inches ☐ C. 51 square inches
- ☐ B. 16 square inches ☐ D. 432 square inches
- 7) In the simple interest formula $I = Prt$, if all variables except the rate are held constant, which statement is true?
- ☐ A. Interest is inversely proportional to the rate ☐ C. Doubling the rate cuts the interest in half
- ☐ B. The rate does not affect the interest amount ☐ D. Interest is directly proportional to the rate
- 8) A die is rolled and a card is drawn from a set of 5 cards labeled A, B, C, D, E. How many total outcomes are in this compound experiment?



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- 9) A university surveyed 3200 students about their housing. The circle graph shows 23% live off-campus. How many students live off-campus?
- ☐ A. 230 ☐ C. 736
☐ B. 640 ☐ D. 2464
- 10) Solve the inequality: $2x + 5 \geq 13$
- ☐ A. $x \geq 3$ ☐ C. $x \leq 4$
☐ B. $x \geq 4$ ☐ D. $x \geq 9$
- 11) Three workers complete $\frac{2}{3}$ of a project equally in 1 day. How much does each worker complete?
- ☐ A. $\frac{1}{9}$ of the project ☐ C. $\frac{2}{3}$ of the project
☐ B. $\frac{3}{2}$ of the project ☐ D. $\frac{2}{9}$ of the project
- 12) A savings account earns 6% simple interest. Which statement best explains the benefit of starting to save early?
- ☐ A. Early saving guarantees no losses on investments ☐ C. Early savers never need to work again
☐ B. Interest rates are always higher for younger people ☐ D. More time allows interest to accumulate on a larger balance
- 13) Solve: $0.5x + 3.5 = 8.5$
- ☐ A. $x = 5$ ☐ C. $x = 12$
☐ B. $x = 10$ ☐ D. $x = 14$



1) A sales associate earned \$150 in commission on \$2,500 worth of sales. What is the commission rate?

☐ A. 4%

☐ C. 6%

☐ B. 5%

☐ D. 8%

2) A coffee shop buys coffee beans for \$8 per pound and marks them up by \$4 per pound. What is the percent markup?

☐ A. 75%

☐ C. 25%

☐ B. 100%

☐ D. 50%

3) Simplify: $\frac{\frac{5}{8}}{\frac{3}{4}}$

☐ A. $\frac{15}{32}$

☐ C. $\frac{32}{15}$

☐ B. $\frac{6}{5}$

☐ D. $\frac{5}{6}$

4) Two tables show relationships between x and y . Table P has (1, 4), (2, 8), (3, 12). Table Q has (1, 5), (2, 9), (3, 13). Which is proportional?

☐ A. Neither table

☐ C. Both tables

☐ B. Table Q

☐ D. Table P

5) Which equation does NOT represent a proportional relationship?

☐ A. $y = 0.5x$

☐ C. $y = x - 7$

☐ B. $y = -3x$

☐ D. $y = \frac{4}{7}x$



- 6) Compute $2\frac{1}{3} \div \frac{5}{9}$. Show all steps: convert mixed number, apply reciprocal rule, and simplify.

- 7) Simplify: $-3x + 5x - x + 2x$

☐ A. $3x$

☐ C. $9x$

☐ B. $5x$

☐ D. $2x$

- 8) A painter needs to paint all six faces of a cubic wooden crate with edge length 2 m. If one liter of paint covers 10 m^2 , how many liters of paint are needed?

☐ A. 2.4 liters

☐ C. 5 liters

☐ B. 4 liters

☐ D. 24 liters

- 9) Factor: $6xy + 9x$

☐ A. $3x(2y + 3)$

☐ C. $9(2xy + 1)$

☐ B. $6x(y + 1.5)$

☐ D. $x(6y + 9)$

- 10) A school wants to estimate the average amount of time students spend on homework per night. Which sample size is best?

☐ A. 10 students

☐ C. 100 students

☐ B. 25 students

☐ D. 1000 students



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1) A student claims that $-14 + 14 = 28$. What is the student's error?

- ☐ A. They forgot that opposites sum to 0
- ☐ B. They should have subtracted instead
- ☐ C. The answer is correct
- ☐ D. Absolute values were not used

2) Solve for y : $2y - 8 = -14$ and check your answer makes sense.

- ☐ A. $y = -3$
- ☐ B. $y = 0$
- ☐ C. $y = 3$
- ☐ D. $y = 11$

3) A rectangular swimming pool on a scale drawing is 6 cm by 8 cm. The scale is 1 cm : 2 m. What is the area of the actual pool in square meters?

