

8

Nebraska

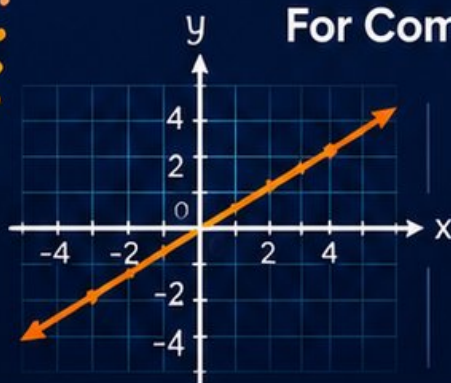
NSCAS Growth

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$
$$C = 2\pi r$$
$$V = \frac{1}{3}\pi r^2 h$$



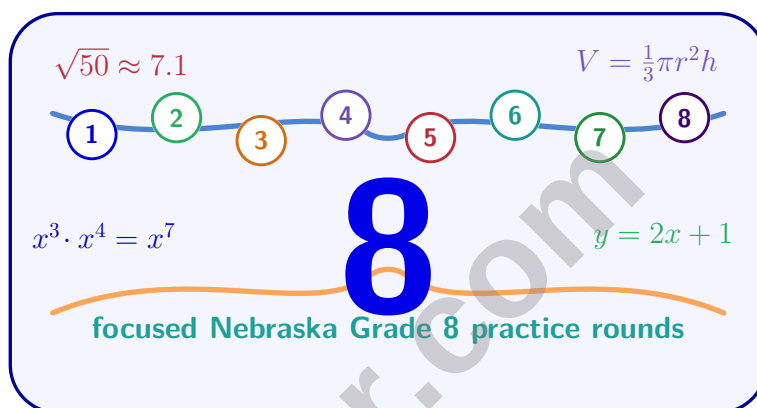
$$V = \frac{1}{3}b^2 h$$

**8** PRINTED TESTS**2** ONLINE TESTS

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

8 Nebraska NSCAS Growth Grade 8 Math Practice Tests

Nebraska Practice for Functions, Geometry, Data, and Problem Solving



Eight 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!

Eight focused rounds for sharper NSCAS Growth math thinking

This book gives you eight 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

An eight-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?

Eight NSCAS Growth tests, 320 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.
Tests 7–8	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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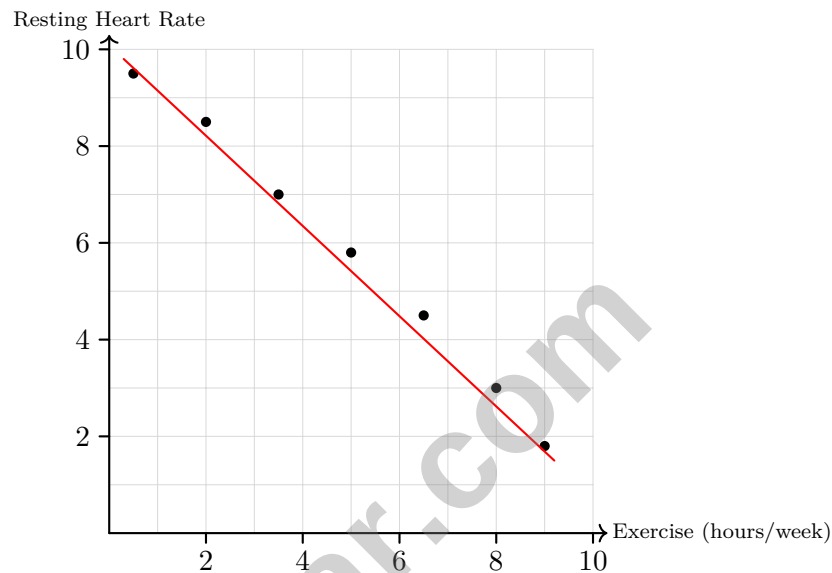
1) Estimate $\sqrt{99}$ to the nearest integer.

