

# 8

# Kentucky

# KSA

GRADE 7

# MATH

## PRACTICE TESTS



**Standards Aligned**  
**Problem Solving**

For Comprehensive  
Assessment Programs



**8 PRINTED TESTS**



**2 ONLINE TESTS**



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



BUILD CONFIDENCE



STRENGTHEN SKILLS



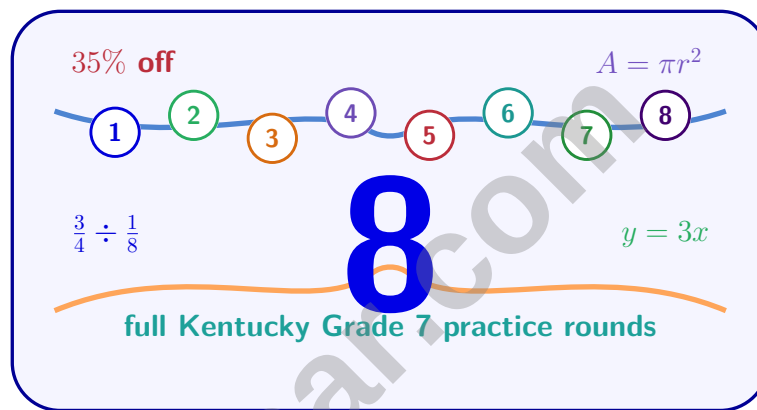
THINK SMARTER



BE TEST-READY

# 8 Kentucky KSA Grade 7 Math Practice Tests

*A complete workout in Kentucky Grade 7 ratios, integer operations, equations, angle relationships, statistics, and chance*



Eight complete 40-question Grade 7 KSA practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.

**Jay Daie and Reza Nazari**



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# Welcome, Kentucky Grade 7 Problem Solver!

Eight focused rounds for sharper KSA math thinking

This book gives you eight full Grade 7 KSA math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, 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

An eight-session plan for confident Grade 7 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.

**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?

Eight KSA tests, 320 questions, and a complete review path

| Part         | What You Will Practice                                                                             |
|--------------|----------------------------------------------------------------------------------------------------|
| Tests 1–3    | Proportional relationships, unit rates, percents, rational-number operations, and careful reading. |
| Tests 4–6    | Expressions, equations, inequalities, scale drawings, geometry, and multi-step problem solving.    |
| Tests 7–8    | Statistics, probability, mixed review, stamina, and choosing efficient strategies.                 |
| Answer Pages | Compact keys and explanations that show why each answer works.                                     |

The tests are mixed on purpose. Grade 7 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) A bag contains only red and blue marbles in unknown proportions. A simulation draws a marble, records the color, and replaces it. After 200 draws, red appears 132 times and blue appears 68 times. Based on this simulation, what is the estimated probability of drawing a red marble?

☐ A. 0.34☐ C. 0.66☐ B. 0.50☐ D. 0.68

2) Explain why division is NOT commutative: Why is  $12 \div 3$  different from  $3 \div 12$ ?

☐ A. Division order does not matter; both equal 4☐ C. One is positive, the other is negative☐ B. Division order matters;  $12 \div 3 = 4$  but  $3 \div 12 = 0.25$ ☐ D. Division is always commutative

3) What is  $\frac{1}{4}$  as a decimal?

☐ A. 0.14☐ C. 0.4☐ B. 0.25☐ D. 0.5

4) A plane descends 750 feet in 2.5 minutes. What is the rate of descent per minute?

☐ A.  $-300$  ft/min☐ C.  $-750$  ft/min☐ B.  $-375$  ft/min☐ D. 300 ft/min

5) Which value is equivalent to  $3.7 \times 10^{-6}$ ?

☐ A. 0.0000037☐ C. 3,700,000☐ B. 0.00000037☐ D. 37,000,000

6) Simplify:  $(d^2)^5$

☐ A.  $d^{10}$

☐ B.  $d^7$

☐ C.  $d^{32}$

☐ D.  $2d^{10}$

7) A printing company charges \$25 for the first 100 copies and \$0.10 for each additional copy. Which equation represents the total cost  $C$  for  $x$  copies beyond 100?

