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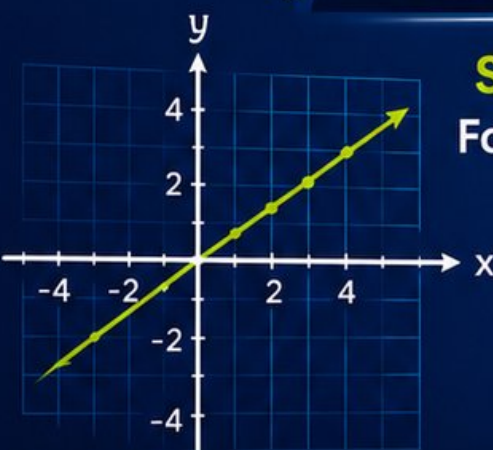
Kentucky KSA

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3

 PRINTED TESTS

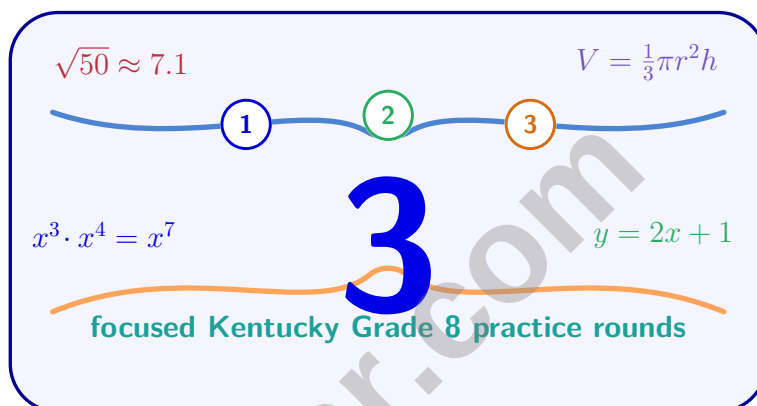
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 ONLINE TESTS

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

3 Kentucky KSA Grade 8 Math Practice Tests

Three Complete Kentucky Practice Rounds for Grade 8 Readiness



Three complete 40-question Grade 8 KSA 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, Kentucky Grade 8 Problem Solver!

Three focused rounds for sharper KSA math thinking

This book gives you three full Grade 8 KSA 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 Kentucky 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 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.

Kentucky 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 KSA tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	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.



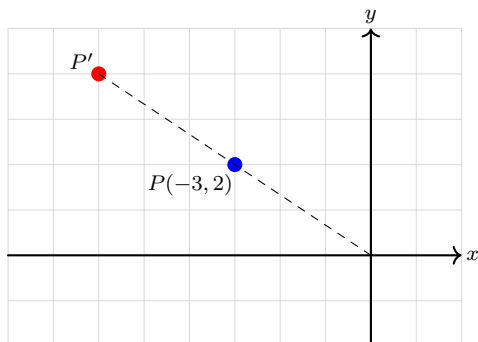
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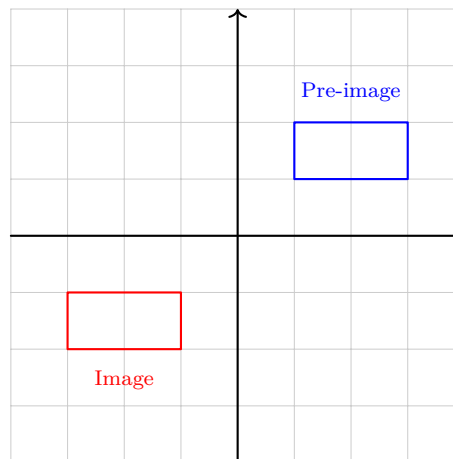
- 1) Point $P(-3, 2)$ is dilated by scale factor 2 from the origin. What are the coordinates of P' ?



- ☐ A. $(-6, 4)$ ☐ C. $(6, -4)$
☐ B. $(-3, 4)$ ☐ D. $(-6, -4)$
- 2) A triangular prism has a right triangular base with legs 3 cm and 4 cm, and hypotenuse 5 cm. The height (length) of the prism is 7 cm. What is the total surface area?

- ☐ A. 12 cm^2 ☐ C. 72 cm^2
☐ B. 60 cm^2 ☐ D. 96 cm^2





3)

Looking at the two rectangles, which transformation was applied?

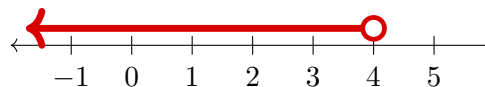
- ☐ A. Reflection across the x -axis ☐ C. 180° rotation about the origin
☐ B. Reflection across the y -axis ☐ D. Dilation by scale factor 2

4) Which pair of equations represents perpendicular lines?