☐ A. 8

☐ C. 10

☐ B. 9

☐ D. 11



2)

The scatter plot shows a strong negative relationship between exercise and resting heart rate. Which statement is most accurate?

☐ A. Lower heart rates prevent people from exercising

☐ C. People with higher heart rates exercise less on average

☐ B. Exercise has no effect on heart rate

☐ D. More exercise causes lower heart rates

3) A rectangular pyramid has a base that is 4 cm by 5 cm and a height of 12 cm. What is the volume?

☐ A. 60 cm^3

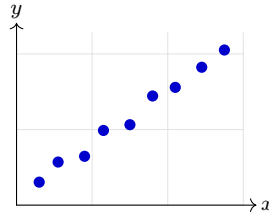
☐ C. 240 cm^3

☐ B. 80 cm^3

☐ D. 120 cm^3



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4)

A scatter plot shows hours of sleep (x) versus cognitive test score (y) for a sample of college students. The relationship is strong and positive ($r = 0.88$). An advertisement claims: “**Buy our mattress; it will increase your test scores by 20 points!**” What is the logical flaw?

- ☐ A. Correlation coefficients cannot be negative
☐ B. College students do not sleep enough
☐ C. Strong correlation does not prove that the mattress causes better scores
☐ D. Sleep has no effect on test scores

5) A cinema tracks 240 moviegoers:

	Action	Comedy	Total
Weekday	72	48	120
Weekend	84	36	120
Total	156	84	240

Among action-movie viewers, what is the relative frequency of weekday watchers?

- ☐ A. ≈ 0.30
☐ B. ≈ 0.46
☐ C. ≈ 0.50
☐ D. ≈ 0.60

6) Data sets X and Y both have 4 values and mean = 20.

Set X: {18, 20, 20, 22}

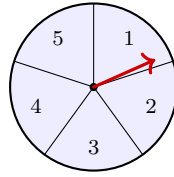
Set Y: {10, 15, 25, 30}

Without calculating, which likely has the larger MAD?

- ☐ A. Set X (more clustered)
☐ B. Set Y (more spread out)
☐ C. Exactly equal
☐ D. Cannot determine



- 7) A spinner has 5 equal sections labeled 1, 2, 3, 4, 5. You spin it twice. What is the probability of spinning a 3 on the first spin AND a 2 on the second spin?



- ☐ A. $\frac{1}{25}$ ☐ C. $\frac{2}{25}$
☐ B. $\frac{1}{5}$ ☐ D. $\frac{2}{5}$
- 8) A raffle has 20 tickets. If the first ticket drawn wins first prize and the second drawn wins second prize, how many ways can the prizes be awarded?
- ☐ A. $20 + 19 = 39$ ☐ C. $20!$
☐ B. $20 \times 19 = 380$ ☐ D. $\binom{20}{2} = 190$
- 9) A square tile has side length 5 cm. The diagonal is $5\sqrt{2}$ cm. What is the best estimate of the diagonal?
- ☐ A. 5.5 cm ☐ C. 7.1 cm
☐ B. 6.5 cm ☐ D. 10.0 cm
- 10) Which value is irrational?
- ☐ A. $0.5 + 0.25$ ☐ C. $\sqrt{10} + 1$
☐ B. $\frac{1}{2} + \frac{1}{3}$ ☐ D. 2^2
- 11) Convert $0.\overline{45}$ to a fraction in simplest form.
- ☐ A. $\frac{9}{20}$ ☐ C. $\frac{45}{90} = \frac{1}{2}$
☐ B. $\frac{45}{100}$ ☐ D. $\frac{45}{99} = \frac{5}{11}$



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1) Factor $9x^2 - 36$ completely.

$$\begin{array}{l} 9x^2 - 36 \\ \swarrow \\ 9(x^2 - 4) \end{array}$$

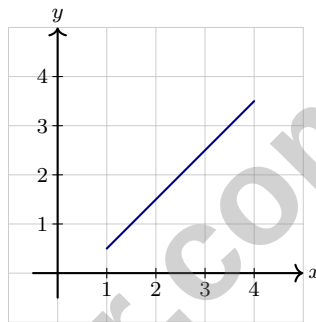
☐ A. $9(x^2 - 4)$

☐ C. $(3x - 6)^2$

☐ B. $9(x - 2)(x + 2)$

☐ D. $(x - 6)(9x + 6)$

2) Which graph BEST represents a linear function?