☐ A.  $C = 0.10x + 25$

☐ B.  $C = 25x + 0.10$

☐ C.  $C = 0.10 + 25x$

☐ D.  $C = 25(x + 0.10)$

8) Which of the following is the correct first step to solve  $4x - 3 = 13$ ?

☐ A. Subtract 4 from both sides

☐ B. Add 3 to both sides

☐ C. Divide both sides by 4

☐ D. Multiply both sides by 4

9) Solve for  $x$ :  $-2(x + 3) = 10$

☐ A.  $x = -8$

☐ B.  $x = -5$

☐ C.  $x = 2$

☐ D.  $x = 5$

10) An investment account earns 7% simple interest per year. If someone invests \$3,000, how much interest will they earn after 3 years?



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11) Solve:  $5(x - 2) = 30$  and verify using inverse operations.

☐ A.  $x = 6$

☐ C.  $x = 10$

☐ B.  $x = 8$

☐ D.  $x = 12$

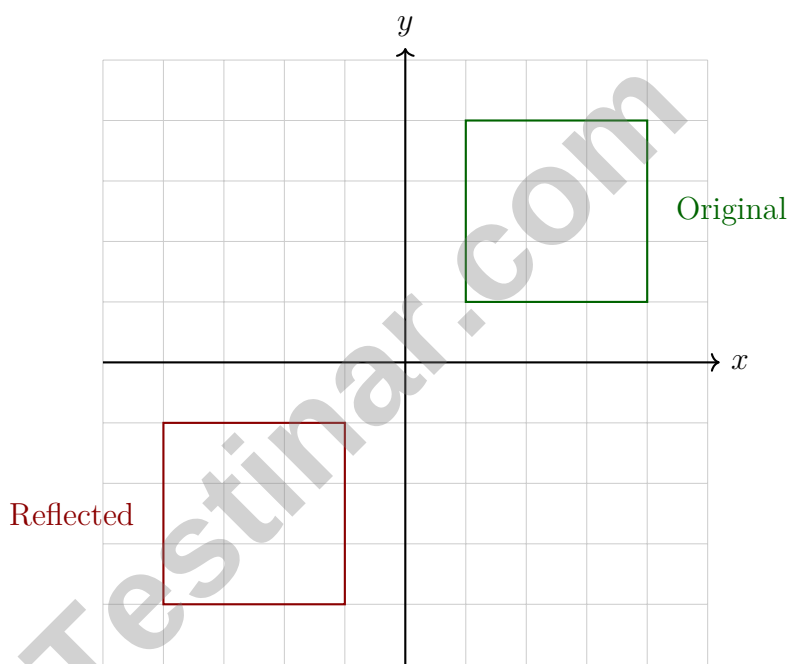
12) Combine:  $(10g + 6) + (2g - 8) - (3g + 1)$

☐ A.  $9g - 3$

☐ C.  $15g - 3$

☐ B.  $9g + 13$

☐ D.  $9g - 15$



13)

The dark green square is transformed to the dark red square. Which line of reflection was used?

☐ A. The line  $y = x$

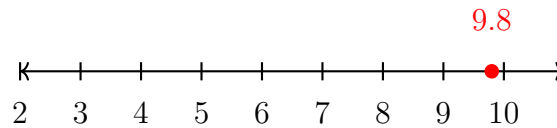
☐ C. The  $x$ -axis

☐ B. The line  $y = -x$

☐ D. The  $y$ -axis



- 1) Which point represents  $9.8 - 3.2$  on the number line below?



- ☐ A. 6.6                                      ☐ C. 6.5  
☐ B. 7.6                                      ☐ D. 13.0
- 2) Solve for  $x$ :  $4(x - 3) = 12$
- ☐ A.  $x = 0$                                       ☐ C.  $x = 6$   
☐ B.  $x = 3$                                       ☐ D.  $x = 9$
- 3) A student writes:  $(-7) \times 5 = 35$ . What error did the student make?
- ☐ A. Forgot to apply the negative sign    ☐ C. Multiplied the absolute values  
☐ B. Added instead of multiplied              incorrectly  
☐ D. Used the wrong order of operations
- 4) A book originally costs \$30. Which form best shows the factored structure of a 10% discount (that you keep 90% of the price)?
- ☐ A.  $30 - 0.1(30)$                                       ☐ C.  $0.9 \times 30$   
☐ B.  $30(1 - 0.1)$                                       ☐ D.  $30 + 10$
- 5) A bag contains 6 white socks and 4 black socks. A sock is drawn at random. What is the probability of drawing a white sock?
- ☐ A.  $\frac{3}{5}$                                                       ☐ C.  $\frac{1}{2}$   
☐ B.  $\frac{2}{5}$                                                       ☐ D.  $\frac{4}{6}$



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6) A bike shop offers frames in 2 sizes (Small, Large) and 4 colors (Black, White, Red, Green). A customer mistakenly counts the colors first as 4, then multiplies by only 1 size instead of 2. What error did the customer make, and what is the correct answer?

- ☐ A. The error is using addition; correct: 8
- ☐ B. The error is forgetting one size; correct: 8
- ☐ C. The error is confusing size and color; correct: 6
- ☐ D. The error is not using the counting principle; correct: 4

7) Two grocery stores tracked the number of customers per hour over 5 hours:

| Hour | Store X | Store Y |
|------|---------|---------|
| 1    | 45      | 52      |
| 2    | 48      | 31      |
| 3    | 47      | 58      |
| 4    | 49      | 44      |
| 5    | 46      | 65      |

Which store had more predictable traffic?

- ☐ A. Store X (mean 47, less variability)
- ☐ B. Store Y (more customers on average means more predictable)
- ☐ C. Both are equally predictable
- ☐ D. Cannot determine without knowing which store is busier
- 8) A box contains 9 identical items: 3 red, 2 blue, and 4 yellow. Drawing with replacement, which is MORE likely: (R then B) or (B then R)?
- ☐ A. (R then B) is more likely
- ☐ B. (B then R) is more likely
- ☐ C. Both have equal probability
- ☐ D. It depends on the order of the items in the box



- 1) Two tables show relationships between  $x$  and  $y$ . Table P has (1, 4), (2, 8), (3, 12). Table Q has (1, 5), (2, 9), (3, 13). Which is proportional?

☐ A. Neither table ☐ C. Both tables  
☐ B. Table Q ☐ D. Table P

- 2) A cone with base radius 10 cm is sliced by a plane parallel to the base at a distance of 8 cm from the apex. If the cone's height is 12 cm, what is the radius of the circular cross-section?

☐ A.  $\frac{20}{3}$  cm ☐ C. 8 cm  
☐ B.  $\frac{16}{3}$  cm ☐ D. 6 cm

- 3) Which pair of samples demonstrates a population with both higher center and greater reliability?

☐ A. Mean 50, MAD 8 vs. Mean 52, MAD 12 ☐ C. Mean 50, MAD 8 vs. Mean 55, MAD 4  
☐ B. Mean 50, MAD 8 vs. Mean 45, MAD 3 ☐ D. Mean 50, MAD 8 vs. Mean 50, MAD 2

- 4) A pictograph uses one star symbol to represent 50 students. If there are 12 stars shown for 7th grade, how many seventh-grade students are there?

☐ A. 12 students ☐ C. 62 students  
☐ B. 50 students ☐ D. 600 students

5)

| Outcome     | $T$           | $U$           | $V$           | $W$ |
|-------------|---------------|---------------|---------------|-----|
| Probability | $\frac{1}{6}$ | $\frac{1}{3}$ | $\frac{1}{4}$ | ?   |

Find the missing probability.

☐ A.  $\frac{1}{12}$  ☐ C.  $\frac{1}{4}$   
☐ B.  $\frac{5}{12}$  ☐ D.  $\frac{7}{12}$



6) If a student estimated 55 pages in a book and the percent error was 10%, how many pages did the book actually have?

