

10 Kentucky KSA

GRADE
8
MATH

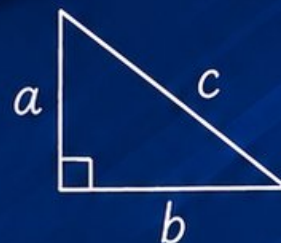
PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

10 PRINTED
TESTS 

2 ONLINE
TESTS 

- ✓ Build Confidence
- ✓ Master Key Math Skills
- ✓ Answer Explanations for Every Question
- ✓ Test-Taking Strategies That Work



$$3x - 7 = 2(x + 5)$$
$$x = 17$$

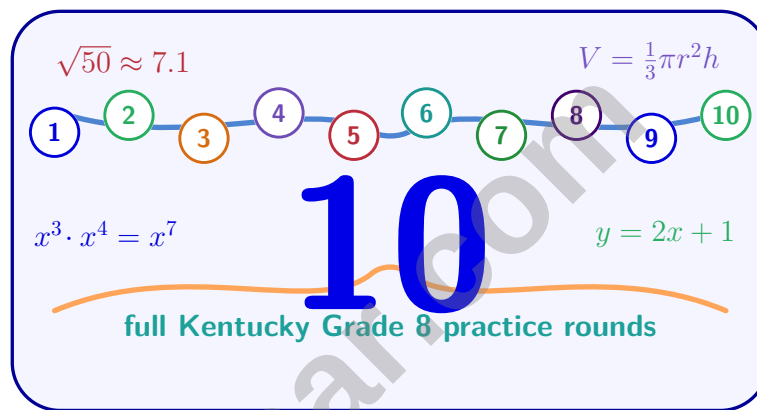


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 Kentucky KSA Grade 8 Math Practice Tests

Kentucky Grade 8 KSA Practice for focused preparation through linear relationships, rational operations, equations, geometry, and data



Ten complete 40-question Grade 8 KSA practice rounds with linear relationships, scientific notation, real numbers, equations, functions, 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!

Ten focused rounds for sharper Kentucky KSA math thinking

This book gives you ten full Grade 8 KSA math practice tests. Each round is built to help you notice structure, compare quantities, use linear reasoning, handle real numbers, and explain your thinking with care.

Grade 8 standards focus: This page supports **Transformations on the Coordinate Plane** (KY.8.G.3): Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. It also prepares you for **Slope as Rate of Change** (KY.8.EE.8): Understand slope as a constant rate of change between two quantities.

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 ten-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 a proportion, equation, diagram, number line, 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.

Grade 8 standards focus: Keep the routine connected to **The Pythagorean Theorem** (KY.8.G.6): Explain a proof of the Pythagorean Theorem and its converse. Another recurring target is **What Is a Function?** (KY.8.F.1): Understand that a function is a rule that assigns to each input exactly one output.

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?

Ten Kentucky KSA tests, 400 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Linear relationships, integer exponents, scientific notation, real-number reasoning, and careful reading.
Tests 4–6	Expressions, equations, inequalities, transformations, geometry, and multi-step problem solving.
Tests 7–9	Data analysis, probability, mixed review, stamina, and choosing efficient strategies.
Test 10	A final Kentucky round to show growth across the whole book.
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.

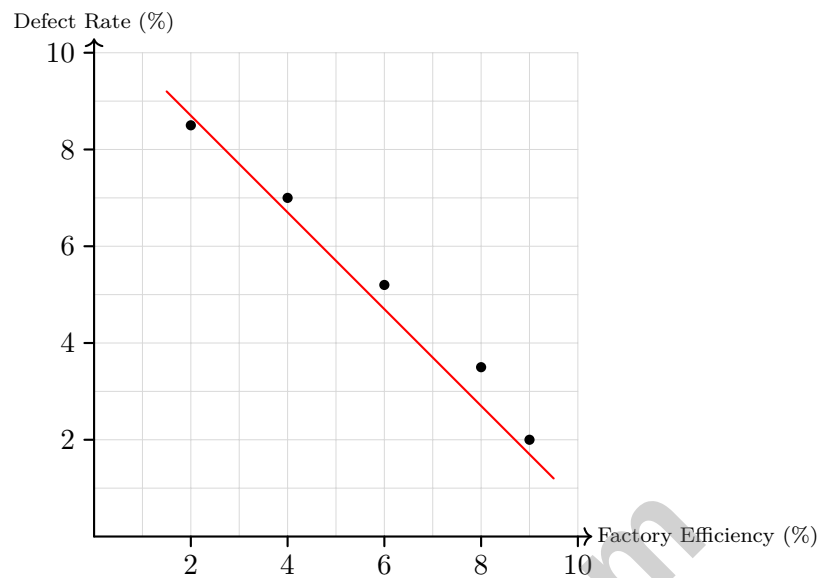
Grade 8 standards focus: Use these habits while practicing **Volume of Cylinders, Cones, and Spheres** (KY.8.G.9): Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. The same routine helps with **Sketching and Describing Function Graphs** (KY.8.F.4): Describe qualitatively the functional relationship between two quantities by analyzing a graph. Sketch a graph that exhibits qualitative features described verbally.



