

3

North Dakota

NDSA

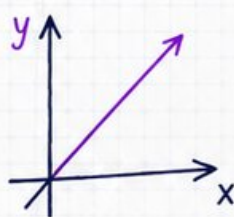
GRADE

7

MATH

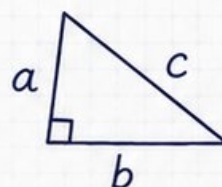
PRACTICE TESTS

- ✓ Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs



$$y = mx + b$$

$$\frac{2}{3}x - \frac{4}{5} = \frac{1}{2}$$



$$3(x - 2) = 2x + 5$$



3 PRINTED TESTS



2 ONLINE TESTS



USE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTS
FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



Strengthen
Math Skills



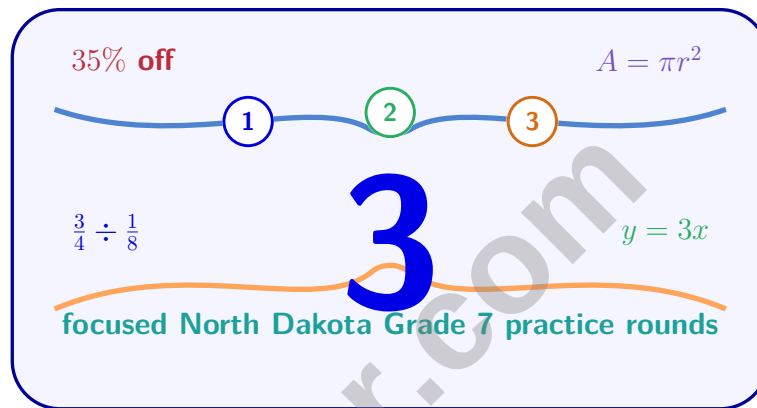
Detailed Answers
& Explanations



Improve Test
Performance

3 North Dakota NDSA Grade 7 Math Practice Tests

North Dakota Grade 7 Practice with Concise Review and Keys



Three 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!

Three focused rounds for sharper NDSA math thinking

This book gives you three 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 three-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?

Three NDSA tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Test 3	Expressions, equations, inequalities, scale drawings, geometry, data, probability, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

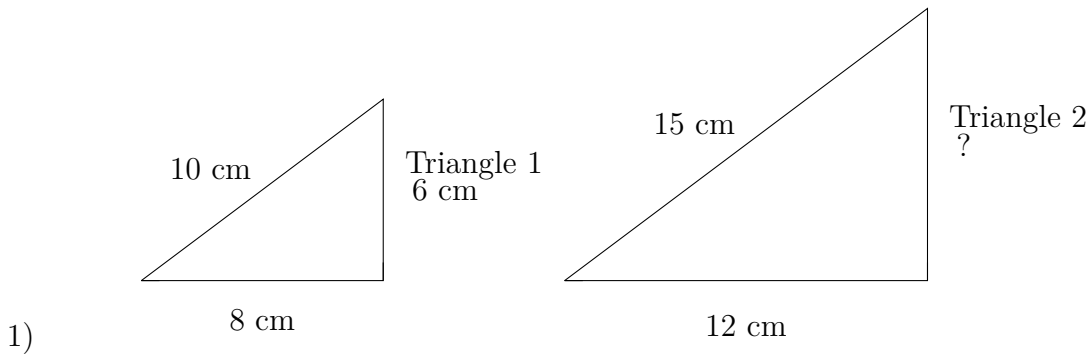
The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.



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& answers

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Triangles 1 and 2 are similar right triangles. What is the length of the missing side in Triangle 2?

☐ A. 7 cm

☐ C. 9 cm

☐ B. 8 cm

☐ D. 9.5 cm

2)

Which Estimate is Closest?

Actual temperature: $72^{\circ}F$

Estimate A: $68^{\circ}F$ Estimate B: $75^{\circ}F$

☐ A. Estimate A is closer

☐ C. Cannot determine

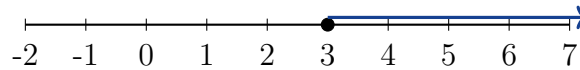
☐ B. Both equally close

☐ D. Estimate B is closer

3) A mountain climber is at 200 meters above sea level. She descends 350 meters. At what elevation is she now? Write your answer as an integer.



4) Identify the correct inequality for this graph.