- ☐ A. 48 m^2
- ☐ B. 96 m^2
- ☐ C. 192 m^2
- ☐ D. 384 m^2

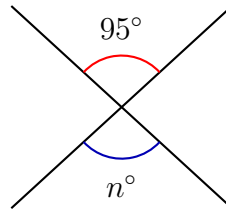
4) What is $-\frac{3}{4} \times (-\frac{8}{9})$?

5) A rectangular prism with dimensions $5 \text{ cm} \times 7 \text{ cm} \times 10 \text{ cm}$ is cut by a plane parallel to the base. The cross-section is a rectangle with area 35 cm^2 . Which dimension of the prism determines the area of the cross-section?

- ☐ A. The height only
- ☐ B. The base dimensions ($5 \text{ cm} \times 7 \text{ cm}$)
- ☐ C. The sum of all dimensions
- ☐ D. The lateral surface area



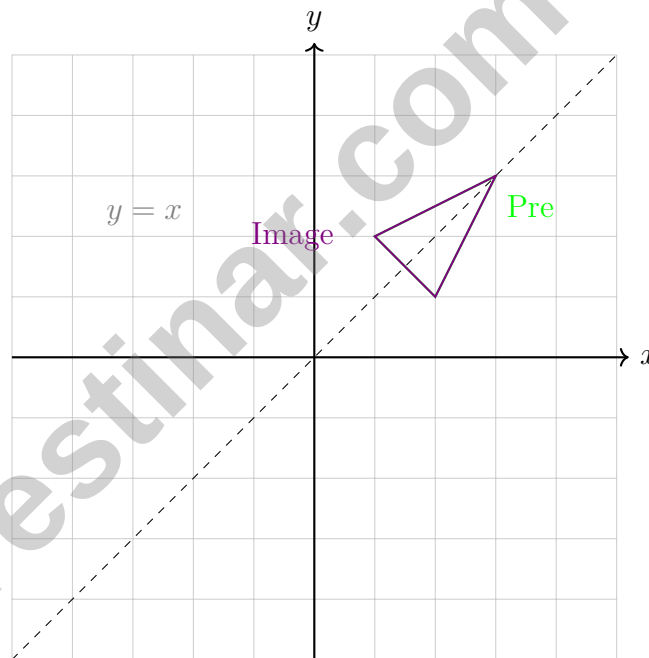
6)



Two intersecting lines form angles. One angle is 95° . What is the vertically opposite angle n ?

☐ A. 5°
☐ C. 95°
☐ B. 85°
☐ D. 265°

7)



The green triangle is reflected over the line $y = x$ to form the purple triangle. Which vertex of the pre-image corresponds to the vertex at $(3, 3)$ in the image?

