

KENTUCKY KSA

GRADE 8 MATH

PRACTICE TESTS

5

PRINTED
TESTS



2

 ONLINE
TESTS

**Standards Aligned
Problem Solving For
Comprehensive Assessment Programs**



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



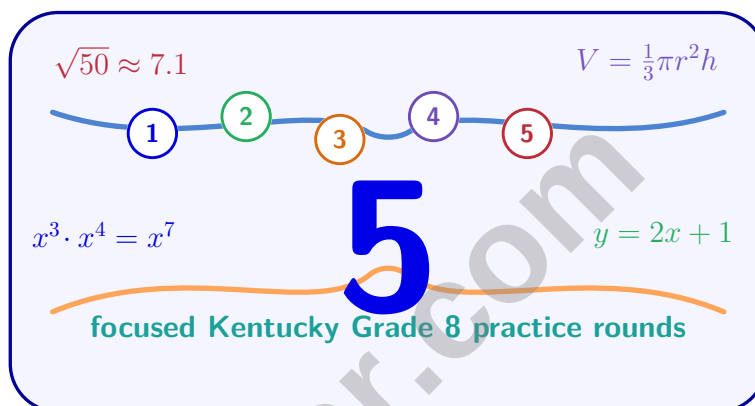
$$a^2 + b^2 = c^2$$



$$y = mx + b$$

5 Kentucky KSA Grade 8 Math Practice Tests

Clear KSA Prep for Linear Models, Geometry, and Data



Five 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!

Five focused rounds for sharper KSA math thinking

This book gives you five 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 five-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?

Five KSA tests, 200 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–5	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.

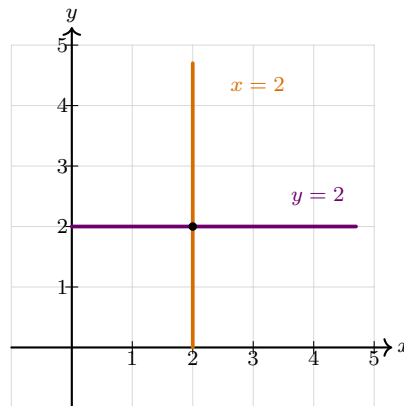


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& answers

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- 1) Graph the two equations and identify what type of solution the system has.



- ☐ A. No solution
 ☐ C. Exactly one solution at (2, 2)
- ☐ B. Infinitely many solutions
 ☐ D. Two solutions
- 2) Compare the values: $\sqrt{36}$ and $\sqrt[3]{216}$. Which is larger?
- ☐ A. $\sqrt{36}$ is larger
 ☐ C. They are equal
- ☐ B. $\sqrt[3]{216}$ is larger
 ☐ D. Cannot be determined
- 3) A fitness trainer charges a client based on the number of sessions attended. The data table shows:

Sessions	2	5	8
Cost (\$)	60	150	240

What is the slope (cost per session)?

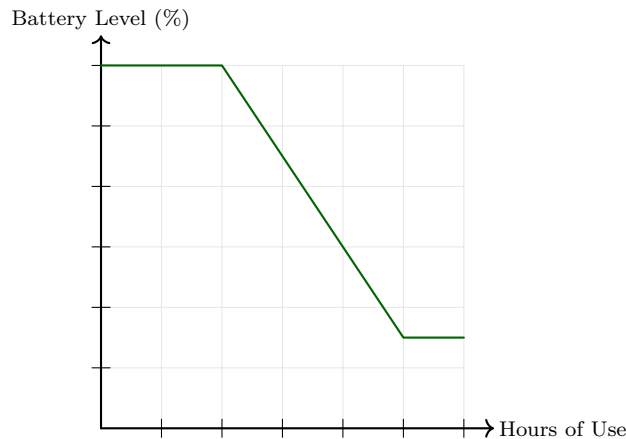
- ☐ A. \$30 per session
 ☐ C. \$20 per session
- ☐ B. \$60 per session
 ☐ D. \$150 per session