☐ A. $x < 3$

☐ C. $x > 3$

☐ B. $x \geq 3$

☐ D. $x \leq 3$

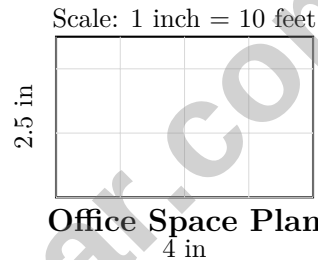
5) Expand: $\frac{1}{4}(8b - 12)$

☐ A. $2b - 3$

☐ C. $8b - 3$

☐ B. $2b - 12$

☐ D. $2b - 4$



6)

Based on the scale, what is the perimeter of the office space in feet?

☐ A. 325 feet

☐ C. 6.5 feet

☐ B. 65 feet

☐ D. 130 feet

7) A retirement fund has \$50,000 that earns 3.2% simple interest per year. What will be the total value of the fund after 10 years?

☐ A. \$51,600

☐ C. \$66,000

☐ B. \$56,000

☐ D. \$66,400



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- 8) A company had 250 employees. They hired 20% more. How many new employees were hired?
- ☐ A. 40 ☐ C. 60
☐ B. 70 ☐ D. 50
- 9) A retailer marks items up by 45% from their cost of \$60. What is the selling price?
- ☐ A. \$105 ☐ C. \$33
☐ B. \$270 ☐ D. \$87
- 10) A plane descends 2000 feet from its cruising altitude of 35000 feet. What is its new altitude? (Model as -2000 for descent.)
- ☐ A. 37000 feet ☐ C. -33000 feet
☐ B. 70000 feet ☐ D. 33000 feet
- 11) Which expression equals $9x - 2y + 3x + 5y$?
- ☐ A. $12x + 3y$ ☐ C. $6x + 3y$
☐ B. $12x + 7y$ ☐ D. $12xy$
- 12) Which expression is equivalent to $3(2y + 7)$?
- ☐ A. $6y + 21$ ☐ C. $3y + 10$
☐ B. $6y + 7$ ☐ D. $2y + 21$
- 13) A rectangular prism has surface area 250 cm^2 . If length = 10 cm and width = 5 cm, what is the height?
- ☐ A. 5 cm ☐ C. 7.5 cm
☐ B. 10 cm ☐ D. 12.5 cm



- 1) A cube's edge length is s cm. If the surface area is 600 cm^2 , which equation correctly represents this relationship?

☐ A. $6s = 600$

☐ C. $6s^2 = 600$

☐ B. $s^3 = 600$

☐ D. $2s + 2s + 2s = 600$

- 2) A scale model of a rectangular stage is 10 cm wide. The scale is 1 cm : 0.4 m. How many meters wide is the actual stage?

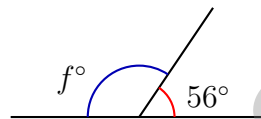
☐ A. 0.4 m

☐ C. 4 m

☐ B. 2.5 m

☐ D. 40 m

3)



A ray splits a straight angle into two adjacent angles. One angle is marked as 56° . What is angle f ?

☐ A. 34°

☐ C. 90°

☐ B. 56°

☐ D. 124°

- 4) A circular pond has circumference 44 meters. Using $\pi \approx \frac{22}{7}$, what is its diameter?

☐ A. 7 m

☐ C. 22 m

☐ B. 14 m

☐ D. 44 m

- 5) A student computed the area of a circle with diameter 10 inches as 314 square inches. Which error did the student make?

☐ A. Used radius 10 instead of 5

☐ D. Squared the diameter instead of the radius

☐ B. Forgot to divide by 2 for the radius

☐ C. Did not use π



- 6) A cylinder has a volume of 565.2 cubic cm and a height of 20 cm. What is the radius?
Use $\pi \approx 3.14$.

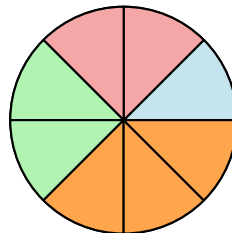
☐ A. 1.5 cm ☐ C. 3 cm
☐ B. 2 cm ☐ D. 4.5 cm

- 7) A student compared two datasets with the same mean of 50 and concluded, "Dataset A is better because it has a larger range." Is the student correct?

☐ A. Yes, larger range always means better data quality ☐ C. The ranges must be equal if means are equal
☐ B. No, larger range indicates more variability, not quality ☐ D. Cannot judge without sample sizes

- 8) A histogram compares the distribution of test scores for two parallel 7th-grade math classes (Class A and Class B). Both show symmetric, bell-shaped distributions with the same mean (78) but different spreads: Class A's scores range 60–96; Class B's scores range 70–86. What does the difference in range tell you?