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1)

A factory tracks production efficiency versus defect rate. What does the strong negative slope tell you?

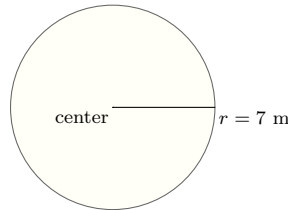
- ☐ A. Higher efficiency causes fewer defects
- ☐ B. As efficiency increases, the defect rate tends to decrease substantially
- ☐ C. Defects are always zero when efficiency is high
- ☐ D. The relationship is unrelated

2) A student borrows \$1,500 for college at 4% simple interest and repays over 10 years. What is the total amount owed?



- 3) A student calculates the lateral surface area of a square pyramid with base side 10 cm and altitude (height) 8 cm as: $\text{Lateral} = 4 \times \frac{1}{2}(10)(8) = 160 \text{ cm}^2$. What is the error?

- ☐ A. Used altitude instead of slant height ☐ C. Used diameter instead of radius
☐ B. Forgot to multiply by 4 triangles ☐ D. The calculation is correct



4)

A sphere with radius 7 m is shown. What is its approximate volume? (Use $\pi \approx 3.14$.)

- ☐ A. 615.44 m³ ☐ C. 1436.03 m³
☐ B. 1230.88 m³ ☐ D. 1916.8 m³
- 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) If a square has side length $(x + 3)$, and a smaller square inside has side length $(x - 3)$, what is the difference in their areas?

- ☐ A. 6 ☐ C. $12x$
☐ B. 9 ☐ D. x^2



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7) Consider the set $\{(a, 1), (b, 2), (c, 1), (d, 3)\}$ where a, b, c, d are distinct. Is this a function?

- ☐ A. No, because output 1 appears twice. ☐ D. Yes, output can repeat; each input must be unique.
- ☐ B. Yes, because all inputs are distinct.
- ☐ C. No, because there are four pairs.

8) Function $p(x) = \frac{3}{2}x - 4$ and the table for function q : $(0, 2), (2, 5), (4, 8)$. Which has a steeper slope?

x	0	2	4
$q(x)$	2	5	8

- ☐ A. $p(x)$ ☐ C. Both have equal slopes.
- ☐ B. $q(x)$ ☐ D. Cannot be determined.

9) If $3^a \cdot 3^5 = 3^{12}$, what is the value of a ?

10) Which represents a LINEAR function?

- ☐ A. $y = 9x^2 - 4$ ☐ C. $y = \sqrt{3x}$
- ☐ B. $y = -12x - 1$ ☐ D. $y = \frac{6}{x}$

11) A line passes through $(0.5, 3)$ and $(2, 9)$. What is the slope?

- ☐ A. 2 ☐ C. 6
- ☐ B. 4 ☐ D. $\frac{1}{4}$



1) Which is the best estimate of π ?

☐ A. 2.14

☐ C. 3.14

☐ B. 3.0

☐ D. 3.5

2) 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

☐ C. The y-intercept is 8 units above the origin

☐ B. The test score when 8 hours are studied

☐ D. For each point increase in test score, hours studied increases by 8

3) A 300 mL mixture contains 40% juice and 60% water. How much pure juice must be added to make the mixture 60% juice?

☐ A. 75 mL

☐ C. 150 mL

☐ B. 100 mL

☐ D. 200 mL

4) If $h(x) = 3x$, what is $h(-2)$?

☐ A. -6

☐ C. -2

☐ B. 6

☐ D. 3

5) If you divide an irrational number by a nonzero rational number, the result is:

☐ A. Always rational

☐ C. Always a whole number

☐ B. Could be either

☐ D. Always irrational



- 6) The elevation rises 500 feet over a horizontal distance of 2000 feet. What is the slope?

- 7) Convert $0.9\overline{3}$ to a fraction in simplest form.

☐ A. $\frac{93}{100}$
☐ B. $\frac{9}{30}$

☐ C. $\frac{93}{99}$
☐ D. $\frac{84}{90} = \frac{14}{15}$

- 8) To the nearest tenth, which is the best estimate for $\sqrt{56}$?