☐ A. The curved path

☐ C. Only if it starts at origin

☐ B. The straight line shown

☐ D. The slopes of individual segments

3) The equation $y = 12x + 50$ represents a driver's earnings in dollars, where x is the number of hours worked. What does the slope 12 represent?

☐ A. Hourly wage of \$12

☐ C. Initial debt of \$12

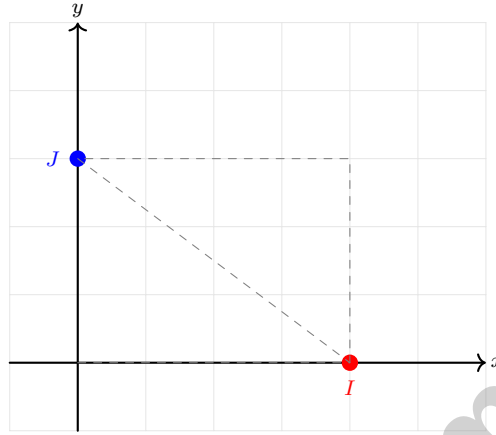
☐ B. Total earnings of \$12

☐ D. Number of hours worked



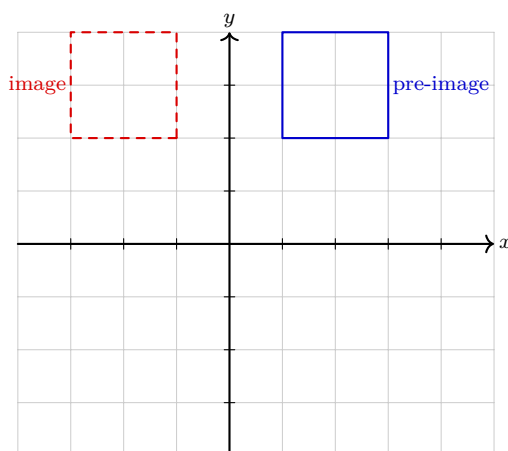
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- 4) A coordinate grid shows points $I = (4, 0)$ and $J = (0, 3)$. What is the distance from I to J ?



- ☐ A. 5
- ☐ B. 7
- ☐ C. 1
- ☐ D. $\sqrt{7}$
- 5) A scatter plot shows the relationship between hours studied (x) and test score (y). The line of best fit has the equation $y = 8x + 50$. What does the slope of 8 represent?
- ☐ A. For each hour studied, the test score increases by 8 points on average
- ☐ B. The test score when 8 hours are studied
- ☐ C. The y-intercept is 8 units above the origin
- ☐ D. For each point increase in test score, hours studied increases by 8
- 6) Which type of transformation maps a figure to a congruent image without changing its position relative to orientation?
- ☐ A. Reflection
- ☐ B. Rotation
- ☐ C. Translation
- ☐ D. Dilation





1)

The blue rectangle is reflected to produce the red image. Over which line is the rectangle reflected?

☐ A. The x -axis☐ C. The line $y = x$ ☐ B. The y -axis☐ D. The line $y = -x$

2) A figure is translated 6 units left and 3 units up. Which rule describes this translation?

☐ A. $(x, y) \rightarrow (x - 6, y + 3)$ ☐ C. $(x, y) \rightarrow (x - 6, y - 3)$ ☐ B. $(x, y) \rightarrow (x + 6, y - 3)$ ☐ D. $(x, y) \rightarrow (x + 6, y + 3)$

3) A bank account earns 3% simple interest on a principal of \$2,000. How much interest will be earned in 4 years?



4) For an inequality, if the boundary point is NOT included in the solution, the line should be:

☐ A. Dashed or dotted

☐ C. Vertical only

☐ B. Solid or thick

☐ D. Horizontal only

5) A student computes $(2 \times 10^3) \times (4 \times 10^4) = 8 \times 10^{12}$. The coefficient is correct, but identify the student's exponent error.