- ☐ A. $y = 3x + 1$ and $y = 3x - 5$ ☐ C. $y = 4x - 2$ and $y = 4x + 6$
☐ B. $y = -\frac{3}{5}x + 2$ and $y = \frac{3}{5}x - 1$ ☐ D. $y = 2x + 4$ and $y = -\frac{1}{2}x + 1$

5) Consider the equation $6x - 4 = 2(3x - 2)$. How many solutions does this have?

- ☐ A. One solution ☐ C. Infinitely many solutions
☐ B. No solution ☐ D. Two solutions

6) Which number line shows the solution to $3 - 2x > -5$?

- ☐ A. Closed circle at 4, ray left ☐ C. Closed circle at 4, ray right
☐ B. Open circle at 4, ray right ☐ D. Open circle at 4, ray left



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7) Which coordinate pair is in the solution region of $3x + y > 9$?

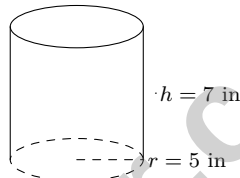
☐ A. (2, 2)

☐ C. (2, 4)

☐ B. (3, 0)

☐ D. (1, 6)

8) A virus has diameter 1.2×10^{-7} m. Bacteria has diameter 8×10^{-6} m. How many times larger is the bacterium than the virus?



9)

A cylinder with radius 5 in and height 7 in is shown. What is its volume? (Use $\pi \approx 3.14$.)

☐ A. 109.9 in^3

☐ C. 549.5 in^3

☐ B. 219.8 in^3

☐ D. 1099 in^3

10) A borrower needs to repay \$1,000. She has time but limited monthly cash flow. Comparing the plans, which choice represents the BEST overall financial decision (lowest total cost + manageable payments)?

☐ A. \$50/month for 24 months (total \$1,200; low monthly cost)

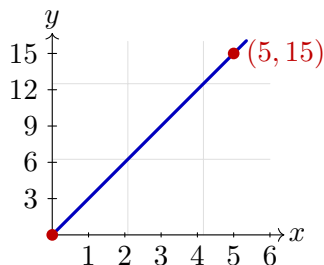
☐ C. \$125/month for 8 months (total \$1,000; high monthly cost)

☐ B. \$100/month for 12 months (total \$1,200; medium monthly cost)

☐ D. \$83/month for 18 months (total \$1,494; expensive overall)



- 1) A graph of a proportional relationship passes through the origin and (5, 15). What is the slope (unit rate)?



- ☐ A. 2 ☐ C. 5
☐ B. 15 ☐ D. 3
- 2) What is $0.3\overline{2}$ as a fraction?
- ☐ A. $\frac{3}{20}$ ☐ C. $\frac{32}{99}$
☐ B. $\frac{32}{100}$ ☐ D. $\frac{29}{90}$
- 3) Which is larger: $\sqrt{11}$ or 3.5?
- ☐ A. They are equal ☐ C. $\sqrt{11}$
☐ B. Cannot be determined ☐ D. 3.5
- 4) Is $\sqrt{12}$ greater than or less than 3.5?
- ☐ A. Greater than 3.5 ☐ C. Exactly 3.5
☐ B. Cannot determine ☐ D. Less than 3.5
- 5) The sum of two people's ages is 35. In 5 years, the older person will be twice the age of the younger person. If the younger person is currently y years old, find y .



- 6) Convert 42,000 to scientific notation.
- ☐ A. 4.2×10^3 ☐ C. 42×10^2
☐ B. 4.2×10^5 ☐ D. 4.2×10^4
- 7) A cylindrical container open at the top has radius 3 cm and height 10 cm. If we need to cover only the curved surface and the bottom (not the top), how much area needs to be covered?
- ☐ A. $60\pi \text{ cm}^2$ ☐ C. $78\pi \text{ cm}^2$
☐ B. $69\pi \text{ cm}^2$ ☐ D. $88\pi \text{ cm}^2$
- 8) A figure in Quadrant I is reflected across the line $y = -x$. Which quadrant will the image be in?
- ☐ A. Quadrant I ☐ C. Quadrant IV
☐ B. Quadrant II ☐ D. Quadrant III
- 9) What is the slope of a line passing through $(-1, 4)$ and $(2, -2)$?
- ☐ A. 2 ☐ C. 3
☐ B. $-\frac{1}{2}$ ☐ D. -2
- 10) Solve for x : $-5x + 12 = -2x - 6$
- ☐ A. $x = -6$ ☐ C. $x = -2$
☐ B. $x = 2$ ☐ D. $x = 6$
- 11) A phone plan charges \$20 base plus \$0.10 per text. If you budget at most \$35, which inequality shows max texts?
- ☐ A. $0.10t + 20 > 35$ ☐ C. $0.10 + 20t \geq 35$
☐ B. $20t + 0.10 \leq 35$ ☐ D. $0.10t + 20 \leq 35$



