

Kentucky

KSA

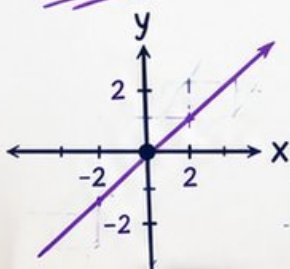
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

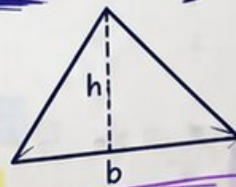
$$y = mx + b$$



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

Practice
Today
Succeed
Tomorrow!

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



7 PRINTED
TESTS



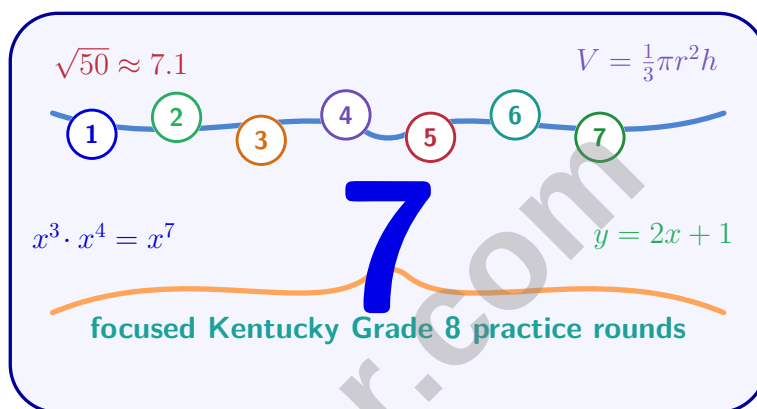
2 ONLINE
TESTS



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

7 Kentucky KSA Grade 8 Math Practice Tests

Seven Grade 8 KSA Rounds with Mixed Standards Practice



Seven 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!

Seven focused rounds for sharper KSA math thinking

This book gives you seven 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 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.

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?

Seven KSA 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.

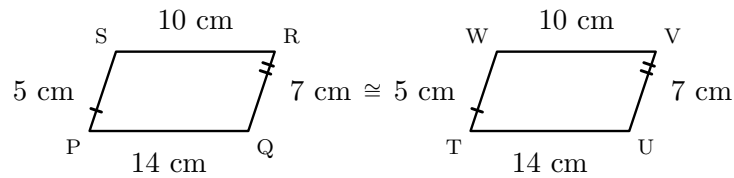


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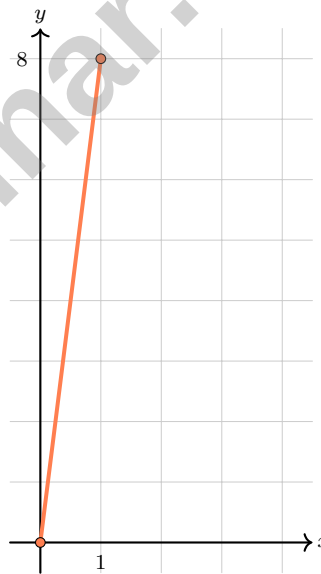
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- 1) Trapezoid PQRS is congruent to trapezoid TUVW. If the parallel sides of PQRS are 10 cm and 14 cm, and the non-parallel sides are 5 cm and 7 cm, what is the perimeter of TUVW?



- ☐ A. 18 cm ☐ C. 36 cm
☐ B. 24 cm ☐ D. 72 cm
- 2) $(4.5 \times 10^{-6}) \times (2 \times 10^{-4}) = ?$
- ☐ A. 9×10^{-2} ☐ C. 9×10^{-10}
☐ B. 6.5×10^{-10} ☐ D. 9×10^{24}



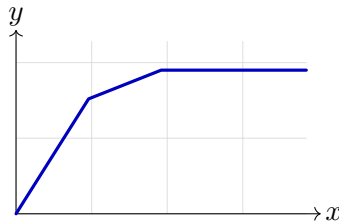
- 3)
- What is the slope?

- ☐ A. 1 ☐ C. 8
☐ B. 4 ☐ D. $\frac{1}{8}$

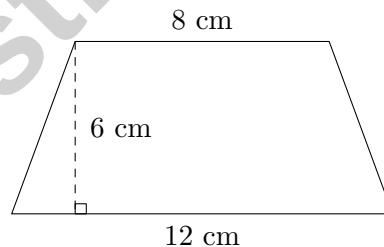


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- 4) A student studies for an exam and creates a graph: time studied vs. score. The first 2 hours give a big score boost, the next 2 hours give less improvement, and after that, no more gains. What is the graph shape?



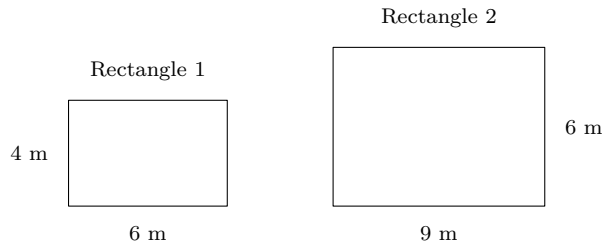
- ☐ A. Steep rise, then gentle rise, then flat
- ☐ B. Gradual rise throughout
- ☐ C. Steep rise throughout
- ☐ D. Flat throughout (no improvement)
- 5) If a right triangle has a hypotenuse of 85 and one leg is 13, what is the other leg?
- ☐ A. 72
- ☐ B. 84
- ☐ C. 98
- ☐ D. 7225
- 6) A trapezoid has parallel sides of 8 cm and 12 cm with a height of 6 cm. This trapezoid is part of a composite figure. What is its area?



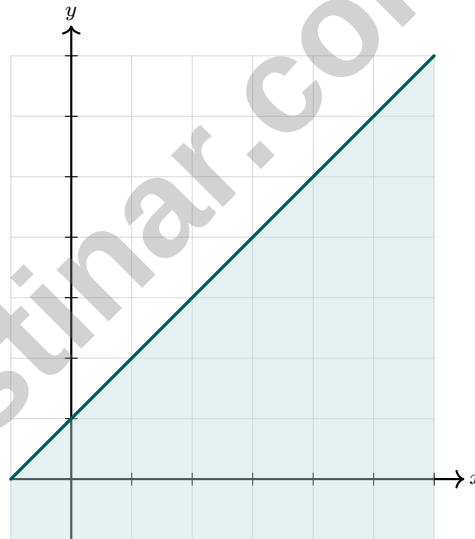
- ☐ A. 48 cm²
- ☐ B. 60 cm²
- ☐ C. 72 cm²
- ☐ D. 80 cm²



- 7) Two rectangles are shown with proportional dimensions. Which similarity statement is correct?



- ☐ A. Rectangle 1 $\sim$ Rectangle 2 with scale factor 1.5
☐ B. The rectangles are not similar
☐ C. Rectangle 1 $\sim$ Rectangle 2 with scale factor 0.5
☐ D. They are congruent



8)

Which inequality matches the graph?

- ☐ A. $y > x + 1$
☐ B. $y < x + 1$
☐ C. $y \leq x + 1$
☐ D. $y \geq x + 1$



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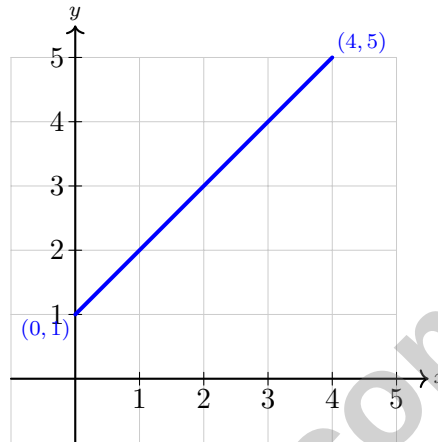
1) Missing value problem: Function through $(2, 9)$ and $(5, 24)$ has what equation?

☐ A. $y = 5x - 1$

☐ C. $y = 3x + 3$

☐ B. $y = 5x + 1$

☐ D. $y = 6x - 3$



2)

What is the slope of the line shown in the graph?

☐ A. 1

☐ C. $\frac{1}{2}$

☐ B. 2

☐ D. 4

3) When solving $2(3x + 1) = 20$, which step comes **first** after distributing?

☐ A. Divide both sides by 3

☐ C. Add 1 to both sides

☐ B. Multiply both sides by 2

☐ D. Subtract 2 from both sides

4) A bacterium is 9×10^{-6} meters long. A virus is 3×10^{-8} meters long. The bacterium is how many times longer?

☐ A. 3×10^3

☐ C. 3×10^2

☐ B. 3×10^{-2}

☐ D. 6×10^{-6}



5) Which equation represents a proportional relationship?

☐ A. $y = 2x + 3$

☐ C. $y = x - 1$

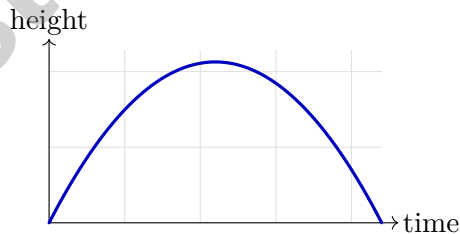
☐ B. $y = \frac{1}{2}x + 2$

☐ D. $y = -5x$

6) Points $(-1, 5)$ and $(2, 14)$ lie on a line. Find the slope.

7) Solve the system $\begin{cases} y = 2x \\ x + y = 9 \end{cases}$ by substitution.

8) Which graph matches: “A ball is thrown upward and falls back down”?

☐ A. A line going up and to the right☐ C. A flat horizontal line☐ B. A curve (parabola) that rises then falls☐ D. A line going down and to the right

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& answers

- 1) A triangular prism has an isosceles triangular base with base 8 cm and two equal sides of 5 cm each. The height of the triangle is 3 cm. The prism length is 6 cm. What is the total surface area?

- ☐ A. 96 cm^2
☐ C. 132 cm^2
☐ B. 108 cm^2
☐ D. 156 cm^2

- 2) A data analyst fits two different trend lines to a scatter plot. Line A has MAD (mean absolute deviation of residuals) = 0.3, while Line B has MAD = 0.8. Which conclusion is justified?

- ☐ A. Line B is better because it has a higher MAD
☐ B. Line A is better because residuals are closer to zero
☐ C. Both lines are equally good
☐ D. We cannot compare lines using MAD alone

- 3) A two-way table of 120 people shows:

	Owens Car	No Car	Total
Urban	24	36	60
Rural	45	15	60
Total	69	51	120

What is the joint frequency of rural people who own a car?

- ☐ A. $\frac{60}{120}$
☐ C. $\frac{45}{120}$
☐ B. $\frac{45}{60}$
☐ D. $\frac{45}{69}$



4) If two dice are rolled, what is the probability of getting at least one 4?

☐ A. $\frac{1}{6}$

☐ B. $\frac{11}{36}$

☐ C. $\frac{6}{36}$

☐ D. $\frac{25}{36}$

5) Which expression equals a rational number?

☐ A. $\sqrt{2} \times \sqrt{3}$

☐ B. $\sqrt{4} + \sqrt{5}$

☐ C. $\sqrt{3} + \sqrt{3}$

☐ D. $\sqrt{9} \times \sqrt{4}$

6) Which product is irrational?

☐ A. $\sqrt{9} \times \sqrt{4}$

☐ B. $\sqrt{2} \times \sqrt{8}$

☐ C. $2 \times \sqrt{3}$

☐ D. $\sqrt{16} \times \sqrt{25}$

7) Convert $0.5\overline{3}$ to a fraction in simplest form.

☐ A. $\frac{53}{100}$

☐ B. $\frac{5}{30}$

☐ C. $\frac{16}{33}$

☐ D. $\frac{48}{90} = \frac{8}{15}$

8) Which is the best estimate of 2π ?

☐ A. 3.28

☐ B. 5.14

☐ C. 6.28

☐ D. 8.56

9) Compare 9.9×10^2 and 1.0×10^3 . Which is true?