☐ A. 7.0
☐ B. 6.0

☐ C. 8.0
☐ D. 7.5

- 9) How many times greater is 8×10^7 than 2×10^5 ?

☐ A. 4 times
☐ B. 40 times

☐ C. 400 times
☐ D. 4,000 times

- 10) A rectangular prism has length $\frac{3}{2}$ ft, width 1 ft, and height $\frac{1}{2}$ ft. What is its surface area?

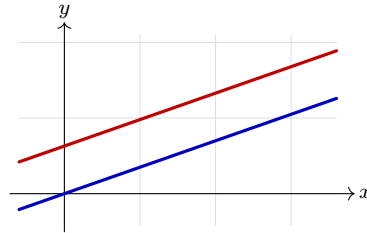
☐ A. $\frac{11}{4}$ ft²
☐ B. $\frac{11}{2}$ ft²

☐ C. 7 ft²
☐ D. $\frac{15}{2}$ ft²



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- 1) Two lines on a graph do not intersect and are not the same line. How many solutions does the system have?



- ☐ A. No solution
- ☐ B. Exactly one solution
- ☐ C. Exactly two solutions
- ☐ D. Infinitely many solutions
- 2) In $y = x^2 - 5$, what is the exponent on x ?

- 3) What is $\sqrt{225}$?

- ☐ A. 13
- ☐ B. 14
- ☐ C. 15
- ☐ D. 16
- 4) A stock price drops from \$45 to \$30 over 10 days. What is the slope (rate of change per day)?
- ☐ A. $-\$1.50$ per day
- ☐ B. $-\$3$ per day
- ☐ C. $\$1.50$ per day
- ☐ D. $\$0.50$ per day



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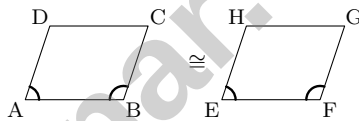
5) A piggy bank holds 25 coins consisting of nickels (5¢) and dimes (10¢). The total value is \$1.70. How many nickels are in the bank?

- ☐ A. 10 ☐ C. 12
☐ B. 16 ☐ D. 8

6) A distance formula for a moving object is $d = 45t$, where d is distance in miles and t is time in hours. What is the slope, and what does it represent?

- ☐ A. Slope is 45; represents the speed in mph ☐ C. Slope is 1; represents constant velocity
☐ B. Slope is 45; represents the distance traveled ☐ D. Slope is 0; the object is stationary

7) Two congruent quadrilaterals are shown. A student reasons: "Since two angles are equal, the quadrilaterals must be congruent." What is wrong with this reasoning?



- ☐ A. Two equal angles alone do NOT guarantee congruence ☐ C. The student's reasoning is correct; angle equality proves congruence
☐ B. Equal angles guarantee equal side lengths ☐ D. Congruent figures never have equal angles
- 8) A segment has endpoints $E(2, 3)$ and $F(5, 7)$. After a translation, E maps to $E'(-1, 2)$. Where does F map to?

- ☐ A. (2, 6) ☐ C. (2, 4)
☐ B. (4, 8) ☐ D. (1, 6)