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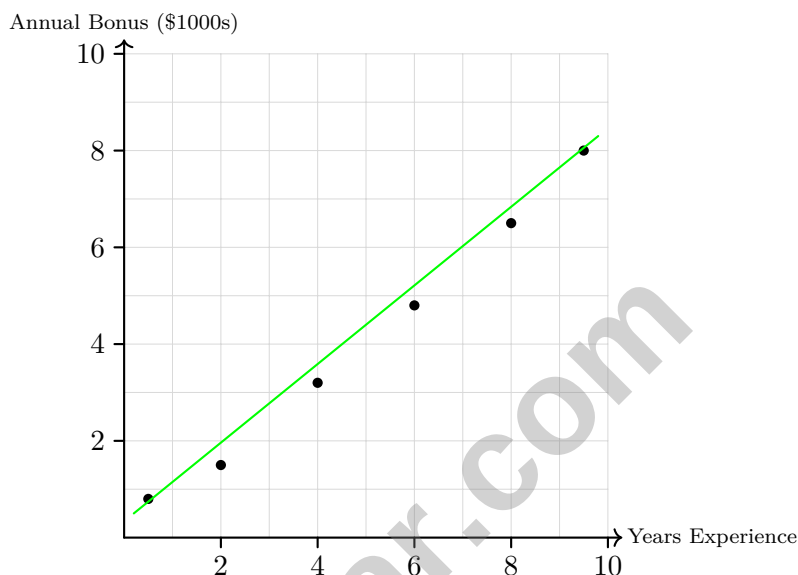
1) Which is the best estimate of $3\sqrt{5}$?

☐ A. 4.5

☐ C. 6.7

☐ B. 6.0

☐ D. 9.8



2)

An employee compensation analysis shows experience versus bonuses. If the trend line predicts a \$3,000 bonus at 4 years of experience, and an employee with 4 years actually gets \$3,500, what is the residual?

☐ A. -500

☐ C. 3000

☐ B. 500

☐ D. 3500

3) A student uses elimination to solve: $3x + 2y = 16$ and $5x - 2y = 24$. They add the equations to get $8x = 40$, so $x = 5$. Then they substitute to find $y = 0.5$. Is this correct?

☐ A. No, adding eliminates x , not y .

☐ C. No, the system has no solution.

☐ B. No, the substitution is wrong.

☐ D. Yes, the solution is correct.



4) A student evaluated $f(x) = 3x + 2$ at $x = 4$ and wrote $f(4) = 3 + 2 + 4 = 9$. What error did the student make?

- ☐ A. Did not multiply x by the coefficient 3
☐ B. Multiplied 3 by 4 correctly but made an arithmetic mistake
☐ C. Added the constant instead of substituting correctly
☐ D. The answer is correct

5)

Decimal Types

Terminating	Repeating
0.5, 0.75	$0.\overline{12}$

Which decimal is rational?

- ☐ A. $0.123456\dots$ (non-repeating)
☐ B. π
☐ C. $0.454545\dots$ (repeating)
☐ D. e (Euler's number)
- 6) What denominator appears when a repeating decimal has a 4-digit repeating block?
- ☐ A. 10
☐ B. 100
☐ C. 999
☐ D. 9999

7) A table shows:

x	0	3	6
y	5	2	-1

What is the rate of change (slope)?



