

NEBRASKA

NSCAS Growth

GRADE 8 MATH

PRACTICE TESTS

5

PRINTED
TESTS



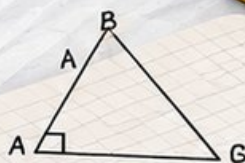
2

 ONLINE
TESTS

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



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



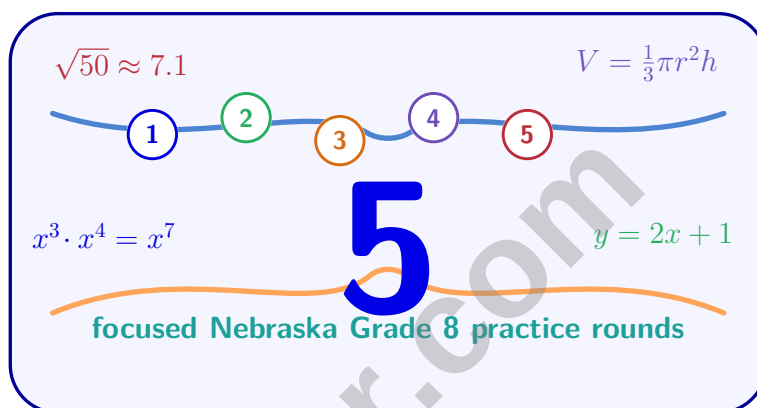
$$a^2 + b^2 = c^2$$



$$y = mx + b$$

5 Nebraska NSCAS Growth Grade 8 Math Practice Tests

Targeted NSCAS Growth Review for Grade 8 Standards Practice



Five complete 40-question Grade 8 NSCAS Growth practice rounds with real numbers, exponents, scientific notation, equations, functions, transformations, geometry, data analysis, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Nebraska Grade 8 Problem Solver!

Five focused rounds for sharper NSCAS Growth math thinking

This book gives you five full Grade 8 NSCAS Growth math practice tests. Each round is built to help you recognize structure, reason with real numbers and exponents, analyze linear relationships, connect equations with graphs, and explain your thinking with care.

Your Nebraska 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 five-session plan for confident Grade 8 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 an exponent rule, equation, graph, transformation, diagram, 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.

Nebraska 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?

Five NSCAS Growth tests, 200 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–5	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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& answers

Table of Contents

★ Practice Test 1	_____	13
★ Practice Test 2	_____	28
★ Practice Test 3	_____	43
★ Practice Test 4	_____	58
★ Practice Test 5	_____	73
Practice Test Answer Keys	_____	89
Practice Test Answers and Explanations	_____	93

1) Which value is irrational?

☐ A. $\sqrt{16}$

☐ B. $\sqrt{9}$

☐ C. $\sqrt{7}$

☐ D. $\sqrt{25}$

2) Simplify $\frac{(b^3)^2 \cdot b^4}{b^5}$.

☐ A. b^{-5}

☐ B. b^9

☐ C. b^{15}

☐ D. b^5

3) A farmer plants rows of corn. Each row contains 20 plants. The relationship between rows (x) and total plants (y) is proportional. How many plants are in 8 rows?

☐ A. 120 plants

☐ B. 140 plants

☐ C. 160 plants

☐ D. 180 plants

4) Solve:
$$\begin{cases} 5x - 2y = 4 \\ 2x + y = 7 \end{cases}$$

☐ A. (1, 2)

☐ B. (2, 1)

☐ C. (1.2, 1)

☐ D. (2, 3)

5) Which scenario describes a negative slope?

☐ A. Population increases each year☐ B. Temperature increases over time☐ C. Your bank account grows with deposits☐ D. Water drains from a tank over time

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- 6) A farmer's market charges \$2 for apples and \$3 for oranges. On Saturday, the vendor sold 120 pieces of fruit for \$310. How many apples were sold?

☐ A. 40☐ C. 50☐ B. 60☐ D. 80

- 7) A phone company charges \$25 per month plus \$0.10 per text message. What is the total monthly cost for 100 texts?

- 8) Plan X: \$10/week, start \$0. Plan Y: \$8/week, start \$50. After how many weeks equal?

- 9) The table shows values of function p :

x	-2	0	2	4
$p(x)$	3	7	11	15

If the pattern continues, what is $p(6)$?

☐ A. 17☐ C. 20☐ B. 19☐ D. 22

- 10) A snowpile melts at a rate of 4 inches per day. If it starts at 60 inches, which equation models the height h after d days?

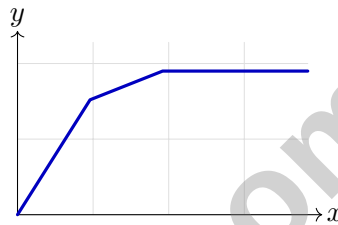
☐ A. $h = 60d - 4$

☐ C. $h = 4d + 60$

☐ B. $h = -4d + 60$

☐ D. $h = 60 - d$

- 11) A student studies for an exam and creates a graph: time studied vs. score. The first 2 hours give a big score boost, the next 2 hours give less improvement, and after that, no more gains. What is the graph shape?



- ☐ A. Steep rise, then gentle rise, then flat
- ☐ B. Gradual rise throughout
- ☐ C. Steep rise throughout
- ☐ D. Flat throughout (no improvement)
- 12) An equilateral triangle has sides of 6 cm. It is reflected across one of its altitudes. What is true about the resulting triangle?
- ☐ A. The resulting triangle has sides of 3 cm
- ☐ B. The resulting triangle is congruent to the original
- ☐ C. The resulting triangle is no longer equilateral
- ☐ D. The angles increase to 90°



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1) Which number is the largest?

☐ A. 3.1×10^{-2}

☐ B. 3.1×10^{-1}

☐ C. 3.1×10^0

☐ D. 3.1×10^1

2) Simplify $(y^4)^3$.

☐ A. y^7

☐ B. y^1

☐ C. y^{-12}

☐ D. y^{12}

3) A student reads 25 pages of a book per day. How many days to read 200 pages?
(Proportional relationship.)

☐ A. 5 days

☐ B. 6 days

☐ C. 7 days

☐ D. 8 days

4) Use elimination to solve:
$$\begin{cases} 3x + 4y = 10 \\ 3x - 2y = 4 \end{cases}$$

☐ A. $(1, \frac{7}{4})$

☐ B. $(3, \frac{1}{4})$

☐ C. $(0, \frac{5}{2})$

☐ D. $(2, 1)$

5) Find $(1.2 \times 10^6) + (8 \times 10^5)$ in scientific notation.



6) A company's profit increases by \$500 for every unit sold. What is the slope of the profit-versus-units-sold line?

☐ A. $\frac{1}{500}$ per unit

☐ C. 500 units

☐ B. \$1000 per unit

☐ D. \$500 per unit

7) A father is currently 32 years older than his son. In 8 years, the father will be twice as old as the son. What is the son's current age?

☐ A. 16

☐ C. 24

☐ B. 20

☐ D. 28

8) What two positive integers multiply to 12 and add to 7?

9) The table shows a linear function $m(x)$:

x	0	2	4	6
$m(x)$	5	11	?	23

What is $m(4)$?

☐ A. 15

☐ C. 17

☐ B. 16

☐ D. 18

10) A recipe uses 2 cups of flour for every 3 eggs. If e is the number of eggs, which expression gives the amount of flour needed?

☐ A. $f = \frac{2e}{3}$

☐ C. $f = 3e + 2$

☐ B. $f = \frac{3e}{2}$

☐ D. $f = 2e - 3$



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1) Which of the following equations represents a LINEAR function?

☐ A. $y = x^3 - 2$

☐ C. $y = \frac{1}{x} + 1$

☐ B. $y = \sqrt{x}$

☐ D. $y = 5 - 4x$

2) A worker receives a paycheck with gross pay of \$2,000, federal tax withholding of \$240, and FICA tax of \$160. What is the net pay?

☐ A. \$2,000

☐ C. \$1,840

☐ B. \$1,760

☐ D. \$1,600

3) Match the expression to the exponent law it uses:

Expression	Law
$x^5 \cdot x^3 = x^8$	Product rule (add)

Which expression uses the quotient rule?

☐ A. $a^2 \cdot a^4 = a^6$

☐ C. $(2b)^3 = 8b^3$

☐ B. $(y^2)^5 = y^{10}$

☐ D. $\frac{m^9}{m^3} = m^6$

4) What is $\sqrt[3]{729}$?

☐ A. 8

☐ C. 10

☐ B. 11

☐ D. 9

5) The radius of Jupiter is about 7.14×10^7 m. What is this in standard form?