☐ A. 9.9×10^2 is larger

☐ B. Cannot be determined

☐ C. They are equal

☐ D. 1.0×10^3 is larger



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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 C is correct.** (KY.8.G.2) Perimeter of PQRS = $10 + 14 + 5 + 7 = 36$ cm. Since TUVW is congruent to PQRS, its perimeter is also 36 cm.
- 2) **Choice C is correct.** (KY.8.EE.4) Multiply coefficients: $4.5 \times 2 = 9$. Add exponents: $10^{-6+(-4)} = 10^{-10}$. Result: 9×10^{-10} .
- 3) **Choice C is correct.** (KY.8.EE.5) Slope = $\frac{8-0}{1-0} = 8$. This is a steep line passing through (0, 0) and (1, 8).
- 4) **Choice A is correct.** (KY.8.F.4) Diminishing returns: initial rapid gains, then slower gains, then ceiling. The slope decreases then becomes zero.
- 5) **Choice B is correct.** (KY.8.G.6, KY.8.G.7) From $13^2 + b^2 = 85^2$, we get $169 + b^2 = 7225$, so $b^2 = 7056$ and $b = 84$ (scaled 5-12-13 triple).
- 6) **Choice B is correct.** (KY.8.G.7) Trapezoid area = $\frac{1}{2}(b_1 + b_2) \times h = \frac{1}{2}(8 + 12) \times 6 = \frac{1}{2} \times 20 \times 6 = 60 \text{ cm}^2$.
- 7) **Choice A is correct.** (KY.8.G.4) Ratio of corresponding sides: $\frac{9}{6} = 1.5$ and $\frac{6}{4} = 1.5$. Constant ratio confirms similarity.
- 8) **Choice C is correct.** (KY.8.G.8) SOLID line (includes boundary) and shading BELOW indicate $y \leq x + 1$.
- 9) **Choice B is correct.** (KY.8.F.3) Linear functions are represented by straight lines. The graph clearly shows a straight line, confirming a linear relationship.
- 10) **Choice C is correct.** (KY.8.SP.3) When $w = 0$, $P = -800$, meaning there is a \$800 loss with no sales. This represents fixed costs or initial loss.
- 11) **Choice B is correct.** (KY.8.G.8) Deviations: $|3 - 5.5| = 2.5$ (twice), $|5 - 5.5| = 0.5$ (three times), $|7 - 5.5| = 1.5$ (twice), $|9 - 5.5| = 3.5$. Sum = $5 + 1.5 + 3 + 3.5 = 13$. MAD = $13/8 = 1.625 \approx 1.63$.
- 12) **The correct answer is $x = 3$.** (KY.8.EE.7) Distribute the 3: $3x + 6 - 5 = x + 7$. Simplify: $3x + 1 = x + 7$. Subtract x from both sides: $2x + 1 = 7$. Subtract 1 from both sides: $2x = 6$. Divide by 2: $x = 3$. Verify: $3(3+2) - 5 = 3(5) - 5 = 15 - 5 = 10$ and $3 + 7 = 10$ ✓.
- 13) **Choice A is correct.** (KY.8.F.1) Each input (1, 2, 3) maps to exactly one output (A, B, C). The fact that outputs are letters instead of numbers is irrelevant.
- 14) **The correct answer is -4 .** (KY.8.EE.7) Solving gives $x > -4$, so the boundary value is -4 .
- 15) **Choice A is correct.** (KY.8.F.2) Slope: $(5 - 3)/(2 - 1) = 2$. From (1, 3): $3 = 2(1) + b \Rightarrow b = 1$. So $y = 2x + 1$.
- 16) **Choice A is correct.** (KY.8.G.3) Under 90° counterclockwise rotation, $(x, y) \rightarrow (-y, x)$. So $(2, 1) \rightarrow (-1, 2)$.
- 17) **Choice B is correct.** (KY.8.G.5) Alternate interior angles are on opposite sides of the transversal and between the parallel lines.
- 18) **Choice A is correct.** (KY.8.G.8) $c = \sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = 15$. (This is a 9-12-15 triple, a multiple of 3-4-5.)
- 19) **Choice C is correct.** (KY.8.G.7) If the angles are $2k$ and $3k$, then $2k + 3k = 90$, so $5k = 90$ and $k = 18^\circ$. The angles are 36° and 54° .
- 20) **Choice B is correct.** (KY.8.G.9) Cube: $V_c = 5^3 = 125 \text{ cm}^3$. Pyramid: $V_{py} = \frac{1}{3} \times 25 \times 5 = \frac{125}{3} \approx 41.67 \text{ cm}^3$. Total: $125 + 41.67 \approx 166.67 \text{ cm}^3$, so 166 cm^3 is the closest choice.
- 21) **Choice C is correct.** (KY.8.G.5) Set $(n - 2) \times 180 = 900$. Then $n - 2 = 5$, so $n = 7$ (a heptagon).
- 22) **The correct answer is A, B.** (KY.8.EE.6) Options A and B both have slope 4, making them parallel. Option C has slope -4 , option D has slope $\frac{1}{4}$, and option E has slope 2, so none of these match.
- 23) **The correct answer is 100.48.** (KY.8.G.9) $V = 3.14 \times 2^2 \times 8 = 3.14 \times 4 \times 8 = 3.14 \times 32 = 100.48 \text{ m}^3$.
- 24) **Choice D is correct.** (KY.8.SP.1) The pattern shows: high experience (right) $\rightarrow$ low reaction time (bottom), and low experience (left) $\rightarrow$ high reaction time (top). This is a negative association: as one increases, the other decreases.
- 25) **Choice C is correct.** (KY.8.SP.3) Relative frequency of streaming among broadband users: $\frac{126}{168} = 0.75$.
- 26) **Choice D is correct.** (KY.8.G.9) Total: 20 books. Hardcover fiction: 8. $P = \frac{8}{20} \times \frac{7}{19} = \frac{56}{380} = \frac{14}{95}$.
- 27) **Choice D is correct.** (KY.8.SP.2) Substituting $x = 4$: $y = 0.5(4) + 10 = 2 + 10 = 12$. Point (4, 12) is on the line.



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Hi, Math Communicator!

◇ Grade 8 math is not only about getting a number. It is about explaining relationships and making your reasoning visible. ◇

★ **Remember this:** When you show steps, label diagrams, and write clear answers, you are joining the conversation that math is trying to have. You practiced across 7 full Grade 8 practice tests, and that repeated effort matters. ★

Communication Skills

- **Use Words:** Explain what the answer means.
- **Use Symbols:** Keep equations accurate.
- **Use Diagrams:** Show relationships visually.
- **Use Units:** Connect math to context.

Grade 8 test-day tip: For open-ended questions, answer in a complete thought: value, unit, and reason.

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

Jay Daie

Your Math Communication Coach

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!