

Nebraska

NSCAS Growth

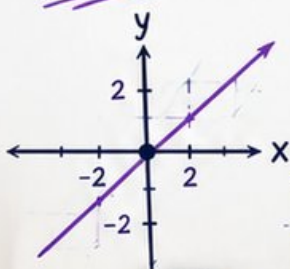
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

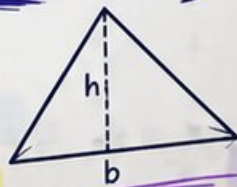
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$



7 PRINTED
TESTS



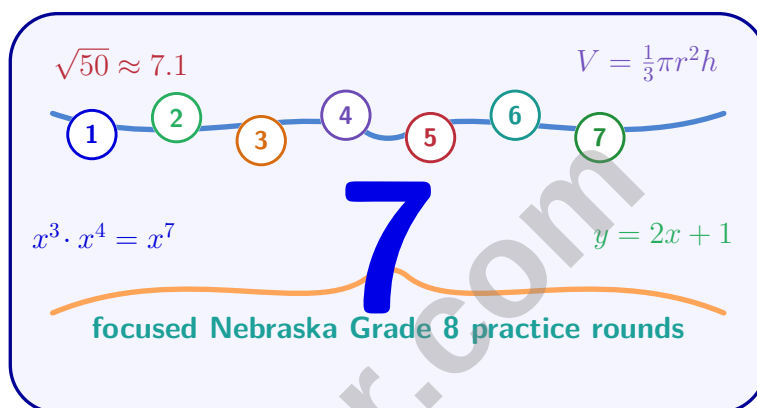
2 ONLINE
TESTS



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

7 Nebraska NSCAS Growth Grade 8 Math Practice Tests

Seven NSCAS Growth Practice Tests for Steady Grade 8 Review



Seven 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!

Seven focused rounds for sharper NSCAS Growth math thinking

This book gives you seven 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 seven-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?

Seven NSCAS Growth tests, 280 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real and irrational numbers, integer exponents, scientific notation, equations, and careful reading.
Tests 4–6	Slope, systems of equations, functions, inequalities, transformations, congruence, and similarity.
Test 7	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
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.

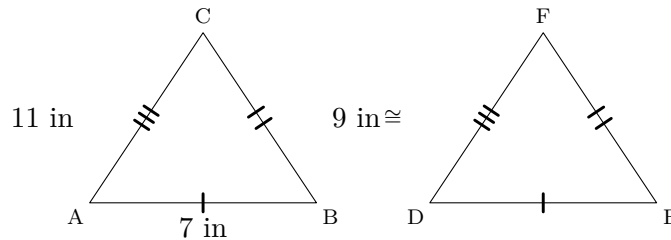


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& answers

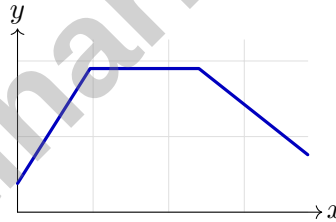
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- 1) Triangle ABC is congruent to triangle DEF. In triangle ABC: $AB = 7$ in, $BC = 9$ in, $AC = 11$ in. In triangle DEF, which side corresponds to side AC ?



- ☐ A. Side DE
☐ D. Cannot be determined from the diagram
☐ B. Side EF
☐ C. Side DF
- 2) A graph shows temperature over a 24-hour period. The temperature rises steadily from 6am to noon, stays constant from noon to 6pm, and falls steadily from 6pm to midnight. At what time is the graph flat (constant)?



- ☐ A. 6am to noon
 ☐ C. 6pm to midnight
☐ B. Noon to 6pm
 ☐ D. All day
- 3) A diagonal walkway connects two opposite corners of a rectangular plaza that is 30 m by 40 m. How long is the walkway?
- ☐ A. 35 m
 ☐ C. 70 m
☐ B. 50 m
 ☐ D. 1200 m



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4) A regular polygon has an interior angle of 162° . How many sides does it have?

☐ A. 18

☐ C. 22

☐ B. 20

☐ D. 25

5) Solve for x : $2(3x - 1) = 4x + 6$. Show all steps and verify your solution.

6) A triangle has area 36 cm^2 . If the triangle is dilated by a scale factor of $\frac{2}{3}$, what is the area of the dilated triangle?

