

6 Kentucky KSA

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



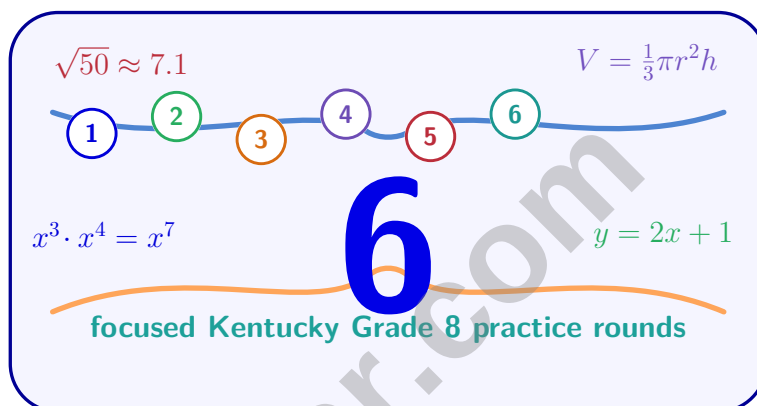
2 ONLINE
TESTS



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

6 Kentucky KSA Grade 8 Math Practice Tests

Six Focused Grade 8 Tests with Review, Answer Keys, and Explanations



Six 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!

Six focused rounds for sharper KSA math thinking

This book gives you six 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 six-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?

Six KSA tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	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.

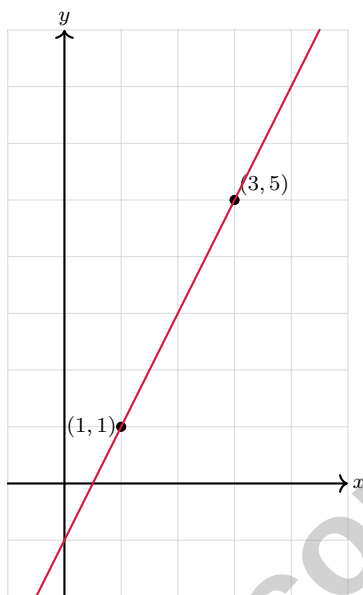


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1) The graph below shows a line. Which equation represents this line?



☐ A. $y = 2x - 1$

☐ B. $y = x$

☐ C. $y = 2x + 1$

☐ D. $y = \frac{1}{2}x + \frac{1}{2}$

2) Which of the following numbers is irrational?

☐ A. $\frac{3}{5}$

☐ B. $0.\overline{6}$

☐ C. $\sqrt{7}$

☐ D. $\sqrt{25}$

3) A college savings plan earns 7% compound interest annually. If \$5,000 is invested for 10 years, approximately how much will be accumulated?

☐ A. \$8,500

☐ B. \$13,800

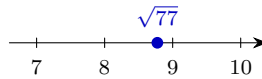
☐ C. \$11,500

☐ D. \$9,835



- 4) For $y = 2.5x + 5$, what is the y -intercept?

- 5) Where on a number line would $\sqrt{77}$ be located?



- ☐ A. At 9
- ☐ B. Between 9 and 10
- ☐ C. Between 8 and 9
- ☐ D. Between 7 and 8
- 6) Which is the best estimate of $\pi - \sqrt{2}$?
- ☐ A. 0.8
- ☐ B. 1.2
- ☐ C. 1.7
- ☐ D. 2.4
- 7) Simplify using the laws of exponents: $\frac{x^7}{x^3}$
- ☐ A. x^{10}
- ☐ B. x^{21}
- ☐ C. x^4
- ☐ D. x^{-4}
- 8) A cube has an edge length of 4 units. What is its volume?
- ☐ A. 16 cubic units
- ☐ B. 24 cubic units
- ☐ C. 48 cubic units
- ☐ D. 64 cubic units



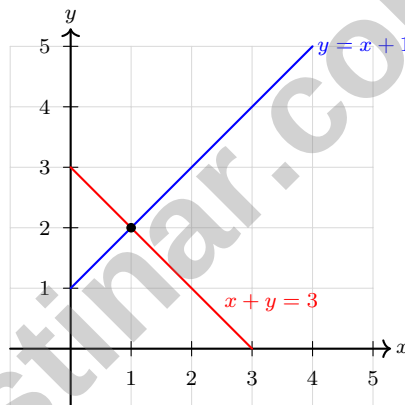
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- 9) Calculate the Mean Absolute Deviation for the data set $\{5, 10, 15, 20\}$.

- 10) Compare 3.2×10^5 and 5.1×10^4 . Which is larger?