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 B is correct.** (KY.8.SP.2) A strong negative slope shows a strong inverse association: better efficiency correlates with fewer defects.
- 2) **The correct answer is \$1,800.** (KY.8.G.9) Interest: $I = 1500 \times 0.04 \times 10 = \600 . Total: $1500 + 600 = \$1,800$.
- 3) **Choice A is correct.** (KY.8.G.9) Lateral surface area requires the slant height (from apex to midpoint of base edge), not the altitude (perpendicular distance from apex to base center). The altitude is 8 cm, but the slant height is $\sqrt{8^2 + 5^2} = \sqrt{89} \approx 9.4$ cm. Using altitude is a common error.
- 4) **Choice C is correct.** (KY.8.G.9) $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 343 \approx 1436.03 \text{ m}^3$.
- 5) **Choice C is correct.** (KY.8.EE.4) Correct rule: multiply coefficients and add exponents. The student got $2 \times 4 = 8$ correct, but mistakenly multiplied $3 \times 4 = 12$ instead of adding $3 + 4 = 7$.
- 6) **Choice C is correct.** (KY.8.EE.7) Difference of squares: $(x+3)^2 - (x-3)^2 = [(x+3) + (x-3)][(x+3) - (x-3)] = (2x)(6) = 12x$.
- 7) **Choice D is correct.** (KY.8.F.1) Multiple inputs can map to the same output. Since each distinct input (a, b, c, d) appears exactly once, the relation is a function.
- 8) **Choice C is correct.** (KY.8.F.2) Slope of p : $\frac{3}{2} = 1.5$. From table q : $(5-2)/(2-0) = 3/2 = 1.5$. Both have slope 1.5.
- 9) **The correct answer is 7.** (KY.8.EE.1) Using the product rule, $a + 5 = 12$, so $a = 7$. Verification: $3^7 \cdot 3^5 = 3^{12}$.
- 10) **Choice B is correct.** (KY.8.F.3) Only $y = -12x - 1$ is in the form $y = mx + b$ with $m = -12$ and $b = -1$. The others involve squares, square roots, and reciprocals.
- 11) **Choice B is correct.** (KY.8.F.4) Slope: $m = \frac{9-3}{2-0.5} = \frac{6}{1.5} = 4$.
- 12) **Choice A is correct.** (KY.8.F.4) The elevator goes down (negative slope), pauses (flat line), then up (positive slope). This is a piecewise linear function with three distinct segments.
- 13) **Choice D is correct.** (KY.8.G.2) Reflection is a rigid motion that preserves side lengths. The reflected rhombus has sides of 8 cm.
- 14) **Choice A is correct.** (KY.8.G.5) Corresponding angles are equal: $6y + 12 = 3y + 51$, so $3y = 39$ and $y = 13$.
- 15) **Choice B is correct.** (KY.8.G.6, KY.8.G.7) Check: $6^2 + 8^2 = 36 + 64 = 100 = 10^2$. This is a scaled 3-4-5 triple (all multiplied by 2).
- 16) **Choice A is correct.** (KY.8.G.8) Correct method: $d = \sqrt{(3-0)^2 + (0-4)^2} = \sqrt{9+16} = \sqrt{25} = 5$ units. The student used addition instead of the Pythagorean Theorem.
- 17) **Choice A is correct.** (KY.8.G.7) Angles on a straight line sum to 180° . So $x + 2x + 3x = 180$, which gives $6x = 180$ and $x = 30^\circ$.
- 18) **The correct answer is A,D.** (KY.8.G.8) A is correct: P's smaller MAD (3 vs 7) means values cluster more tightly around the mean. D is correct: we are told both have 10 values. B is incorrect: P has less variability. C is not guaranteed by MAD alone, and E is incorrect because both means are equal at 50.
- 19) **Choice B is correct.** (KY.8.G.7) Rectangle area = $6 \times 5 = 30 \text{ m}^2$. Triangle area = $\frac{1}{2} \times 6 \times 2 = 6 \text{ m}^2$. Total = $30 + 6 = 36 \text{ m}^2$.
- 20) **Choice C is correct.** (KY.8.G.5) Number of sides = $\frac{360}{18} = 20$.
- 21) **Choice B is correct.** (KY.8.SP.1) A strong linear correlation with tight clustering around the line of best fit allows the most accurate predictions.
- 22) **Choice A is correct.** (KY.8.SP.3) The slope (0.25) represents the rate of change: for every 1 GB used, cost increases by \$0.25.
- 23) **Choice B is correct.** (KY.8.SP.3) Marginal relative frequency for IT employees: row total divided by grand total = $\frac{180}{500} = 0.36$.
- 24) **Choice D is correct.** (KY.8.EE.2) $\sqrt{200} = \sqrt{100 \times 2} = 10\sqrt{2} \approx 10 \times 1.41 = 14.1$. So 14 is the closest integer.
- 25) **Choice C is correct.** (KY.8.EE.5) Unit rate $k = \frac{48}{2} = 24$ bacteria per hour.
- 26) **Choice C is correct.** (KY.8.EE.8) The second equation is exactly 2 times the first equation. They represent the same line, so the system has infinitely many solutions.



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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 10 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!

This book includes **10** full-length Math practice tests and **2** online tests to help Grade 8 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.



THIS BOOK INCLUDES:

10 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answers & Explanations



MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

WHAT YOU'LL GAIN



Build Confidence

Practice regularly to feel prepared and test-ready.



Master Key Skills

Develop strong math skills and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Strategies

Learn proven strategies to approach every question with confidence.



Boost Performance

Apply your knowledge and achieve your best score!

TOPICS COVERED

- | | |
|---------------------------|----------------------------|
| ✓ The Number System | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Data Analysis |
| ✓ Inequalities | ✓ Measurement |
| ✓ Functions | ✓ Pythagorean Theorem |
| ✓ Geometry | ✓ Surface Area & Volume |
| ✓ Ratios & Proportions | ✓ And More! |



2 ONLINE TESTS

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



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!



PRACTICE
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY