

9

Kentucky

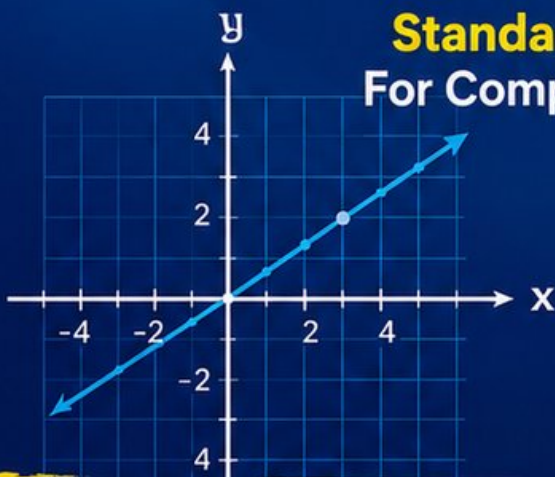
KSA

Grade 8

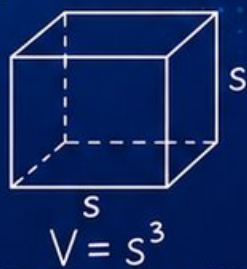
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



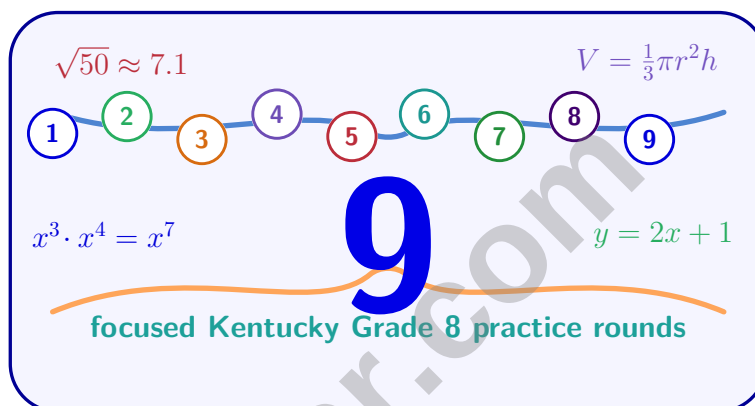
$$2x + 3y = 12$$
$$y = mx + b$$

**9** PRINTED
TESTS**2** ONLINE
TESTS

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

9 Kentucky KSA Grade 8 Math Practice Tests

Focused Kentucky Review for Linear Models, Transformations, Statistics, and Volume



Nine 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!

Nine focused rounds for sharper KSA math thinking

This book gives you nine 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 nine-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?

Nine KSA tests, 360 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.
Tests 7–9	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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1) Angles A and B are complementary. If $A = 38^\circ$, what is the measure of angle B ?

☐ A. 52°

☐ C. 142°

☐ B. 62°

☐ D. 128°

2) Express 356,000 in scientific notation.

3) Using $\sqrt{2} \approx 1.41$, estimate $3 + \sqrt{2}$ to the nearest hundredth.

4) Under which transformation would the image of a point (x, y) always lie on the opposite side of the origin from the original point?

☐ A. Reflection across the x -axis

☐ C. 180° rotation about the origin

☐ B. Reflection across the y -axis

☐ D. Translation 5 units right

5) A line passes through $(1, 5)$ with slope $\frac{1}{2}$. What is the y -intercept?

☐ A. 4

☐ C. 5

☐ B. $\frac{3}{2}$

☐ D. $\frac{9}{2}$



6) You invest \$4,000 in a 3-year CD (Certificate of Deposit) at 3% simple interest. What is your final amount?

☐ A. \$4,120

☐ C. \$4,240

☐ B. \$4,180

☐ D. \$4,360

7) Compute $(3.6)^2$ for comparison with $\sqrt{13}$.

8) Which expression cannot be simplified using exponent laws?

☐ A. $a^3 \cdot a^2$

☐ C. $a^3 + a^2$

☐ B. $\frac{b^3}{b^2}$

☐ D. $(c^2)^3$

9) Which equation has **no solution**?

☐ A. $2x + 5 = 2x + 5$

☐ C. $5x - 2 = 2x + 4$

☐ B. $4x + 1 = x + 7$

☐ D. $3x + 4 = 3x + 7$

10) Solve: $4x - 9 \leq 3x + 1$

☐ A. $x \leq 10$

☐ C. $x \leq -10$

☐ B. $x \geq 10$

☐ D. $x \geq -10$

11) A student graphs $x \leq -1$ but draws a DASHED line instead of solid. What is the consequence?