- ☐ A. Cannot be determined ☐ C. They are equal
☐ B. 5.1×10^4 ☐ D. 3.2×10^5

- 11) Use the graph below to find the solution to the system of $y = x + 1$ and $x + y = 3$.



- ☐ A. (1, 2) ☐ C. (2, 1)
☐ B. (0, 3) ☐ D. (3, 0)

- 12) Factor completely: $5x^2 + 35x + 50$.

- ☐ A. $5(x^2 + 7x + 10)$ ☐ C. $5(x + 2)(x + 5)$
☐ B. $(5x + 5)(x + 10)$ ☐ D. $5(x + 10)(x + 1)$



1) A student finds that their homework scores have a mean of 85 and MAD of 4. Which interval is one MAD from the mean?

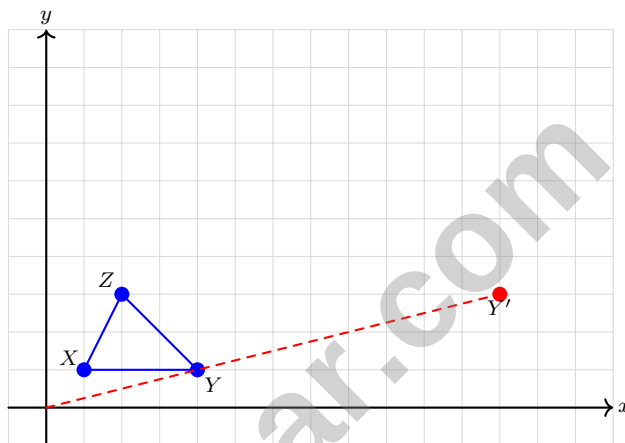
☐ A. 81 to 89

☐ C. 80 to 90

☐ B. 75 to 95

☐ D. 70 to 100

2) Triangle XYZ has vertices at $X(1, 1)$, $Y(4, 1)$, and $Z(2, 3)$. If dilated by scale factor 3 from the origin, where is the vertex that corresponds to Y ?

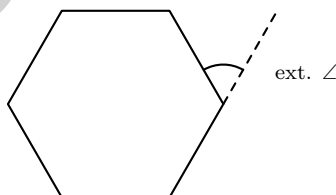


☐ A. (12, 3)

☐ C. (7, 4)

☐ B. (4, 1)

☐ D. (3, 3)



3)

For a regular hexagon, what is the measure of each exterior angle?

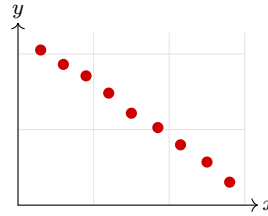
☐ A. 30°

☐ C. 60°

☐ B. 45°

☐ D. 72°





4)

A scatter plot shows the relationship between exercise frequency (days per week) and resting heart rate (bpm). The points form a clear downward trend with minimal scatter around the trend line. A student can infer that:

- ☐ A. Exercise causes higher heart rates ☐ C. Exercise and heart rate are unrelated
☐ B. More exercise is associated with lower resting heart rate ☐ D. Heart rate determines exercise frequency

5) From the table below, which statement correctly compares completion rates between employee types?

	Completed	Incomplete	Total
Salaried	96	24	120
Hourly	56	24	80
Total	152	48	200

- ☐ A. Salaried: $\frac{96}{152}$; Hourly: $\frac{56}{152}$ (both use column total).
☐ B. Salaried: $\frac{96}{120} = 0.80$; Hourly: $\frac{56}{80} = 0.70$.
☐ C. Salaried: $\frac{96}{200} = 0.48$; Hourly: $\frac{56}{200} = 0.28$.
☐ D. Salaried: $\frac{96}{120} = 0.80$; Hourly: $\frac{56}{152} \approx 0.37$.



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1) If $\sqrt{x}$ is rational and x is a positive integer, what must be true about x ?

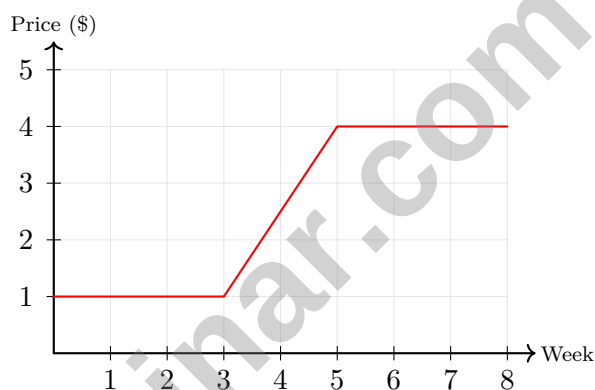
☐ A. x is odd

☐ C. x is prime

☐ B. x is greater than 10

☐ D. x is a perfect square

2) Compute $(2.5 \times 10^3) \times (4 \times 10^2)$ and write your answer in scientific notation.