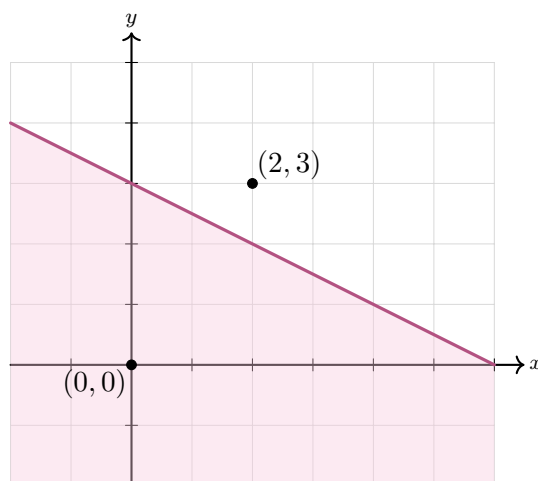
☐ A. 16 cm^2

☐ C. 36 cm^2

☐ B. 24 cm^2

☐ D. 54 cm^2





7)

The graph has a solid line with shading below. Two points are marked: $(0, 0)$ (in shaded region) and $(2, 3)$ (above the line). Which inequality is graphed?

- ☐ A. $y < -\frac{1}{2}x + 3$ (forgot to flip when dividing by $-\frac{1}{2}$)
 ☐ C. $y \leq -\frac{1}{2}x + 3$ (correct)
- ☐ B. $y \geq -\frac{1}{2}x + 3$ (reversed shading AND boundary inclusion)
 ☐ D. $y > -\frac{1}{2}x + 3$ (solid line with shading above)

8) $\alpha(x) = -3x + 12$ and β table $(0, 12), (2, 6), (4, 0)$. Related how?

x	0	2	4
$\beta(x)$	12	6	0

- ☐ A. Identical
 ☐ C. Different slopes.
- ☐ B. Same slope, different intercepts.
 ☐ D. Cannot be determined.

9) Which table shows a LINEAR function?

x	2	4	6	8
y	5	11	17	23

- ☐ A. Yes; the y -values increase by 6 each step
 ☐ C. No; y is greater than x
- ☐ B. No; x increases by 2 each time
 ☐ D. No; the equation is $y = 3x - 1$



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1) A line of best fit for a data set is $y = 2x + 5$. What is the y -intercept, and what does it represent?

- ☐ A. The intercept is 2; it is the starting value
- ☐ B. The intercept is 5; it is the predicted value when $x = 0$
- ☐ C. The intercept is 7; it is the sum of slope and starting value
- ☐ D. The intercept is $2x$; it is the slope

2) If 5 kilograms of rice cost \$15, what is the unit price (constant of proportionality) in dollars per kilogram?

3) What is the solution to $9 - x = 4$?

- ☐ A. $x = 5$
- ☐ B. $x = -5$
- ☐ C. $x = 13$
- ☐ D. $x = 36$

4) What is the slope of a line that is perpendicular to the line $y = 2x + 5$?

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

5) A savings goal is to have more than \$500. Currently you have \$150 and save \$25 per week. Which inequality describes the number of weeks needed to exceed the goal?

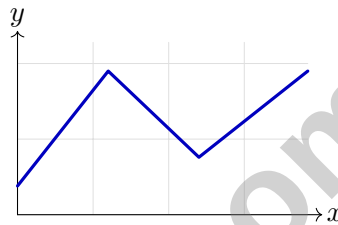
- ☐ A. $w \geq 14$
- ☐ B. $w < 14$
- ☐ C. $w \leq 14$
- ☐ D. $w > 14$



6) Which representation does NOT show a function?

- ☐ A. A table where each x -value appears exactly once.
 ☐ C. A parabola opening to the right: $x = y^2$.
- ☐ B. A graph of $y = |x|$.
 ☐ D. The relation $\{(1, 1), (2, 2), (3, 3)\}$.

7) A function exhibits error: a student says “The graph increases at all points.” But the actual graph increases, then decreases, then increases again. Which statement correctly identifies the student’s error?



- ☐ A. The student only looked at one part of the graph
 ☐ C. The graph is decreasing everywhere
- ☐ B. The graph is increasing everywhere
 ☐ D. The graph is constant everywhere
- 8) A right triangle has legs of 11 and 60. What is the hypotenuse?
- ☐ A. 49
 ☐ C. 71
- ☐ B. 61
 ☐ D. 121
- 9) What is the relationship between an interior angle and its adjacent exterior angle of a polygon?

- ☐ A. They are equal.
 ☐ C. They sum to 360° .
- ☐ B. They sum to 180° .
 ☐ D. The interior angle is always larger.



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1) Rewrite $3x - 2y < 6$ in slope-intercept form. Which inequality is equivalent?

☐ A. $y > \frac{3}{2}x - 3$

☐ C. $y \geq \frac{3}{2}x - 3$

☐ B. $y < \frac{3}{2}x - 3$

☐ D. $y \leq \frac{3}{2}x - 3$

2) A sports analyst compares two players' scoring consistency. Player A averaged 15 points with $MAD = 1.5$. Player B averaged 15 points with $MAD = 4$. Who is the more reliable scorer?