☐ A. The boundary point $x = -1$ is excluded from the solution

☐ C. The shading direction is flipped

☐ D. The inequality changes to $x > -1$

☐ B. The boundary point $x = -1$ is still included



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12) For the relation to be a function, which y -value should replace the question mark?

$$\{(1, 4), (2, 8), (3, ?), (3, 12)\}$$

☐ A. 12

☐ B. 10

☐ C. This is impossible; the relation cannot be a function.

☐ D. 8

13) Compare verbal descriptions: Function f : “starts at 100, increases by 8 per unit.”
Function g : “starts at 95, increases by 10 per unit.” After 20 units, which is larger?

☐ A. f is larger

☐ B. g is larger

☐ C. Both equal

☐ D. Cannot determine

14) The table shows the distance traveled over time. Is this a linear relationship?

Time (h)	1	2	3	4
Distance (mi)	60	120	180	240

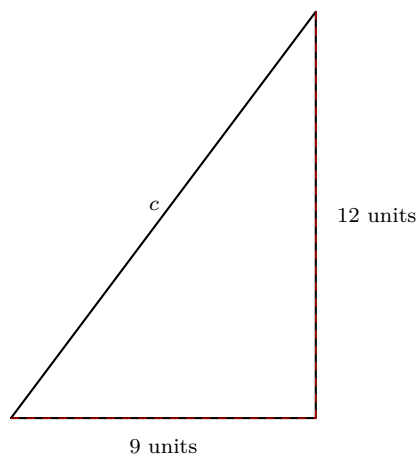
☐ A. No, time goes up to 4

☐ B. Yes, the first differences are constant (60 mi)

☐ C. No, the distances double

☐ D. Yes, the ratio of distance to time is not constant


- 1) A right triangle has legs of 9 units and 12 units. What is the length of the hypotenuse?



- ☐ A. 15 units ☐ C. $\sqrt{200}$ units
☐ B. 21 units ☐ D. 3 units
- 2) The height of a ball (in meters) t seconds after being thrown is $h(t) = 20t - 5t^2$. Find $h(2)$.

- 3) A pyramid is half-filled with sand. The pyramid's total volume is 360 ft^3 . How much sand is in the pyramid?

- ☐ A. 90 ft^3 ☐ C. 180 ft^3
☐ B. 120 ft^3 ☐ D. 240 ft^3



4)

	1	2	3
Red	R1	R2	R3
Blue	B1	B2	B3

The table above shows all possible outcomes when selecting a color and a number. How many total outcomes are there?

☐ A. 5☐ C. 8☐ B. 6☐ D. 9

5) If each interior angle of a regular polygon is 144° , how many sides does it have?

☐ A. 8☐ C. 10☐ B. 9☐ D. 12

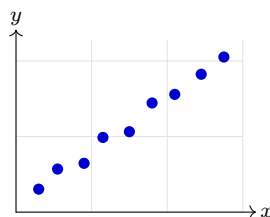
6) A biologist records the relationship between a bacteria colony's age (days) and size (cells). The model is $S = 1500 \cdot 1.2^t$. This is NOT a linear model. Why?

☐ A. The growth rate (slope) is constant across all days☐ C. The relationship is between days and cells, so it must be linear☐ B. The number of new cells added increases each day (exponential growth, not constant rate)☐ D. Exponential models always have more accuracy than linear ones

7) Among 160 gym members, 96 have a personal trainer and 64 do not. Of those with a trainer, 72 achieved their fitness goals. What is the joint relative frequency of members with a trainer who achieved goals?

☐ A. 0.36☐ C. 0.60☐ B. 0.45☐ D. 0.75

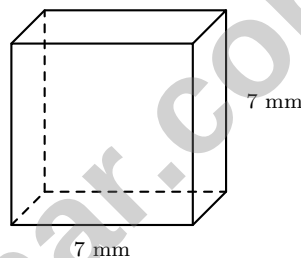
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1)

A scatter plot shows the relationship between advertising spending (in hundreds of dollars) and product sales (in units). The data points form a tight cluster around an imaginary upward line. What does this indicate?

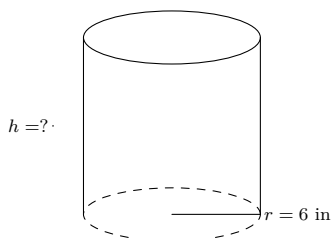
- ☐ A. Weak positive correlation ☐ C. Weak negative correlation
☐ B. No correlation ☐ D. Strong positive correlation



2)

The cube shown has an edge length of 7 mm. Calculate its surface area.