☐ A. 714,000 m

☐ C. 714,000,000 m

☐ B. 7,140,000,000 m

☐ D. 71,400,000 m



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6) $\frac{1.2 \times 10^4}{4 \times 10^6} = ?$

☐ A. 0.3×10^{-2}

☐ C. 3.2×10^{-2}

☐ B. 5×10^{-3}

☐ D. 3×10^{-3}

7) The relationship between inches (x) and centimeters (y) is $y = 2.54x$. How many centimeters equal 10 inches?

☐ A. 20.4 cm

☐ C. 25.4 cm

☐ B. 23.4 cm

☐ D. 26.4 cm

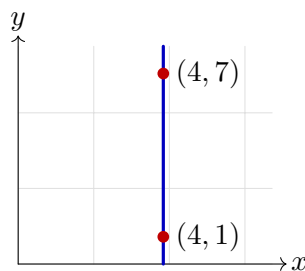
8) Solve:
$$\begin{cases} y = \frac{1}{3}x + 2 \\ y = -\frac{2}{3}x + 5 \end{cases}$$

☐ A. $(2, 7/3)$

☐ C. $(1, 7/3)$

☐ B. $(4, 10/3)$

☐ D. $(3, 3)$

9) A student claims that $10x + 25$ factors as $5(2x + 5)$. Is this completely factored?☐ A. Yes, this is the complete factorization.☐ C. No; $2x + 5$ can be factored further.☐ B. No; the GCF should be 10.☐ D. No; a factor of 5 can still be removed.10) A graph shows a line with an undefined slope passing through $(4, 1)$ and $(4, 7)$. Which description fits?☐ A. The line is horizontal☐ C. The line has zero slope☐ B. The line is slanted at 45° ☐ D. The line is vertical