- 4) A chemist mixes a 30% acid solution with an 80% acid solution to make 100 mL of a 50% solution. Let x = volume of 30% solution (mL). Which equation represents the acid content?
- ☐ A. $0.3x + 0.8(100 - x) = 0.5(100)$ ☐ C. $30x + 80x = 50 \cdot 100$
☐ B. $0.3(100 - x) + 0.8x = 50$ ☐ D. $0.3x + 0.8x = 50$
- 5) A savings account has $S(n) = 50 + 10n$ dollars after n weeks. After how many weeks will the account have \$150?
- ☐ A. 5 weeks ☐ C. 15 weeks
☐ B. 10 weeks ☐ D. 20 weeks
- 6) Which data scenario would MOST closely match a linear model $y = 0.5x + 15$?
- ☐ A. Bacteria population doubling every hour ☐ C. Height of a ball after it bounces (decreasing bounce heights)
☐ B. Water height in a tank filling at a constant rate ☐ D. Compound interest in a savings account



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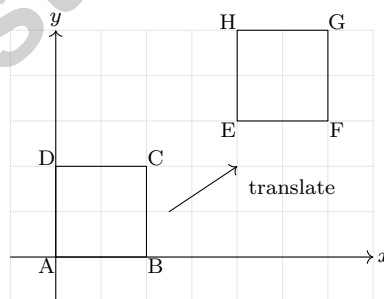


7)

A smartphone battery charges to 100%, remains fully charged during 2 hours of non-use, then drains steadily over 3 hours of active use. Which statement is true?

- ☐ A. The phone uses battery only during the first 2 hours
☐ B. The battery drains faster during non-use
☐ C. The battery level is constant from 0 to 2 hours
☐ D. The phone battery reaches 0% at 6 hours

8) Which sequence of rigid motions would map square ABCD onto square EFGH positioned elsewhere on the coordinate plane?



- ☐ A. Rotation only
☐ B. Translation only
☐ C. Reflection and translation
☐ D. Dilation and rotation



1) When rolling two six-sided dice, what is the probability of rolling a sum of 7?

- ☐ A. $\frac{1}{5}$
☐ B. $\frac{1}{6}$

- ☐ C. $\frac{1}{12}$
☐ D. $\frac{7}{36}$

2) What is $\sqrt{289}$?

- ☐ A. 16
☐ B. 19

- ☐ C. 18
☐ D. 17

3) Which system has infinitely many solutions?

- ☐ A. $y = x + 2$ and $y = x - 2$
☐ B. $y = x + 2$ and $y = 2x + 2$

- ☐ C. $y = x + 2$ and $y = -x + 2$
☐ D. $y = x + 2$ and $2y = 2x + 4$

4) A rectangle has length ℓ and fixed width 5. Which equation expresses area A as a function of length?

- ☐ A. $A = 5\ell$
☐ B. $A = \ell(10 - \ell)$

- ☐ C. $A = 10\ell + 5$
☐ D. $A = \ell^2$

5) A student's test score improves by 3 points for every hour of study. What is the slope if hours are on the x -axis?

- ☐ A. $\frac{1}{3}$
☐ B. -3

- ☐ C. 6
☐ D. 3

6) A gym offers two membership plans. Plan A costs \$50 upfront plus \$10 per month. Plan B costs \$20 per month with no upfront fee. After how many months do the total costs equal?

- ☐ A. 3 months
☐ B. 4 months

- ☐ C. 5 months
☐ D. 6 months

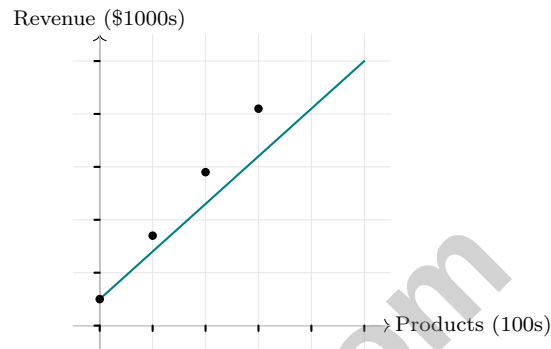


7) The temperature $T(h)$ in degrees Celsius at height h km above sea level is $T(h) = 25 - 6h$. What is $T(2)$?

☐ A. 37

☐ C. 19

☐ B. 13

☐ D. 50


8)

A company's revenue model is $R = 12x + 500$, where R is revenue and x is the number of products sold. If revenue is \$8,900, how many products were sold?

☐ A. 525

☐ C. 675

☐ B. 700

☐ D. 725

9) Which of the following relations is a function?

☐ A. $\{(1, 2), (1, 3), (2, 4)\}$
☐ C. $\{(2, 5), (2, 6), (3, 7)\}$
☐ B. $\{(1, 2), (2, 3), (3, 4)\}$
☐ D. $\{(4, 1), (4, 2), (4, 3)\}$

10) Temperature functions: Oven $T_{\text{oven}}(m) = 15m + 70$ (degrees, starting at 70). Freezer T_{freeze} shown in table: $(0, -5), (2, -15), (4, -25)$. At 10 minutes, which is warmer?

m	0	2	4
T_{freeze}	-5	-15	-25

☐ A. Oven is warmer

☐ C. Same temperature

☐ B. Freezer is warmer

☐ D. Cannot be determined


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- 1) 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. $\binom{20}{2} = 190$

- 2) A freelancer's gross income is \$5,000/month. After federal tax (15%), state tax (5%), and self-employment tax (15%), what is the net income?

Gross Income \$5,000
Total Taxes 35%
Net Income ?

- ☐ A. \$4,250
 ☐ C. \$4,000
☐ B. \$3,500
 ☐ D. \$3,250
- 3) Simplify and estimate $\sqrt{2} \times \sqrt{8}$.
- ☐ A. Approximately 4.5
 ☐ C. Approximately 3.4
☐ B. Exactly 8
 ☐ D. Exactly 4
- 4) A scientist measures a particle with mass $m = 10^{-6}$ kilograms. Rewrite this as a fraction.
- ☐ A. $\frac{1}{6}$ kg
 ☐ C. 10^6 kg
☐ B. -10^6 kg
 ☐ D. $\frac{1}{10^6}$ kg



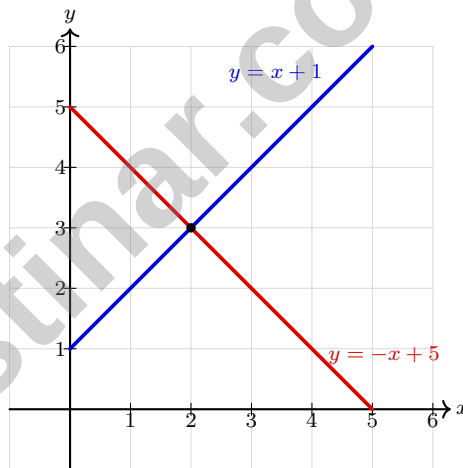
- 5) A cone has a radius of 6 inches and a height of 10 inches. Find its volume using $V = \frac{1}{3}\pi r^2 h$ with $\pi \approx 3.14$.

- 6) What is $\sqrt{361}$?

- ☐ A. 18
☐ B. 21

- ☐ C. 20
☐ D. 19

- 7) Which ordered pair is the solution to the system shown on the graph?



- ☐ A. (3, 4)
☐ B. (1, 2)

- ☐ C. (2, 3)
☐ D. $(\frac{5}{2}, \frac{7}{2})$



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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.EE.8) A horizontal line $y = 2$ and a vertical line $x = 2$ intersect at exactly one point: $(2, 2)$.
- 2) **Choice C is correct.** (KY.8.EE.2) $\sqrt{36} = 6$ and $\sqrt[3]{216} = 6$, so they are equal.
- 3) **Choice A is correct.** (KY.8.EE.8) Using $(2, 60)$ and $(5, 150)$: slope $= \frac{150 - 60}{5 - 2} = \frac{90}{3} = \30 per session.
- 4) **Choice A is correct.** (KY.8.EE.7) The 30% solution contributes $0.3x$ mL of pure acid. The 80% solution contributes $0.8(100 - x)$ mL. Total pure acid must equal $0.5(100) = 50$ mL. Only option A is correct.
- 5) **Choice B is correct.** (KY.8.F.3) Solve $50 + 10n = 150$ for n : subtract 50 to get $10n = 100$, so $n = 10$ weeks.
- 6) **Choice B is correct.** (KY.8.SP.3) Only (B) changes at a constant positive rate, matching a line with positive slope. (A) and (D) are exponential, and (C) is not a steady linear pattern.
- 7) **Choice C is correct.** (KY.8.F.4) The graph shows a flat segment at 100% from hours 0 to 2, indicating no charge change during idle time. From hour 2 onward, the slope is negative (draining). Option D is false because the battery approaches 1.5%, not 0%.
- 8) **Choice B is correct.** (KY.8.G.2) Comparing the two squares: ABCD (lower left on the grid) and EFGH (upper right) have identical side lengths and the same orientation. The vertices align: A is at $(0, 0)$ and E is at $(4, 3)$, indicating a translation 4 units right and 3 units up. Translation is a rigid motion that preserves all distances and angles, so no rotation or reflection is needed.
- 9) **Choice B is correct.** (KY.8.G.3) The rule for 90° counterclockwise rotation is $(x, y) \rightarrow (-y, x)$. So $(6, 8) \rightarrow (-8, 6)$.
- 10) **Choice B is correct.** (KY.8.G.5) The exterior angle at C is 123° , so the interior angle $\angle ACD = 180 - 123 = 57^\circ$.
- 11) **Choice B is correct.** (KY.8.G.6, KY.8.G.7) From $(\sqrt{7})^2 + 3^2 = c^2$, we get $7 + 9 = 16$, so $c = \sqrt{16} = 4$.
- 12) **Choice B is correct.** (KY.8.G.8) $d = \sqrt{(10 - 1)^2 + (13 - 1)^2} = \sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = 15$.
- 13) **Choice C is correct.** (KY.8.G.7) A linear pair is supplementary. Let the smaller angle be x . Then $x + 2x = 180$, so $3x = 180$ and $x = 60^\circ$. The larger angle is $2 \times 60 = 120^\circ$.
- 14) **Choice C is correct.** (KY.8.G.9) $V = \frac{1}{3} \times B \times h \Rightarrow 500 = \frac{1}{3} \times 100 \times h \Rightarrow h = 15$ m.
- 15) **Choice B is correct.** (KY.8.G.7) The square area is $20 \times 20 = 400$ m². Four corner triangles are removed, and each has area $\frac{1}{2} \times 3 \times 3 = 4.5$ m². The octagon area is $400 - 4(4.5) = 382$ m².
- 16) **Choice A is correct.** (KY.8.G.5) The sum of angles in a pentagon is 540° . So $\angle E = 540 - 100 - 120 - 110 - 130 = 80^\circ$.
- 17) **The correct answer is \$35.** (KY.8.F.1) Compute $25 + 0.10(100) = 35$.
- 18) **The correct answer is -2 .** (KY.8.F.2) Slope: $(14 - 2)/(4 - 1) = 4$. From $(1, 2)$: $2 = 4(1) + b \Rightarrow b = -2$.
- 19) **Choice B is correct.** (KY.8.SP.1) A U-shaped curve represents a nonlinear relationship. The direction changes, so it is not a simple linear correlation.
- 20) **The correct answer is B, C.** (KY.8.EE.7) $(x + 6)^2 = (x + 6)(x + 6) = x^2 + 12x + 36$. Choice B is the expanded form, and choice C is the factored form. Choice A ignores the middle term. Choice D has an error. Choice E is a different factorization that does not equal $(x + 6)^2$.
- 21) **Choice A is correct.** (KY.8.SP.3) This is a row-conditional relative frequency. Among pizza-likers (30 total), 15 are girls: $\frac{15}{30} = 0.5 = 50\%$.
- 22) **Choice B is correct.** (KY.8.G.8) Original data has $MAD = 0$ (all identical). Adding a value equal to the mean keeps all deviations at 0. New $MAD = 0$.
- 23) **Choice B is correct.** (KY.8.NS.2) Lead attendee: 12 choices. Backup: 11 remaining choices. Using permutation: $\frac{12!}{10!} = 12 \times 11 = 132$.
- 24) **Choice B is correct.** (KY.8.G.9) These are mutually exclusive. $P(5 \text{ or } 9) = P(5) + P(9) = \frac{4}{52} + \frac{4}{52} = \frac{8}{52}$.
- 25) **Choice B is correct.** (KY.8.SP.2) A near-zero slope indicates weak or no correlation between the variables.
- 26) **Choice A is correct.** (KY.8.G.4) $20 \times 0.4 = 8$ cm. A scale factor between 0 and 1 creates a reduction.
- 27) **Choice C is correct.** (KY.8.NS.1) Since $6^2 = 36$ and $6.3^2 = 39.69 \approx 40$, we have $\sqrt{40} \approx 6.3$. Also, $7^2 = 49 > 40$.



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Hi, Persistent Problem Solver!

◇ Some Grade 8 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 5 full Grade 8 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 8 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

Practice Today. Succeed Tomorrow!

Give your child the confidence and skills they need with **5 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 |
| ✓ Measurement & Data | ✓ And More! |

5
PRINTED
TESTS



2 ONLINE
TESTS



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