- ☐ A. 49 mm^2 ☐ C. 294 mm^2
☐ B. 196 mm^2 ☐ D. 343 mm^2



3)

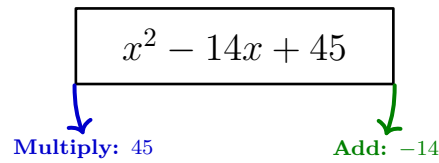
A cylinder has radius 6 in and volume 1695.6 in^3 . What is its height? (Use $\pi \approx 3.14$.)

- ☐ A. 7.5 in ☐ C. 10 in
☐ B. 15 in ☐ D. 20 in



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4) Factor $x^2 - 14x + 45$.



☐ A. $(x - 5)(x - 9)$

☐ C. $(x - 10)(x - 4)$

☐ B. $(x - 15)(x + 1)$

☐ D. $(x - 45)(x + 1)$

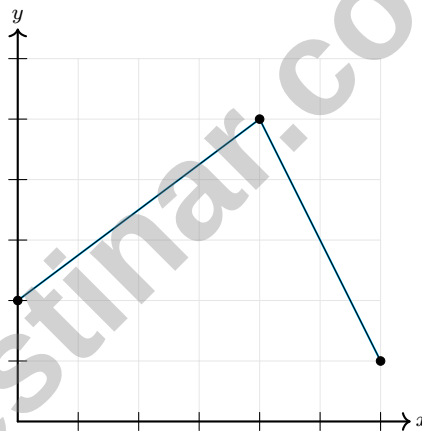
5) A line has slope -2 and y -intercept 5 . Which equation represents this line?

☐ A. $y = -2x + 5$

☐ C. $y = 5x - 2$

☐ B. $y = 2x + 5$

☐ D. $y = -2x - 5$



6)

Which set of statements is true about the piecewise linear function?

☐ A. It increases from $x = 0$ to $x = 4$, decreases from $x = 4$ to $x = 6$, and has maximum value 5
☐ B. It has a zero at $x = 3$, decreases from $x = 4$ to $x = 6$, and has y -intercept 5
☐ C. It increases from $x = 0$ to $x = 6$, has maximum value 6 , and has y -intercept 2
☐ D. It decreases from $x = 0$ to $x = 4$, has a zero at $x = 3$, and has maximum value 2