☐ A. Class A students are less prepared ☐ C. Class B has better teaching
☐ B. Class B has more consistent performance (smaller spread) ☐ D. The ranges prove the mean is not representative



9)

A spinner has 8 equal sections: 1 blue, 2 red, 2 green, and 3 yellow. What is the probability of landing on yellow?

☐ A. $\frac{1}{8}$ ☐ C. $\frac{3}{8}$
☐ B. $\frac{2}{8}$ ☐ D. $\frac{1}{2}$



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- 1) An error analysis: A student claims that in the equation $y = \frac{3}{2}x$, the constant of proportionality is $k = \frac{2}{3}$. What is wrong?

☐ A. Nothing is wrong; $k = \frac{2}{3}$ is correct. ☐ C. The equation is not proportional.
☐ B. The student forgot to include x . ☐ D. The student flipped the fraction.

- 2) A baker makes 18 loaves of bread in 3 hours. At this constant rate, how many loaves are made per hour?

- 3) A spinner has 4 equal sections labeled 1, 2, 3, 4. Which statement is FALSE for this uniform probability model?

☐ A. $P(1) = \frac{1}{4}$ ☐ C. $P(\text{greater than } 2) = \frac{1}{2}$
☐ B. $P(\text{odd}) = \frac{1}{2}$ ☐ D. $P(5) = \frac{1}{4}$

- 4) Emma spent \$18 and this was 20% of her total budget. What was her total budget?

- 5) A movie theater applies a \$1.50 processing fee to online ticket orders. If a customer buys 4 tickets at \$12 each, what is the total cost?

☐ A. \$48.00 ☐ C. \$50.00
☐ B. \$52.50 ☐ D. \$49.50



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6)

Income Source	Monthly Amount
Part-time job	\$1 200
Allowance	\$100
Total Income	\$1 300

What percent of Tanya's income comes from her allowance?

☐ A. 6%☐ C. 10%☐ B. 12%☐ D. 8%

- 7) A survey of 250 students shows that $\frac{3}{5}$ prefer online learning. How many students prefer online learning?

- 8) An account earning 3% annual compound interest starts with \$1,000. Approximately how many years until the balance reaches \$1,100?

☐ A. 2 years☐ C. 3.5 years☐ B. 5 years☐ D. 3 years

- 9) A company's sales dropped from \$500 000 to \$400 000 in one quarter. To return to \$500 000, what percent increase is needed from the new sales figure?

