

ALABAMA ACAP

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.



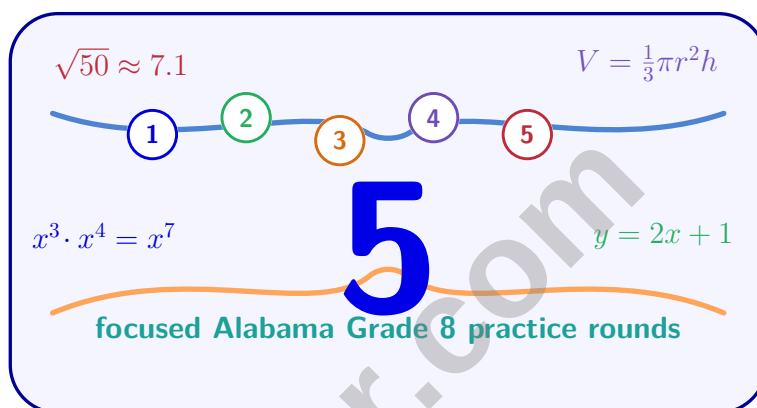
$$a^2 + b^2 = c^2$$



$$y = mx + b$$

5 Alabama ACAP Grade 8 Math Practice Tests

Five ACAP Rounds for Functions, Geometry, Data, and Reasoning



Five complete 40-question Grade 8 ACAP 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, Alabama Grade 8 Problem Solver!

Five focused rounds for sharper ACAP math thinking

This book gives you five full Grade 8 ACAP 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 Alabama 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.

Alabama 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 ACAP 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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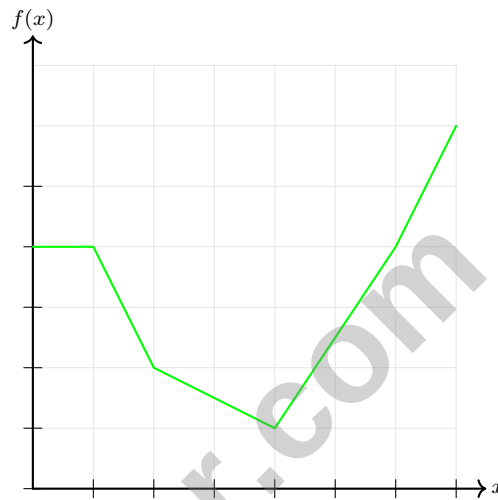
★ Practice Test 1	_____	13
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- 1) Maria is currently 4 years older than her sister Emma. In 3 years, Maria will be twice Emma's age. How old is Emma now?

☐ A. 1

☐ C. 3

☐ B. 2

☐ D. 5


2)

A piecewise function is shown. Which interval is decreasing?

☐ A. From $x = -2$ to $x = -1$
☐ C. From $x = 2$ to $x = 4$
☐ B. From $x = -1$ to $x = 2$
☐ D. From $x = 4$ to $x = 5$

- 3) A plane is descending. Its altitude decreases 2000 feet for every 5 minutes. What is the slope of altitude versus time?

☐ A. 400 feet per minute

☐ C. $\frac{5}{2000}$ feet per minute

☐ B. 2000 feet per minute

☐ D. -400 feet per minute


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4) Rectangle $PQRS$ has length 10 m and width 6 m. Rectangle $TUVW$ has length 5 m and width 3 m. What is the scale factor from $PQRS$ to $TUVW$?

☐ A. 2☐ C. 3☐ B. $\frac{1}{2}$ ☐ D. $\frac{1}{3}$

5) A bus travels according to $d(t) = 55t$, where d is distance in miles and t is time in hours. How far has the bus traveled after 3 hours?

☐ A. 55 miles☐ C. 165 miles☐ B. 110 miles☐ D. 185 miles

6) f passes through $(2, 5)$ and $(4, 1)$. $g(x) = -x + 8$. Which has a more negative slope?

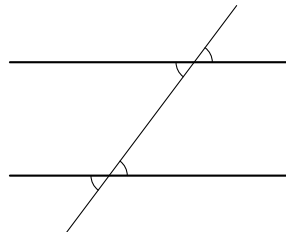
☐ A. $f(x)$ ☐ C. Both equal.☐ B. $g(x)$ ☐ D. Not comparable.

7) A bakery produces 50 cookies per hour. After 4 hours, how many cookies have been produced?

8) What is the first difference for the sequence 5, 13, 21, 29?

☐ A. 8 (constant, so linear)☐ D. Cannot be determined without the x -values☐ B. 5 (not constant, so nonlinear)☐ C. The differences vary, so nonlinear

- 9) A student claims the line through $(1, 3)$ and $(3, 6)$ has slope $\frac{2}{3}$. What error did the student make?
- ☐ A. Inverted the slope as $\frac{\Delta x}{\Delta y}$ ☐ C. Used $(1, 3)$ twice
- ☐ B. Subtracted incorrectly ☐ D. Used the y -intercept as the slope
- 10) Pentagon JKLMN is congruent to pentagon PQRST. In pentagon JKLMN, all sides have equal length and each interior angle measures 108° . What can you conclude about pentagon PQRST?
- ☐ A. It is a regular pentagon ☐ C. Its interior angles are not 108°
- ☐ B. Its sides have different lengths ☐ D. It is smaller than JKLMN
- 11) A point is reflected across the line $y = -x$. The image is at $(2, -5)$. What is the pre-image?
- ☐ A. $(-5, 2)$ ☐ C. $(2, 5)$
- ☐ B. $(-2, 5)$ ☐ D. $(5, -2)$
- 12) Two parallel lines cut by a transversal create angle pairs. Which type of angles are congruent?