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.7) Complementary angles sum to 90° . So $B = 90 - 38 = 52^\circ$.
- 2) **The correct answer is 3.56×10^5 .** (KY.8.EE.3) Move the decimal 5 places left to get 3.56; since the original number is greater than 1, the exponent is positive 5.
- 3) **The correct answer is 4.41.** (KY.8.NS.1) Compute $3 + 1.41 = 4.41$.
- 4) **Choice C is correct.** (KY.8.G.1) A 180° rotation maps $(x, y) \rightarrow (-x, -y)$, placing the image on the opposite side of the origin. Single reflections across axes do not have this property.
- 5) **Choice D is correct.** (KY.8.EE.6) Using $y = mx + b$: $5 = \frac{1}{2}(1) + b$, so $5 = \frac{1}{2} + b$, thus $b = \frac{9}{2}$.
- 6) **Choice D is correct.** (KY.8.G.9) Interest: $I = 4000 \times 0.03 \times 3 = \360 . Final: $4000 + 360 = \$4,360$.
- 7) **The correct answer is 12.96.** (KY.8.NS.2) $(3.6)^2 = 12.96$, which is slightly less than 13.
- 8) **Choice C is correct.** (KY.8.EE.1) Addition/subtraction of powers requires like terms with same base AND exponent. $a^3 + a^2$ are not like terms.
- 9) **Choice D is correct.** (KY.8.EE.7) A: Identity (infinitely many). B: Subtract $3x$: $4 = 7$ (false, no solution). C and D: Unique solutions.
- 10) **Choice A is correct.** (KY.8.EE.7) Subtract $3x$: $x - 9 \leq 1$. Add 9: $x \leq 10$.
- 11) **Choice A is correct.** (KY.8.G.8) A DASHED line means the boundary is NOT included, changing the meaning to $x < -1$. The solid line is essential for including the boundary in $\leq$ or $\geq$ inequalities.
- 12) **Choice A is correct.** (KY.8.F.1) Input 3 appears twice. For the relation to be a function, both ordered pairs with input 3 must have the same output, so the question mark must be 12.
- 13) **Choice B is correct.** (KY.8.F.2) $f(20) = 100 + 8(20) = 260$. $g(20) = 95 + 10(20) = 295$. Since $295 > 260$, g is larger.
- 14) **Choice B is correct.** (KY.8.F.3) The differences are $120 - 60 = 60$, $180 - 120 = 60$, $240 - 180 = 60$. Constant differences mean this is a linear relationship with a speed of 60 mi/h.
- 15) **Choice A is correct.** (KY.8.F.4) y -intercept is 2 (at $x = 0$). Slope is $\frac{6-2}{4-0} = \frac{4}{4} = 1$.
- 16) **Choice A is correct.** (KY.8.F.4) A y -intercept occurs where $x = 0$, giving point $(0, -3)$. An x -intercept occurs where $y = 0$, giving point $(2, 0)$.
- 17) **Choice C is correct.** (KY.8.G.2) Side $AC = 11$ in is the longest side in triangle ABC. In congruent triangle DEF, side DF must be the longest side (11 in), so AC corresponds to DF .
- 18) **Choice B is correct.** (KY.8.G.6, KY.8.G.7) The 3-4-5 triple scaled by 10 is 30-40-50. The diagonal $d^2 = 30^2 + 40^2 = 900 + 1600 = 2500$, so $d = 50$ m.
- 19) **Choice C is correct.** (KY.8.G.7) Rectangle = $10 \times 3 = 30 \text{ in}^2$. Trapezoid = $\frac{1}{2}(6 + 10) \times 4 = 32 \text{ in}^2$. Add the two parts: $30 + 32 = 62 \text{ in}^2$.
- 20) **Choice D is correct.** (KY.8.EE.2) $s = \sqrt{200} = \sqrt{100 \times 2} = 10\sqrt{2} \approx 14.14$ meters.
- 21) **The correct answer is A,C.** (KY.8.G.9) A is correct: $P(\text{heads}) = \frac{1}{2}$. C is correct: $P(\text{heads and 4}) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$. B is wrong: $P(4) = \frac{1}{6}$. D is wrong: total outcomes = 12. E is wrong: $P(\text{not heads}) = \frac{1}{2}$.
- 22) **Choice D is correct.** (KY.8.EE.4) Divide coefficients: $8 \div 2 = 4$. Subtract exponents: $10^{8-3} = 10^5$. Result: 4×10^5 .
- 23) **Choice D is correct.** (KY.8.EE.5) Slope = $\frac{6}{5} = 1.2$. The line passes through $(0, 0)$ and $(5, 6)$.
- 24) **Choice D is correct.** (KY.8.EE.8) Substitute $x = y - 4$ into $2x + 3y = 2$: $2(y - 4) + 3y = 2$, so $2y - 8 + 3y = 2$, giving $5y = 10$ and $y = 2$. Then $x = 2 - 4 = -2$. Solution: $(-2, 2)$.
- 25) **Choice A is correct.** (KY.8.EE.7) FOIL: $(x - 4)(x - 3) = x^2 - 3x - 4x + 12 = x^2 - 7x + 12$.
- 26) **Choice D is correct.** (KY.8.G.3) Original length: $\sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = 15$. Dilated: $15 \times \frac{2}{3} = 10$.
- 27) **Choice A is correct.** (KY.8.G.8) Distance = $\sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$ units.
- 28) **Choice A is correct.** (KY.8.SP.1) Outliers in health data can indicate genuine health risks or data recording errors. Ignoring (B) or removing (C) the outlier without investigation risks missing important health concerns. The outlier should prompt further examination.



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Hi, Momentum Builder!

◇ Finishing a Grade 8 practice book is not a small thing. It means you practiced persistence, patience, and flexible problem solving. ◇

★ **Remember this:** Some questions were quick. Others probably made you stop and think. Both kinds helped you grow because practice turns effort into confidence. This version gave you 9 opportunities to rehearse test-day habits. ★

Momentum Habits

- **Start Clean:** Write down what the problem gives you.
- **Pick a Tool:** Use a table, model, equation, or graph.
- **Keep Moving:** Skip and return when needed.
- **Review Smart:** Study mistakes without judging yourself.

Grade 8 test-day tip: If a problem feels stuck, change tools. A graph, table, or sketch can make the same idea clearer.

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

Jay Daie

Your Math Momentum Partner

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

Help your child excel in math with **9 full-length Grade 8 practice tests** designed to reflect real test formats and cover all key math standards.

With a wide variety of questions and real-world applications, this book builds the skills and confidence students need to achieve their best!



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

- | | |
|---------------------------------------|----------------------------|
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| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
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