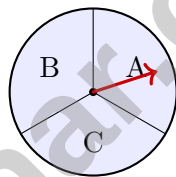
☐ A. Player A (more consistent)

☐ C. They are equally reliable

☐ B. Player B (higher variability makes them adaptable)

☐ D. Cannot determine from MAD alone

3) A fair spinner with sections A, B, C (each $\frac{1}{3}$ probability) is spun three times. What is the probability of getting C on all three spins?



☐ A. $\frac{1}{9}$

☐ C. $\frac{3}{27}$

☐ B. $\frac{1}{27}$

☐ D. $\frac{1}{3}$

4) A schedule allows you to pick a morning activity and an afternoon activity from the list below. Morning: hiking or swimming. Afternoon: painting, music, or reading. How many different schedules are possible?

☐ A. $2 + 3 = 5$

☐ C. $3^2 = 9$

☐ B. $2 \times 3 = 6$

☐ D. $(2 + 3)^2 = 25$



5) Which expression is larger: $\sqrt{5} + \sqrt{6}$ or 4.8?

- ☐ A. $\sqrt{5} + \sqrt{6}$ is larger
☐ B. Cannot be determined
☐ C. They are equal
☐ D. 4.8 is larger

Number Sorting

$\pi, \sqrt{4}, 0.\bar{5}, -2.5, \sqrt{11}$

How many are rational?

6)

- ☐ A. One ($\sqrt{4}$ only)
☐ B. Two ($\sqrt{4}$ and $0.\bar{5}$)
☐ C. Three ($\sqrt{4}$, $0.\bar{5}$, and -2.5)
☐ D. Four (all but π or $\sqrt{11}$)

7) Convert $0.\overline{72}$ to a fraction in simplest form.

- ☐ A. $\frac{8}{100}$
☐ B. $\frac{72}{100}$
☐ C. $\frac{72}{90}$
☐ D. $\frac{72}{99} = \frac{8}{11}$

8) $\sqrt{24}$ is closest to which integer?

- ☐ A. 4
☐ B. 6
☐ C. 5
☐ D. 3

9) A strand of DNA has width 2.0×10^{-9} m. Convert to standard form.