3)

An item's price over 8 weeks is shown. During which week does the price increase the fastest?

☐ A. Weeks 1-3

☐ C. Weeks 3-5

☐ B. Week 3

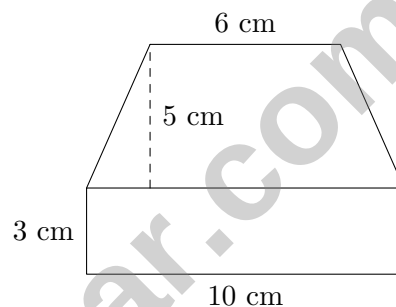
☐ D. Weeks 5-8



- 4) A student incorrectly solved: "If legs are 5 and 12, then hypotenuse = $5 + 12 = 17$." What is the error and the correct answer?

- ☐ A. Correct: hypotenuse is 17
☐ B. Error: student added instead of squaring. Correct hypotenuse is 13
☐ C. Error: student forgot to square root. Correct hypotenuse is 119
☐ D. Error: student computed $5 \times 12 = 60$ instead

- 5) A composite figure consists of an isosceles trapezoid (parallel sides 6 cm and 10 cm, height 5 cm) with a rectangle attached below (length 10 cm, width 3 cm). What is the total area?



- ☐ A. 30 cm^2
☐ B. 40 cm^2
☐ C. 70 cm^2
☐ D. 80 cm^2
- 6) Triangle P has sides 8, 15, 17. Triangle Q has sides 12, 22.5, 25.5. Are they similar?
- ☐ A. No, the sides are not equal
☐ B. No, the ratios are 1.5, 1.5, 1.5 which is not constant
☐ C. Yes, all sides have the same ratio 1.5 to Q 's sides
☐ D. Only if corresponding angles equal 90°