☐ A. Did not add the exponents: $3 + 4 = 7$.

☐ C. Multiplied the exponents: $3 \times 4 = 12$ instead of adding.

☐ B. Should subtract exponents: $4 - 3 = 1$.

☐ D. The answer is actually correct.

6) The points $(-2, -5)$, $(0, -1)$, and $(2, 3)$ lie on the same line. What is the y -intercept?

☐ A. -5

☐ C. -1

☐ B. -2

☐ D. 2

7) Which is the solution to $2(x - 1) \geq 4$?

☐ A. $x \geq 3$

☐ C. $x \geq 1$

☐ B. $x \leq 3$

☐ D. $x \leq 1$

8) Multiply: $(x - 4)(x - 3)$

☐ A. $x^2 - 7x + 12$

☐ C. $x^2 + 7x + 12$

☐ B. $x^2 - 12$

☐ D. $x^2 - x - 12$



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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) $9^2 = 81$ and $10^2 = 100$. Since 99 is very close to 100, $\sqrt{99} \approx 9.95 \approx 10$.
- 2) **Choice C is correct.** (8.D.1) The negative trend shows correlation, not necessarily causation. Those with lower resting heart rates tend to exercise more.
- 3) **Choice B is correct.** (8.A.2) $V = \frac{1}{3} \times B \times h = \frac{1}{3} \times (4 \times 5) \times 12 = \frac{1}{3} \times 20 \times 12 = 80 \text{ cm}^3$.
- 4) **Choice C is correct.** (8.D.2) Even a strong correlation ($r = 0.88$) only shows association. The mattress company confuses correlation with causation. Better test scores might result from healthier habits, nutrition, or academic motivation—not specifically the mattress.
- 5) **Choice B is correct.** (8.G.2) Column-conditional frequency among action viewers (156 total): $\frac{72}{156} \approx 0.46$.
- 6) **Choice B is correct.** (8.D.1) Set X clusters tightly around 20 (values 18–22). Set Y is spread widely (10–30). Larger spread implies larger MAD.
- 7) **Choice A is correct.** (8.D.3) $P(3 \text{ then } 2) = \frac{1}{5} \times \frac{1}{5} = \frac{1}{25}$.
- 8) **Choice B is correct.** (8.A.2) First prize: 20 ticket choices. Second prize: 19 remaining tickets. Total: $20 \times 19 = 380$.
- 9) **Choice C is correct.** (8.N.1) $5\sqrt{2} \approx 5 \times 1.41 = 7.05 \text{ cm}$.
- 10) **Choice C is correct.** (8.N.1) The sum of an irrational number ($\sqrt{10}$) and a rational number (1) is always irrational. So $\sqrt{10} + 1$ is irrational. The others are rational: $0.5 + 0.25 = 0.75$, $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$, and $2^2 = 4$.
- 11) **Choice D is correct.** (8.A.1) Let $x = 0.4\overline{5}$. Then $100x = 45.\overline{45}$. Subtracting: $99x = 45$, so $x = \frac{45}{99} = \frac{5}{11}$.
- 12) **Choice D is correct.** (8.N.1) $(4.6)^2 = 21.16$ and $(4.7)^2 = 22.09$. Since 22 is closer to 22.09, $\sqrt{22}$ is closer to 4.7.
- 13) **Choice C is correct.** (8.N.2) Both equal 140,000: $1.4 \times 10^5 = 140,000$ and $0.14 \times 10^6 = 140,000$. Note: While both are mathematically equivalent, only the first form (1.4×10^5) is in correct scientific notation.
- 14) **Choice D is correct.** (8.N.1) Check: $5(3) - 8 = 15 - 8 = 7 \neq 12$. Correct solution: Add 8: $5x = 20$. Divide by 5: $x = 4$.
- 15) **Choice D is correct.** (8.D.3) Total installment cost: $250 + 150 \times 12 = 250 + 1800 = \$2,050$. Finance charge: $2050 - 1500 = \$550$.
- 16) **Choice D is correct.** (8.D.2) Divide coefficients: $8 \div 2 = 4$. Subtract exponents: $10^{8-3} = 10^5$. Result: 4×10^5 .
- 17) **Choice A is correct.** (8.A.2) Parallel lines have equal slopes. Both equations have slope 2.