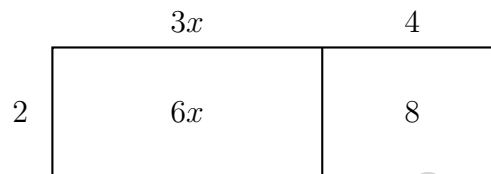
☐ A. 61 pages

☐ C. 49.5 pages

☐ B. 60 pages

☐ D. 50 pages

7) Which expression is equivalent to  $2(3x + 4)$ ? The diagram shows the split:



☐ A.  $6x + 4$

☐ C.  $5x + 6$

☐ B.  $6x + 8$

☐ D.  $3x + 8$

8) What is  $3 - 7$ ?

☐ A. 4

☐ C. 10

☐ B.  $-10$

☐ D.  $-4$

9) An item costs \$72 after a 20% discount. What was the original price?

☐ A. \$360

☐ C. \$57.60

☐ B. \$86.40

☐ D. \$90

10) Emma spent \$18 and this was 20% of her total budget. What was her total budget?



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**Kentucky KSA Grade 7 Practice Test Answer Keys****How to use this section with a Grade 7 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.** (7.SP.5-7.SP.8) Relative frequency =  $\frac{132}{200} = 0.66$ .
- 2) **Choice B is correct.** (7.NS.1-7.NS.3)  $12 \div 3 = 4$  but  $3 \div 12 = \frac{1}{4} = 0.25$ . Division is **not commutative**: changing the order changes the result. This is different from addition and multiplication.
- 3) **Choice B is correct.** (7.NS.2d) Divide  $1 \div 4 = 0.25$ . This terminating decimal results because  $4 = 2^2$ .
- 4) **Choice A is correct.** (7.NS.1-7.NS.3) Descent is  $-750$  feet:  $-750 \div 2.5 = -300$  ft/min.
- 5) **Choice A is correct.** (7.NS.1-7.NS.3)  $3.7 \times 10^{-6} = 0.0000037$ . Move decimal 6 places left.
- 6) **Choice A is correct.** (7.EE.1-7.EE.2) Multiply exponents:  $(d^2)^5 = d^{2 \times 5} = d^{10}$ .
- 7) **Choice A is correct.** (7.EE.4a) First 100 copies cost \$25 plus \$0.10 per additional copy. Formula:  $C = 0.10x + 25$ .
- 8) **Choice B is correct.** (7.EE.3-7.EE.4) When the constant is subtracted, reverse the operation by adding. This gives  $4x = 16$ .
- 9) **Choice A is correct.** (7.EE.4a) Distribute:  $-2x - 6 = 10$ . Add 6:  $-2x = 16$ . Divide by  $-2$ :  $x = -8$ .
- 10) **The correct answer is \$630.** (7.RP.3) Simple interest =  $P \times r \times t = \$3,000 \times 0.07 \times 3 = \$630$ .
- 11) **Choice B is correct.** (7.EE.3-7.EE.4) Divide by 5:  $x - 2 = 6$ . Add 2:  $x = 8$ . Check:  $5(8 - 2) = 5(6) = 30$  ✓. Reasonable: five groups of 6 equals 30.
- 12) **Choice A is correct.** (7.EE.1-7.EE.2) Combine:  $(10g + 2g - 3g) + (6 - 8 - 1) = 9g - 3$ .
- 13) **Choice B is correct.** (7.G.1-7.G.5) Reflection over  $y = -x$  uses the rule  $(x, y) \rightarrow (-y, -x)$ . The vertex  $(1, 1)$  maps to  $(-1, -1)$ . The vertex  $(4, 1)$  maps to  $(-1, -4)$ . These corners match the dark red square's position.
- 14) **Choice B is correct.** (7.SP.1-7.SP.4) In a histogram, the height of each bar represents the frequency (count or number of data points) in that interval.
- 15) **Choice A is correct.** (7.SP.5-7.SP.8) The largest sector is  $144^\circ$  out of  $360^\circ$ :  $P = \frac{144}{360} = \frac{2}{5} = 0.4$ .
- 16) **Choice A is correct.** (7.NS.2)  $0.4 \times 0.5 = 0.2$ . Count total decimal places:  $4 \times 5 = 20$ , then place decimal to get  $0.20 = 0.2$ .
- 17) **The correct answer is 0.08.** (7.RP.3)  $900(1 + r)^2 = 1059.48 \Rightarrow (1 + r)^2 = 1.1772 \Rightarrow 1 + r = 1.08 \Rightarrow r = 0.08$ .
- 18) **The correct answer is A, C.** (7.NS.1-7.NS.3)  $-5 + 7 = 2$ . Choice A:  $7 - 5 = 2$  (correct). Choice B:  $-5 - 7 = -12$  (wrong). Choice C:  $7 + (-5) = 2$  (correct). Choice D:  $2$  (this is the result, but not an equivalent expression). Choice