Nebraska NSCAS Growth Grade 8 Practice Test Answer Keys

How to use this section with a Grade 8 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 Nebraska NSCAS Growth practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** **(8.N.1)** $\sqrt{16} = 4$, $\sqrt{9} = 3$, and $\sqrt{25} = 5$ are all rational. Only $\sqrt{7}$ cannot be expressed as a ratio of integers.
- 2) **Choice D is correct.** **(8.N.2)** $(b^3)^2 = b^6$; then $b^6 \cdot b^4 = b^{10}$; then $\frac{b^{10}}{b^5} = b^5$.
- 3) **Choice C is correct.** **(8.G.1)** Equation: $y = 20x$. For $x = 8$: $y = 20(8) = 160$ plants.
- 4) **Choice D is correct.** **(8.G.1)** Check $(2, 3)$: $5(2) - 2(3) = 10 - 6 = 4$ and $2(2) + 3 = 7$. So the solution is $(2, 3)$.
- 5) **Choice D is correct.** **(8.A.1)** Negative slope means as x increases, y decreases. Water draining means the amount in the tank decreases over time. All other options describe increasing quantities.
- 6) **Choice C is correct.** **(8.G.1)** Let $a =$ apples, $o =$ oranges. Then $a + o = 120$ and $2a + 3o = 310$. From the first: $o = 120 - a$. Substituting: $2a + 3(120 - a) = 310$, so $2a + 360 - 3a = 310$, giving $-a = -50$, thus $a = 50$.
- 7) **The correct answer is \$35.** **(8.A.2)** Compute $25 + 0.10(100) = 35$.
- 8) **The correct answer is 25.** **(8.D.2)** $S_X(w) = 10w$, $S_Y(w) = 50 + 8w$. Equal when $10w = 50 + 8w \Rightarrow w = 25$.
- 9) **Choice B is correct.** **(8.D.2)** The pattern shows outputs increase by 4 for every 2-unit increase in x . From $p(4) = 15$, the next value is $p(6) = 15 + 4 = 19$.
- 10) **Choice B is correct.** **(8.G.1)** Initial height is 60 inches (intercept). Melts (decreases) at 4 inches per day (negative slope). Equation: $h = -4d + 60$.
- 11) **Choice A is correct.** **(8.A.1)** Diminishing returns: initial rapid gains, then slower gains, then ceiling. The slope decreases then becomes zero.
- 12) **Choice B is correct.** **(8.G.2)** Reflection across an altitude of an equilateral triangle is a rigid motion that preserves all side lengths and angles. The resulting triangle is congruent to the original: sides of 6 cm and all angles 60° .
- 13) **Choice B is correct.** **(8.G.2)** The translation vector is $(4, 5) - (1, 2) = (3, 3)$. So $Q' = Q + (3, 3) = (4, 2) + (3, 3) = (7, 5)$.
- 14) **Choice B is correct.** **(8.G.1)** Sum of angles: $y + 2y + 3y = 180$, so $6y = 180$ and $y = 30^\circ$.
- 15) **Choice A is correct.** **(8.G.3)** The diagonal is the hypotenuse of a right triangle with legs 8 and 6: $d^2 = 8^2 + 6^2 = 64 + 36 = 100$, so $d = 10$ m.
- 16) **Choice A is correct.** **(8.G.3)** Map distance is $\sqrt{100} = 10$ units. Actual distance is $10 \times 5 = 50$ miles.
- 17) **Choice B is correct.** **(8.G.1)** Corresponding angles formed by a transversal cutting parallel lines are congruent. So $n = 48^\circ$.
- 18) **Choice B is correct.** **(8.A.2)** $B = \left(\frac{1}{2}\right)^2 = \frac{1}{4} \text{ cm}^2$. $V = \frac{1}{3} \times \frac{1}{4} \times \frac{3}{2} = \frac{3}{24} = \frac{1}{8} \text{ cm}^3$.
- 19) **Choice C is correct.** **(8.A.2)** Decompose: triangle and rectangle. Triangle area $= \frac{1}{2} \times 8 \times 6 = 24 \text{ ft}^2$. Rectangle area $= 8 \times 1.5 = 12 \text{ ft}^2$. Total $= 24 + 12 = 36 \text{ ft}^2$.
- 20) **Choice C is correct.** **(8.G.2)** Relative frequency of higher grades among study-group users: $\frac{189}{252} = 0.75$.
- 21) **The correct answer is A,D.** **(8.A.1)** Choice A: $x^2 - 25 = (x + 5)(x - 5)$ includes $(x - 5)$. Choice D: $x^2 - 7x + 10 = (x - 5)(x - 2)$ includes $(x - 5)$. Choice B is $x^2 + 10x + 25 = (x + 5)^2$, which does not include $(x - 5)$. Choice C: $x^2 + 2x - 15 = (x + 5)(x - 3)$ does not include $(x - 5)$. Choice E: $x^2 + 3x - 10 = (x + 5)(x - 2)$ does not include $(x - 5)$.
- 22) **Choice B is correct.** **(8.D.1)** Mean $= 6$. Absolute deviations: $|2 - 6| = 4$, $|4 - 6| = 2$, $|6 - 6| = 0$, $|8 - 6| = 2$, $|10 - 6| = 4$. Sum $= 12$. MAD $= 12/5 = 2.4$.
- 23) **Choice D is correct.** **(8.D.3)** $P(\text{not } 7) = 1 - P(7) = 1 - \frac{1}{12} = \frac{11}{12}$.
- 24) **Choice B is correct.** **(8.A.2)** Count the cells in the table: 3 numbers $\times$ 2 letters $= 6$ total outcomes, shown as rows and columns.
- 25) **Choice D is correct.** **(8.D.1)** When there is no clear trend (no correlation), data appears randomly scattered. The best fit is a horizontal line at the average y -value, since no slope can be meaningfully determined.
- 26) **Choice C is correct.** **(8.G.2)** The area ratio smaller:larger is $\frac{9}{16}$. The linear ratio is $\sqrt{\frac{9}{16}} = \frac{3}{4}$, so the scale factor from the smaller polygon to the larger polygon is the reciprocal, $\frac{4}{3}$.
- 27) **The correct answer is $y = 3x + 5$.** **(8.D.2)** With slope $m = 3$ and y -intercept $b = 5$, the equation is $y = 3x + 5$.



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Hi, Persistent Problem Solver!

◇ Some Grade 8 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 5 full Grade 8 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 8 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

Practice Today. Succeed Tomorrow!

Give your child the confidence and skills they need with **5 full-length Grade 8 Math** practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving success on test day!



WHAT'S INSIDE?



Standards-Aligned Practice

Questions designed to cover essential Grade 8 math standards.



Variety of Question Types

Multiple-choice, short answer, and more to build well-rounded skills.



Real-World Applications

Engaging problems that connect math to everyday life.



Step-by-Step Progress

Track improvement and build confidence with every test.

COVERS ALL ESSENTIAL TOPICS

- | | |
|---------------------------------------|----------------------------|
| ✓ The Number System | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
| ✓ Functions | ✓ Inequalities |
| ✓ Geometry | ✓ Data Analysis & Graphing |
| ✓ Measurement & Data | ✓ And More! |

5
PRINTED
TESTS



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