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Kentucky KSA 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 Kentucky KSA practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (KY.8.G.4) Multiply both coordinates by 2: $(-3 \times 2, 2 \times 2) = (-6, 4)$.
- 2) **Choice D is correct.** (KY.8.G.9) Two triangular bases: $2 \times \frac{1}{2}(3)(4) = 12 \text{ cm}^2$. Three rectangular sides: $7(3+4+5) = 84 \text{ cm}^2$. Total surface area = $12 + 84 = 96 \text{ cm}^2$.
- 3) **Choice C is correct.** (KY.8.G.1) A 180° rotation about the origin maps $(x, y) \rightarrow (-x, -y)$. The pre-image at $(1, 1)$ maps to $(-1, -1)$ in the image, confirming the rotation.
- 4) **Choice D is correct.** (KY.8.EE.6) Perpendicular slopes are negative reciprocals. Here, 2 and $-\frac{1}{2}$ are negative reciprocals.
- 5) **Choice C is correct.** (KY.8.EE.7) Expand the right side: $6x - 4 = 6x - 4$. Both sides are identical, so every value of x is a solution.
- 6) **Choice D is correct.** (KY.8.EE.7) Subtract 3: $-2x > -8$. Divide by -2 (FLIP): $x < 4$. Open circle and left ray.
- 7) **Choice C is correct.** (KY.8.G.8) Test $(2, 4)$: $3(2) + 4 = 10 > 9$ TRUE. Others fail: $(2, 2)$: $8 \not> 9$; $(3, 0)$: $9 \not> 9$; $(1, 6)$: $9 \not> 9$.
- 8) **The correct answer is 66.67.** (KY.8.EE.3) Divide: $\frac{8 \times 10^{-6}}{1.2 \times 10^{-7}} = \frac{8}{1.2} \times 10^1 = 6.67 \times 10^1 \approx 66.67$.
- 9) **Choice C is correct.** (KY.8.G.9) $V = \pi r^2 h = 3.14 \times 5^2 \times 7 = 3.14 \times 25 \times 7 = 549.5 \text{ in}^3$.
- 10) **Choice A is correct.** (KY.8.G.9) Option C has zero interest (lowest cost) but requires \$125/month. Option A costs \$200 extra but is affordable at \$50/month. For someone with limited cash flow, Option A balances cost and affordability.
- 11) **Choice C is correct.** (KY.8.EE.1) $(3x^2)^2 = 9x^4$. Then $9x^4 \cdot x^{-3} = 9x^{4-3} = 9x^1 = 9x$.
- 12) **Choice D is correct.** (KY.8.EE.4) Add first: $(9 + 3.6) \times 10^5 = 12.6 \times 10^5 = 1.26 \times 10^6$. Then divide: $\frac{1.26 \times 10^6}{4 \times 10^2} = 0.315 \times 10^4 = 3.15 \times 10^3$.
- 13) **Choice A is correct.** (KY.8.EE.7) Find two numbers that multiply to -20 and add to -1 : -5 and 4 . Check: $-5 \cdot 4 = -20$ and $-5 + 4 = -1$.
- 14) **Choice A is correct.** (KY.8.F.1) Multiply by 2 first: $2x$. Then add 3: $2x + 3$.
- 15) **Choice A is correct.** (KY.8.F.2) Slope of u : $(3 - (-1))/(2 - 0) = 4/2 = 2 > 0$. Slope of v : $-1 < 0$. Only u is positive.
- 16) **The correct answer is $\frac{2}{9}$.** (KY.8.NS.1) Set $x = 0.\bar{2}$, so $10x = 2.\bar{2}$. Subtracting: $10x - x = 2$, giving $9x = 2$ and $x = \frac{2}{9}$.
- 17) **Choice B is correct.** (KY.8.F.3) Constant second differences indicate a quadratic (degree-2 polynomial) function, which is nonlinear.
- 18) **Choice A is correct.** (KY.8.F.4) For $x = 0$, $y = -5$. For $x = 2$, $y = 1$. For $x = 5$, $y = 10$. The sum is $-5 + 1 + 10 = 6$.
- 19) **Choice C is correct.** (KY.8.F.4) By the vertical line test, a function can have at most one y -intercept (at $x = 0$). But it can have many x -intercepts (zeros). Options A violates the vertical line test, B is sometimes false, D is false for functions that don't cross an axis.
- 20) **Choice B is correct.** (KY.8.G.2) Comparing the triangles: Triangle ABC has vertex A at the bottom left, B at the bottom right, and C at the top. Triangle DEF has vertices in a different orientation with D at the bottom left, E at the bottom right, and F at the top (flipped). A reflection flips triangle ABC, and then a translation (shift) moves it to the position of triangle DEF.
- 21) **The correct answer is A,C.** (KY.8.NS.1) $\sqrt{169} = 13$ is rational (perfect square). The repeating decimal $0.777\ldots = \frac{7}{9}$ is rational. The other values are irrational: $\sqrt{170}$ (non-perfect square), 2π (irrational multiple of π), and $\sqrt{2} + 1$ (irrational plus rational is irrational).
- 22) **Choice B is correct.** (KY.8.G.5) By the exterior angle theorem, the exterior angle equals the sum of the two remote interior angles: $52 + 74 = 126^\circ$.
- 23) **Choice A is correct.** (KY.8.G.6, KY.8.G.7) From $(\sqrt{2})^2 + (\sqrt{2})^2 = c^2$, we get $2 + 2 = 4$, so $c = 2$.
- 24) **Choice A is correct.** (KY.8.G.8) $d = \sqrt{(5-2)^2 + (7-3)^2} = \sqrt{3^2 + 4^2} = \sqrt{9+16} = \sqrt{25} = 5$ units.
- 25) **Choice B is correct.** (KY.8.G.7) Alternate interior angles are congruent when a transversal cuts parallel lines. So $q = 89^\circ$.



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Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for 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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PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better **Results**.