☐ A. 20%☐ C. 33.3%☐ B. 50%☐ D. 25%

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.G.1-7.G.5) The scale factor from Triangle 1 to Triangle 2 is $\frac{12}{8} = 1.5$. The missing side is $6 \times 1.5 = 9$ cm.
- 2) **Choice D is correct.** (7.RP.3) Estimate A: $\frac{|68-72|}{72} \times 100\% \approx 5.6\%$. Estimate B: $\frac{|75-72|}{72} \times 100\% \approx 4.2\%$. Estimate B has smaller error.
- 3) **The correct answer is -150.** (7.NS.1-7.NS.3) The elevation change is $200 - 350 = -150$. She is now 150 meters below sea level.
- 4) **Choice B is correct.** (7.EE.4b) A closed circle at 3 with a right-pointing arrow indicates $x \geq 3$.
- 5) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute: $\frac{1}{4}: \frac{1}{4}(8b) - \frac{1}{4}(12) = 2b - 3$.
- 6) **Choice D is correct.** (7.RP.1-7.RP.3) Actual dimensions: $4 \times 10 = 40$ feet; $2.5 \times 10 = 25$ feet. Perimeter $= 2(40 + 25) = 130$ feet.
- 7) **Choice C is correct.** (7.RP.3) Interest earned: $I = 50000 \times 0.032 \times 10 = \$16,000$. Total value: $A = P + I = 50000 + 16000 = \$66,000$.
- 8) **Choice D is correct.** (7.RP.3) 20% of 250 is $0.20 \times 250 = 50$ new employees.
- 9) **Choice D is correct.** (7.RP.3) Markup $= 0.45 \times 60 = \$27$. Selling price $= 60 + 27 = \$87$.
- 10) **Choice D is correct.** (7.NS.1b) New altitude $= 35000 + (-2000) = 33000$ feet. The plane's altitude decreased by 2000 feet.
- 11) **Choice A is correct.** (7.EE.1) Combine: $(9 + 3)x + (-2 + 5)y = 12x + 3y$.
- 12) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute: $3(2y + 7) = 3(2y) + 3(7) = 6y + 21$. Check: factor back to verify.
- 13) **Choice A is correct.** (7.G.4-7.G.6) $SA = 2(lw + lh + wh) = 250$. $2(50 + 10h + 5h) = 250 \Rightarrow 50 + 15h = 125 \Rightarrow 15h = 75 \Rightarrow h = 5$ cm.
- 14) **The correct answer is \$3.** (7.RP.1-7.RP.3) Store A costs $2 \div \frac{2}{5} = 5$ dollars per pound. Store B costs $2.25 \div \frac{3}{4} = 3$ dollars per pound, so the lower price is \$3.
- 15) **Choice B is correct.** (7.SP.1-7.SP.4) By surveying only lunch-buyers that day, she misses students who bring lunch from home. This creates a non-response bias and an unrepresentative sample.
- 16) **Choice D is correct.** (7.SP.5-7.SP.8) A single die generates outcomes 1–6. To select uniformly from 28 students, you would need a spinner or random number generator that covers all 28 equally. Rolling the die multiple times creates a complex map that may not be uniform.
- 17) **Choice A is correct.** (7.NS.1-7.NS.3) A loss of \$168 is -168 . Loss per month: $(-168) \div 7 = -24$. This means the account loses \$24 per month (or has a change of $-\$24/\text{month}$).
- 18) **Choice A is correct.** (7.NS.1-7.NS.3) Total change: $-3.20 \times 5 = -16$ dollars.
- 19) **Choice C is correct.** (7.EE.1-7.EE.2) Substitute: $3(4) - 2(-3) = 12 + 6 = 18$.
- 20) **Choice B is correct.** (7.EE.4b) Check $x = 4$: $3(4) - 2 = 10 \leq 10$ ✓. Check $x = 5$: $3(5) - 2 = 13 \not\leq 10$. Check $x = 8$: $3(8) - 2 = 22 \not\leq 10$.
- 21) **Choice B is correct.** (7.G.1-7.G.5) The cut is $\frac{2h}{3}$ from the apex. Using similar cones: $\frac{r_{\text{cross}}}{2h/3} = \frac{r}{h}$, so $r_{\text{cross}} = \frac{2r}{3}$.
- 22) **The correct answer is C,D.** (7.SP.1-7.SP.4) The total amounts are not given, so A and B cannot be determined from the percentages alone. Region Y has 50% indoor and 50% outdoor use, so C is correct. Region Y's outdoor percentage (50%) is higher than Region X's outdoor percentage (40%), so D is correct.
- 23) **Choice A is correct.** (7.G.1-7.G.5) The translation is: $(3, 2) + (-3, -2) = (0, 0)$.
- 24) **Choice D is correct.** (7.RP.1-7.RP.3) Distance equals speed times time. With speed $k = 8$ mph, the equation is $d = 8t$.
- 25) **Choice D is correct.** (7.RP.1-7.RP.3) From the marked point $(5, 3)$, the unit rate is $3 \div 5 = 0.6$ problems per minute. At $x = 15$, $y = 15 \times 0.6 = 9$ problems.
- 26) **Choice D is correct.** (7.RP.3) Using the proportion $\frac{60}{100} = \frac{x}{50}$, cross-multiply: $x = 30$ items.
- 27) **Choice D is correct.** (7.RP.3) Difference $= 30\% - 20\% = 10\%$.
- 28) **Choice B is correct.** (7.NS.1-7.NS.3) Convert to common denominator 4: $3\frac{3}{4} - 1\frac{2}{4} = 2\frac{1}{4}$.



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Hi, Detail Champion!

◇ In Grade 7, small details can change an entire answer: a negative sign, a decimal place, a unit, an exponent, or an inequality symbol. ◇

★ **Remember this:** You practiced noticing those details. That is a serious test skill, and it gets better with every careful review. This version gave you 3 opportunities to rehearse test-day habits. ★

Detail Checks

- **Signs:** Circle negatives before simplifying.
- **Symbols:** Read inequality signs carefully.
- **Decimals:** Line up place values.
- **Units:** Match the unit the question asks for.

Grade 7 test-day tip: Use the final minute on each section for a detail scan, not a full redo.

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

Jay Daie

Your Detail-Check Coach

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This book includes **3** full-length Math practice tests and **2** online tests to help Grade 7 students build confidence, strengthen skills, and excel on standardized assessments.

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THIS BOOK INCLUDES:

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2 Online Practice Tests

 Detailed Answers & Explanations



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

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Practice regularly to feel prepared and test-ready.



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Develop key math concepts and problem solving abilities.



Detailed Answers & Explanations

Learn from clear explanations and step-by-step solutions.



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- ✓ 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.



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