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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.F.4) Slope: $m = \frac{5-1}{3-1} = \frac{4}{2} = 2$. Using point (1, 1): $1 = 2(1) + b \Rightarrow b = -1$. Equation: $y = 2x - 1$.
- 2) **Choice C is correct.** (KY.8.NS.1) $\sqrt{7}$ is irrational because 7 is not a perfect square; its decimal expansion is non-terminating and non-repeating. $\frac{3}{5} = 0.6$ and $0.\overline{6} = \frac{2}{3}$ are rational. $\sqrt{25} = 5$ is rational.
- 3) **Choice D is correct.** (KY.8.G.9) $A = 5000(1.07)^{10} \approx 5000 \times 1.967 = \$9,835$.
- 4) **The correct answer is 5.** (KY.8.SP.2) The constant term is the y -intercept, so it is 5.
- 5) **Choice C is correct.** (KY.8.NS.2) $8^2 = 64$ and $9^2 = 81$. Since $64 < 77 < 81$, we have $8 < \sqrt{77} < 9$.
- 6) **Choice C is correct.** (KY.8.G.3) $\pi \approx 3.14$ and $\sqrt{2} \approx 1.41$, so $3.14 - 1.41 \approx 1.73$.
- 7) **Choice C is correct.** (KY.8.EE.1) When dividing powers with the same base, subtract exponents: $\frac{x^7}{x^3} = x^{7-3} = x^4$.
- 8) **Choice D is correct.** (KY.8.EE.2) Volume of a cube $= e^3 = 4^3 = 64$ cubic units.
- 9) **The correct answer is 5.** (KY.8.G.8) Mean $= 12.5$. Deviations: $|5 - 12.5| = 7.5$, $|10 - 12.5| = 2.5$, $|15 - 12.5| = 2.5$, $|20 - 12.5| = 7.5$. Sum $= 20$. MAD $= 20/4 = 5$.
- 10) **Choice D is correct.** (KY.8.EE.3) The exponent in 3.2×10^5 is larger (5 vs. 4), so $3.2 \times 10^5 = 320,000$ is greater than $5.1 \times 10^4 = 51,000$.
- 11) **Choice A is correct.** (KY.8.EE.8) The two lines intersect at the point marked on the graph. At this point, both $x = 1$ and $y = 2$. Verify: $y = 1 + 1 = 2$ ✓ and $1 + 2 = 3$ ✓.
- 12) **Choice C is correct.** (KY.8.EE.7) GCF is 5: $5x^2 + 35x + 50 = 5(x^2 + 7x + 10) = 5(x+2)(x+5)$.
- 13) **Choice D is correct.** (KY.8.EE.8) Red line: slope $= \frac{-2-1}{3-0} = \frac{-3}{3} = -1$. Blue line: slope $= \frac{1-2}{3-0} = \frac{-1}{3} = -\frac{1}{3}$. The blue line matches the target slope.
- 14) **Choice A is correct.** (KY.8.EE.7) Let e = Emma's current age. Then Maria's age is $e + 4$. In 3 years: Emma is $e + 3$, Maria is $e + 7$. The condition gives $e + 7 = 2(e + 3)$, so $e + 7 = 2e + 6$, thus $e = 1$.
- 15) **Choice A is correct.** (KY.8.F.3) Solve $5x - 3 = 12$: add 3 to both sides to get $5x = 15$, so $x = 3$.
- 16) **Choice A is correct.** (KY.8.G.9) The student correctly calculated the two triangular bases as $2 \times \frac{1}{2}(3)(4) = 12 \text{ cm}^2$. The lateral area is $10(3 + 4 + 5) = 120 \text{ cm}^2$. Total surface area is $12 + 120 = 132 \text{ cm}^2$, which is correct.
- 17) **Choice A is correct.** (KY.8.G.1) A 90° clockwise rotation maps (x, y) to $(y, -x)$. For example, $(1, 2) \rightarrow (2, -1)$ and $(2, 0) \rightarrow (0, -2)$, matching triangle Q.
- 18) **Choice B is correct.** (KY.8.G.9) Radius $r = 5$ cm. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 125 = 523.33 \text{ cm}^3$.
- 19) **Choice D is correct.** (KY.8.EE.6) The correct slope is $\frac{9-3}{4-1} = \frac{6}{3} = 2$. The student computed $\frac{4-1}{9-3} = \frac{3}{6} = \frac{1}{2}$, reversing the roles of Δx and Δy .
- 20) **The correct answer is A,C.** (KY.8.G.4) Correct: (A) All linear measurements (sides, perimeter) are multiplied by 2.5. (C) Area is multiplied by $(2.5)^2 = 6.25$. Incorrect: (B) Angles are congruent in dilation, not scaled. (D) Perimeter is multiplied, not divided, by 2.5. (E) Dilation preserves shape; polygon type does not change.
- 21) **Choice A is correct.** (KY.8.EE.7) Multiply by 2: $y - 3 = 10$. Add 3: $y = 13$.
- 22) **Choice A is correct.** (KY.8.EE.7) Multiply by -2 (FLIP): $x + 5 \geq -6$. Subtract 5: $x \geq -11$.
- 23) **Choice A is correct.** (KY.8.G.8) Dashed vertical line at $x = 1$ with shading to the LEFT means $x < 1$.
- 24) **Choice C is correct.** (KY.8.SP.3) Set $P = 500$: $500 = 3.2c - 250 \Rightarrow 3.2c = 750 \Rightarrow c = \frac{750}{3.2} \approx 234.4$. Since cakes are whole items, the bakery must sell at least 235 cakes.
- 25) **Choice B is correct.** (KY.8.NS.2) First position: 4 letter choices. Second position: 3 remaining letters. Total: $4 \times 3 = 12$.
- 26) **Choice C is correct.** (KY.8.EE.4) Volume $= (\text{side})^3 = (1.5 \times 10^{-2})^3 = (1.5)^3 \times (10^{-2})^3 = 3.375 \times 10^{-6} \text{ m}^3$.
- 27) **Choice D is correct.** (KY.8.EE.5) Slope $k = \frac{8}{2} = 4$. The equation is $y = 4x$.



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Hi, Thoughtful Reader!

◇ A strong Grade 8 test taker is also a strong reader. You practiced turning words, tables, graphs, and diagrams into math decisions. ◇

★ **Remember this:** That skill grows each time you slow down enough to ask what the problem is really telling you and what it is really asking for. This version gave you 6 opportunities to rehearse test-day habits. ★

Reader-to-Solver Skills

- **Circle the Ask:** Make the target visible.
- **Sort Information:** Separate useful facts from extra words.
- **Match Units:** Keep quantities connected.
- **Answer Fully:** Include the value and what it means.

Grade 8 test-day tip: After solving, reread only the final question. Make sure your answer matches it exactly.

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

Jay Daie

Your Reading-and-Math Helper

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 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 |
| | ✓ And More! |



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