- 19) **Choice C is correct.** (7.NS.1-7.NS.3)  $9^2 = 81$  and  $10^2 = 100$ . Since  $81 < 99 < 100$ , we have  $9 < \sqrt{99} < 10$ .
- 20) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute  $-3$ :  $-3x - 6 - 2x$ . Combine  $x$  terms:  $-3x - 2x - 6 = -5x - 6$ .
- 21) **Choice B is correct.** (7.SP.3) The IQR (from Q1 to Q3) represents the spread of the middle 50% of data. A larger IQR (8 vs. 3) indicates more variability in the central portion of the distribution.
- 22) **The correct answer is  $-3$ .** (7.NS.1-7.NS.3) The opposite of  $-3$  is 3, and the opposite of 3 is  $-3$ .
- 23) **Choice D is correct.** (7.RP.3) Commission = commission rate  $\times$  sales. Since  $480 = 0.06 \times \text{sales}$ ,  $\text{sales} = 480 \div 0.06 = \$8,000$ .
- 24) **Choice B is correct.** (7.SP.1-7.SP.4) Group A:  $3 + 2 = 5$  values. Group B:  $3 + 3 + 3 = 9$  values. Group B has more.
- 25) **Choice B is correct.** (7.G.4-7.G.6) Each trapezoid:  $\frac{1}{2}(4 + 6) \times 3 = 15 \text{ m}^2$ . Two trapezoids:  $15 \times 2 = 30 \text{ m}^2$ .
- 26) **Choice D is correct.** (7.RP.1-7.RP.3) Distance = speed  $\times$  time =  $15 \times 2.5 = 37.5$  miles.
- 27) **Choice B is correct.** (7.G.1-7.G.5) All equilateral triangles with side 7 cm are congruent. Given three specific side lengths, exactly one shape is determined.
- 28) **Choice B is correct.** (7.G.4-7.G.6) A sector is a pie-shaped region formed by two radii and the arc between them.
- 29) **Choice C is correct.** (7.G.1-7.G.5) Check the longest side:  $9^2 = 81$  vs.  $6^2 + 5^2 = 36 + 25 = 61$ . Since  $81 > 61$ , the square of the longest side exceeds the sum of squares of the other two. The angle opposite the longest side is obtuse.
- 30) **The correct answer is 45.** (7.NS.1-7.NS.3) Net change =  $-150 + 220 - 85 + 60 = 45$  feet.
- 31) **Choice C is correct.** (7.SP.1-7.SP.4)  $\frac{28}{70} = \frac{x}{3500}$ . Reduce:  $\frac{2}{5} = \frac{x}{3500} \Rightarrow x = 1400$ .



## Hi, Momentum Builder!

◇ Finishing a Grade 7 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 8 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 7 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](mailto:jay@testinar.com).

**Jay Daie**

Your Math Momentum Partner

# PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **8** full-length Math practice tests and **2** online tests to help Grade 7 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:

**8** Full-Length Printed Tests

**2** Online Practice Tests

 Detailed Answer 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



### Stronger Math Skills

Build a solid foundation through targeted practice and review.



### Better Problem Solving

Develop logical thinking and effective solution strategies.



### Deeper Understanding

Reinforce key concepts with clear explanations and meaningful practice.



### Test Confidence

Familiarize with test formats and improve accuracy and speed.



### Achieve Success

Build confidence and perform your best on test day.

## TOPICS COVERED

- ✓ Ratios & Proportions
- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Geometry
- ✓ Percents & Decimals
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ Algebraic Thinking
- ✓ 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!



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BRIGHTLY