- 18) **The correct answer is 6.** (8.G.2) Area scales by k^2 : $96 \times \left(\frac{1}{4}\right)^2 = 96 \times \frac{1}{16} = 6$.
- 19) **Choice A is correct.** (8.G.1) Add 3: $x > -4$. Open circle at -4 with right ray confirms this.
- 20) **The correct answer is B,E.** (8.G.1) Option B is correct because the constant term 35 is the fixed monthly cost. Option E is correct because at $t = 0$, $C = 0.10(0) + 35 = 35$. The slope is 0.10, so the cost per text is \$0.10, not \$0.35.
- 21) **Choice A is correct.** (8.A.2) Option A has each input mapping to exactly one output. Option B has input 1 mapping to two outputs. Option C has input 5 mapping to two outputs. Option D has input 2 mapping to two outputs.
- 22) **Choice C is correct.** (8.N.2) Apply power to numerator and denominator: $\left(\frac{x}{y}\right)^2 = \frac{x^2}{y^2}$.
- 23) **The correct answer is 10.** (8.G.3) $d = \sqrt{(5 - (-3))^2 + (-2 - 4)^2} = \sqrt{8^2 + (-6)^2} = \sqrt{64 + 36} = \sqrt{100} = 10$ units.
- 24) **Choice C is correct.** (8.G.1) Slope = $\frac{8-0}{1-0} = 8$. This is a steep line passing through (0, 0) and (1, 8).
- 25) **Choice C is correct.** (8.G.1) Add the equations to eliminate y : $(2x + y) + (x - y) = 7 + 2$, so $3x = 9$, giving $x = 3$. Substitute: $3 - y = 2$, so $y = 1$. Solution: (3, 1).
- 26) **Choice A is correct.** (8.A.1) $(x + 5)^2 = (x + 5)(x + 5) = x^2 + 5x + 5x + 25 = x^2 + 10x + 25$.
- 27) **Choice A is correct.** (8.A.1) The elevator goes down (negative slope), pauses (flat line), then up (positive slope). This is a piecewise linear function with three distinct segments.
- 28) **Choice B is correct.** (8.G.3) Verify: $121 + 3600 = 3721 = 61^2$. This is the 11-60-61 Pythagorean triple.
- 29) **Choice C is correct.** (8.G.1) Number of sides = $\frac{360}{18} = 20$.



Hi, Smart Reviewer!

◇ The best learning often happens after the test, when you look back and notice what worked and what needs attention. This wide-ranging book gave you eight serious Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** You can use these practice tests as a map. The questions you solved quickly show strengths; the questions you missed show where to train next. ★

Review Routine

- **Sort:** Group mistakes by skill.
- **Reread:** Check whether the question was misunderstood.
- **Resolve:** Do the problem again without looking.
- **Record:** Write the lesson in one sentence.

Grade 8 test-day tip: Review in short focused sessions. Ten careful minutes can be more useful than an hour of rushing.

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

Jay Daie

Your Review Coach

PRACTICE TODAY, SUCCEED TOMORROW!

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror 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.



BUILD SKILLS & BOOST CONFIDENCE

Strengthen understanding and feel prepared for test day.



COVERS ALL ESSENTIAL TOPICS

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Ratios & Proportional Relationships
- ✓ Linear Equations
- ✓ Functions
- ✓ Geometry
- ✓ Measurement & Data
- ✓ Statistics & Probability
- ✓ Pythagorean Theorem
- ✓ Volume & Surface Area
- ✓ Transformations
- ✓ Inequalities
- ✓ Data Analysis & Graphing
- ✓ 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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More Practice. More Confidence.
Better Results.