☐ A. $(1, 2)$
☐ C. $(2, 1)$
☐ B. $(3, 3)$
☐ D. $(3, 1)$


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North Dakota NDSA 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 NDSA practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (7.EE.3-7.EE.4) Subtract 5: $\frac{1}{2}x = 4$. Multiply by 2: $x = 8$.
- 2) **Choice A is correct.** (7.G.4-7.G.6) Volume of first = $25 \times 4 = 100 \text{ cm}^3$. Volume of second = $25 \times 8 = 200 \text{ cm}^3$. Difference = $200 - 100 = 100 \text{ cm}^3$.
- 3) **Choice C is correct.** (7.G.4-7.G.6) You can draw a radius from the center to any point on the circle, so there are infinitely many radii.
- 4) **Choice A is correct.** (7.G.1-7.G.5) By the Pythagorean theorem, $c^2 = 6^2 + 8^2 = 36 + 64 = 100$, so $c = 10 \text{ cm}$.
- 5) **Choice B is correct.** (7.SP.5-7.SP.8) $A = 0.5$, $B = 0.6$, $C = 0.55$. Event B has the highest probability ($0.6 > 0.55 > 0.5$).
- 6) **Choice D is correct.** (7.RP.1-7.RP.3) Area scales by the square of the linear scale factor: $(3)^2 = 9$. New area = $48 \times 9 = 432 \text{ sq in}$.
- 7) **Choice D is correct.** (7.RP.3) In $I = Prt$, with P and t constant, I scales linearly with r . If r doubles, I doubles.
- 8) **The correct answer is 30.** (7.SP.5-7.SP.8) Die outcomes: 6. Card outcomes: 5. Total: $6 \times 5 = 30$ outcomes.
- 9) **Choice C is correct.** (7.SP.1-7.SP.4) 23% of $3200 = 0.23 \times 3200 = 736$ students.
- 10) **Choice B is correct.** (7.EE.4b) Subtract 5: $2x \geq 8$. Divide by 2: $x \geq 4$.
- 11) **Choice D is correct.** (7.RP.1-7.RP.3) Each worker: $\frac{2/3}{3} = \frac{2}{3} \times \frac{1}{3} = \frac{2}{9}$ of the project.
- 12) **Choice D is correct.** (7.RP.3) Starting early maximizes the benefit of time in the market. Longer periods allow more interest to build, demonstrating the Grade-7 concept that time is a key factor in savings growth. Options A, C, and D are false or misleading.
- 13) **Choice B is correct.** (7.EE.3-7.EE.4) Subtract 3.5: $0.5x = 5$. Divide by 0.5 (or multiply by 2): $x = 10$.
- 14) **Choice B is correct.** (7.G.1-7.G.5) A 90° clockwise rotation maps $(x, y) \rightarrow (y, -x)$. So $(4, -1) \rightarrow (-1, -4)$.
- 15) **Choice D is correct.** (7.RP.1-7.RP.3) Set up proportion: $\frac{2}{3} = \frac{8}{y}$. Cross multiply: $2y = 24$, so $y = 12$.
- 16) **Choice D is correct.** (7.RP.1-7.RP.3) For a proportional relationship, the ratio $\frac{\text{toys}}{\text{hours}}$ must be constant. Both ratios equal 30 toys per hour, so the relationship is proportional with $k = 30$.
- 17) **The correct answer is $\frac{1}{2}$.** (7.SP.5-7.SP.8) Outcomes with exactly one head: HT or TH. Total outcomes: HH, HT, TH, TT = 4. Favorable outcomes: 2. Probability: $\frac{2}{4} = \frac{1}{2}$.
- 18) **Choice D is correct.** (7.RP.3) Using the proportion $\frac{40}{100} = \frac{d}{1}$ where d is the decimal, divide: $\frac{40}{100} = 0.4$.
- 19) **The correct answer is A, C.** (7.G.4-7.G.6) Option A is correct (60 m^2). Option C is correct (18 m^2). The true total is $60 + 18 = 78 \text{ m}^2$, so D and
- 20) **The correct answer is 30.** (7.RP.1-7.RP.3) Hourly rate = $180 \div 6 = 30$ dollars per hour.
- 21) **The correct answer is 1600.** (7.SP.1-7.SP.4) Set up the proportion: $\frac{80}{250} = \frac{x}{5000}$. Solve: $x = \frac{80 \times 5000}{250} = 1600$.
- 22) **Choice B is correct.** (7.NS.1-7.NS.3) $-4.7 + 2.9 = -(4.7 - 2.9) = -1.8$.
- 23) **Choice C is correct.** (7.NS.1-7.NS.3) The area of a square is s^2 . If the area is 100, then $s^2 = 100$, so $s = \sqrt{100} = 10$ meters.
- 24) **Choice A is correct.** (7.NS.1-7.NS.3) Depth = $-2.25 \times 8 = -18 \text{ m}$ (18 meters below sea level).
- 25) **Choice D is correct.** (7.NS.1-7.NS.3) Scientific notation requires the coefficient a to satisfy $1 \leq a < 10$. The value 10.1 exceeds the upper bound.
- 26) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute the negative: $5a + 9 - 2a + 3 = (5a - 2a) + (9 + 3) = 3a + 12$.
- 27) **Choice A is correct.** (7.EE.1-7.EE.2) The percent bar shows $100\% + 8\% = 108\%$ total. This is $p + 0.08p = 1.08p$.
- 28) **Choice D is correct.** (7.SP.5-7.SP.8) Total: 360° . Green: $180^\circ \Rightarrow P(\text{green}) = \frac{180}{360} = \frac{1}{2}$. Blue: $\frac{60}{360} = \frac{1}{6}$. Red: $\frac{120}{360} = \frac{1}{3}$ (non-uniform model).
- 29) **Choice A is correct.** (7.SP.3) Group A centers at 3–5 (peak at 4). Group B centers at 5–9 (peak at 7). Overlap occurs at 4–5. Group A's lower center is clear despite overlap.
- 30) **Choice A is correct.** (7.NS.2) $-\frac{7}{8} \times 8 = \frac{-7 \times 8}{8} = -7$. The 8's cancel.



Hi, Confident Learner!

◇ This high-stamina book gave you nine substantial Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 7 math can feel big because it brings together rational numbers, expressions, equations, geometry, probability, and data. ◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 7 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **9** 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.

THIS BOOK INCLUDES:

9 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answer Explanations



MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

WHAT YOU'LL GAIN



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

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



2 ONLINE TESTS

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



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

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