- ☐ A. 2,000,000,000 m
☐ B. 0.00000002 m
☐ C. 0.0000002 m
☐ D. 0.000000002 m



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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.G.2) Side $AC = 11$ in is the longest side in triangle ABC . In congruent triangle DEF , side DF must be the longest side (11 in), so AC corresponds to DF .
- 2) **Choice B is correct.** (8.A.1) A flat section means the function is constant, so the temperature does not change. This occurs from noon to 6pm.
- 3) **Choice B is correct.** (8.G.3) The 3-4-5 triple scaled by 10 is 30-40-50. The diagonal $d^2 = 30^2 + 40^2 = 900 + 1600 = 2500$, so $d = 50$ m.
- 4) **Choice B is correct.** (8.G.1) Using $\frac{(n-2) \times 180}{n} = 162$: $(n-2) \times 180 = 162n \Rightarrow 180n - 360 = 162n \Rightarrow 18n = 360 \Rightarrow n = 20$.
- 5) **The correct answer is $x = 4$.** (8.N.1) Distribute the 2: $6x - 2 = 4x + 6$. Subtract $4x$ from both sides: $2x - 2 = 6$. Add 2 to both sides: $2x = 8$. Divide by 2: $x = 4$. Verify: $2(3(4) - 1) = 2(11) = 22$ and $4(4) + 6 = 22$ ✓.
- 6) **Choice A is correct.** (8.G.2) Area scales by the square of the scale factor: $36 \times \left(\frac{2}{3}\right)^2 = 36 \times \frac{4}{9} = 16$ cm².
- 7) **Choice C is correct.** (8.G.2) SOLID boundary (includes line) + BELOW shading = $\leq$. Verify: $(0, 0)$ in shaded region: $0 \leq -\frac{1}{2}(0) + 3 = 3$ ✓ TRUE. Distractor A shows algebra error (forgot flip); B shows double error; D shows inverted shading.
- 8) **Choice A is correct.** (8.D.2) β slope: $(6 - 12)/2 = -3$. Using $(0, 12)$: $\beta(x) = -3x + 12$. Same as α .
- 9) **Choice A is correct.** (8.D.2) The y -values are 5, 11, 17, 23. The differences are $11 - 5 = 6$, $17 - 11 = 6$, and $23 - 17 = 6$. Because the difference is constant for equal steps in x , the function is linear.
- 10) **The correct answer is -4 .** (8.G.1) Solving gives $x \geq -4$, so the boundary value is -4 .
- 11) **Choice B is correct.** (8.G.1) Alternate interior angles are congruent when a transversal cuts parallel lines. So $q = 89^\circ$.
- 12) **The correct answer is 3.** (8.A.2) The domain contains the three inputs 2, 4, and 6.
- 13) **Choice D is correct.** (8.D.2) Substitute $t = 8$: $S = 5(8) + 60 = 40 + 60 = 100$.
- 14) **Choice A is correct.** (8.G.1) Service call fee \$60 (intercept). Hourly rate \$40 (slope). Slope check: $\frac{180-60}{3-0} = \frac{120}{3} = 40$. Equation: $C = 40h + 60$.
- 15) **Choice A is correct.** (8.G.2) Checking: $(1, 2) \rightarrow (-1, -2)$, $(3, 2) \rightarrow (-3, -2)$, $(2, 4) \rightarrow (-2, -4)$. All points follow the rule $(x, y) \rightarrow (-x, -y)$, confirming 180° rotation.
- 16) **Choice B is correct.** (8.G.1) Alternate exterior angles are congruent: $7k - 3 = 5k + 17 \Rightarrow 2k = 20 \Rightarrow k = 10$.
- 17) **Choice A is correct.** (8.G.3) $d = \sqrt{(5-0)^2 + (12-0)^2} = \sqrt{25 + 144} = \sqrt{169} = 13$.
- 18) **The correct answer is B,E.** (8.A.2) The equation has slope $-\frac{2}{3}$ and y -intercept 5, so B and E are correct. The point $(5, 0)$ is not on the line because $-\frac{2}{3}(5) + 5 = \frac{5}{3}$, not 0. A perpendicular line would have slope $\frac{3}{2}$, not $-\frac{3}{2}$.
- 19) **Choice B is correct.** (8.A.2) $192 = \frac{1}{3} \times 64 \times h \Rightarrow h = \frac{192 \times 3}{64} = \frac{576}{64} = 9$ cm.
- 20) **Choice D is correct.** (8.A.2) Decompose using subtraction: outer rectangle minus inner rectangle. Outer area = $20 \times 10 = 200$ m². Inner area = $16 \times 6 = 96$ m². Path area = $200 - 96 = 104$ m².
- 21) **Choice D is correct.** (8.D.2) The tight downward trend shows a strong negative association: as phone usage increases, battery life decreases. This is a clear negative correlation pattern.
- 22) **Choice B is correct.** (8.G.2) This is a joint frequency (read directly from the cell). Row label **Boys**, column **Basketball**: entry is 20.
- 23) **Choice A is correct.** (8.D.1) Mean = 10.4. Deviations: 0.4, 0.6, 0.4, 0.6, 0.4. MAD = $(0.4 + 0.6 + 0.4 + 0.6 + 0.4)/5 = 2.4/5 = 0.48 < 1$. Set A clusters within 0.6 of the mean, so small MAD. Other sets are more spread.
- 24) **Choice C is correct.** (8.D.3) Sums of 10, 11, 12: (4,6), (5,5), (6,4), (5,6), (6,5), (6,6). That's 6 outcomes.
- 25) **Choice B is correct.** (8.A.2) Multiply the number of choices at each step: $3 \times 2 \times 4 = 24$ different outfits.
- 26) **Choice C is correct.** (8.D.1) Residual = actual y - predicted $y = 8 - 7 = 1$.
- 27) **Choice D is correct.** (8.N.1) $\sqrt{2}$, $\sqrt{7}$, and $\sqrt{20}$ are all irrational because 2, 7, and 20 are not perfect squares. None of these can be simplified to a rational number.



Hi, Strategy Solver!

◇ Grade 8 math rewards students who think before they calculate. You practiced choosing strategies, not just hunting for answers. This broad and demanding book gave you seven strong Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** That matters because stronger math students do not use one method for every question. They notice the structure and choose the tool that fits. ★

Strategy Moves

- **Estimate:** Know the neighborhood of the answer.
- **Simplify:** Rewrite numbers in friendlier forms.
- **Model:** Draw what the words describe.
- **Verify:** Put the answer back into the problem.

Grade 8 test-day tip: Pause for ten seconds before hard questions. A short plan can save several minutes.

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

Jay Daie

Your Strategy Guide

PRACTICE TODAY SUCCEED TOMORROW!

Give your child the confidence and skills they need with **7 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!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

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.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

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! |



2 EXTRA ONLINE PRACTICE TESTS INCLUDED!

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

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BUILD CONFIDENCE. SHARPEN SKILLS. ACE YOUR EXAM!