- ☐ A. Only adjacent angles ☐ C. All angles formed
- ☐ B. Corresponding, alternate interior, and alternate exterior ☐ D. Only angles on the same side



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1) A student claims that sides 5, 10, and $\sqrt{125}$ form a right triangle. Is this correct?

- ☐ A. Yes, because $5^2 + 10^2 = (\sqrt{125})^2$
☐ C. Yes, because 5 and 10 are factors of $\sqrt{125}$
- ☐ B. No, because $\sqrt{125} \approx 11.2$, which is too large
 ☐ D. No, because $5 + 10 \neq \sqrt{125}$

2) Which table represents a function?

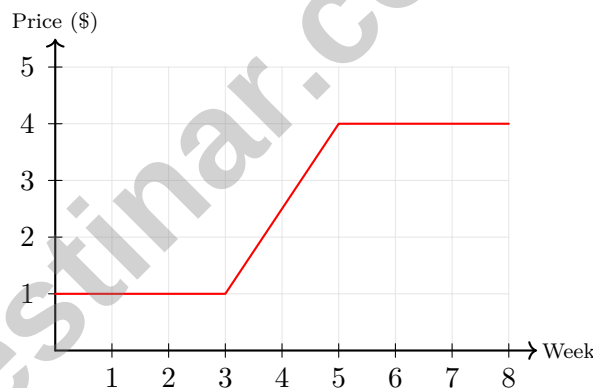
Table A:

x	1	2	2	3
y	4	5	6	7

Table B:

x	1	2	3	4
y	2	4	6	8

- ☐ A. Table A, because it has more inputs.
 ☐ C. Both tables are functions.
- ☐ B. Table B, because each input has exactly one output.
 ☐ D. Neither table is a function.



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



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- 4) 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

- 5) What is $\sqrt{484}$?

- 6) To find the number of \$0.50 postage stamps and \$0.37 postage stamps that total \$3.74 with 10 stamps, which approach is best?

☐ A. Guess and check
☐ B. Proportional reasoning

☐ C. Solving a system of equations
☐ D. Trial by tables

- 7) Find $(1.2 \times 10^6) + (8 \times 10^5)$ in scientific notation.

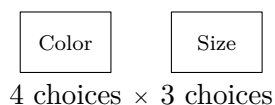
- 8) Triangle X is similar to Triangle Y . In Triangle X , one angle measures 60° . What is the measure of the corresponding angle in Triangle Y ?

☐ A. 30°
☐ B. 60°

☐ C. 120°
☐ D. Cannot be determined



- 1) A store sells T-shirts in 4 colors and 3 sizes. The diagram shows one color choice and one size choice. How many different T-shirt options are there?



- ☐ A. $4 + 3 = 7$
☐ C. $3^4 = 81$
☐ B. $4 \times 3 = 12$
☐ D. $4 - 3 = 1$
- 2) A virus has diameter 1.2×10^{-7} m. Bacteria has diameter 8×10^{-6} m. How many times larger is the bacterium than the virus?

- 3) A student loan of \$10,000 at 5% compound interest grows for 4 years. Approximately how much will be owed?

- ☐ A. \$10,500
 ☐ C. \$12,155
☐ B. \$11,500
 ☐ D. \$13,000
- 4) Simplify $\frac{(k^2)^3 \cdot k^{-1}}{k^5}$.
- ☐ A. k^{-5}
☐ C. k^{10}
☐ B. k^2
☐ D. $k^0 = 1$



5) A rectangular garden has an area of 200 square meters. If it is a square, what is the approximate side length?

☐ A. 13 meters

☐ C. 15 meters

☐ B. 16.2 meters

☐ D. 14.1 meters

6) $(7.8 \times 10^7) - (2.3 \times 10^6) = ?$

☐ A. 5.5×10^7

☐ C. 5.5×10^6

☐ B. 5.5×10^1

☐ D. 7.57×10^7

7) Which table represents a function where the output is always greater than the input?

Table A:

x	1	2	3	4
y	3	5	7	9

Table B:

x	0	1	2	3
y	0	2	4	6

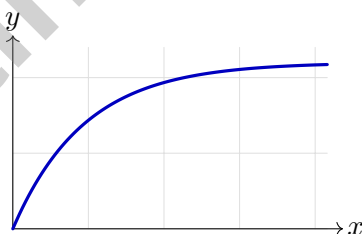
☐ A. Neither table.

☐ C. Table B only.

☐ B. Table A only.

☐ D. Both tables.

8) Which real-world scenario matches: graph starts at origin, rises steeply, then gradually levels off?



☐ A. A plant growing slower and slower as it matures

☐ C. Water flowing out of a tank at constant rate

☐ B. A car accelerating uniformly over time

☐ D. A ball rolling down a ramp with no friction



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Alabama ACAP 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 Alabama ACAP practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (8.12) 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 $e = 1$.
- 2) **Choice B is correct.** (8.17) From $x = -1$ to $x = 2$, the graph moves downward from 2 to -1 . The other listed intervals are flat or increasing.
- 3) **Choice D is correct.** (8.9) Change in altitude is -2000 feet over 5 minutes. Slope = $\frac{-2000}{5} = -400$ feet per minute.
- 4) **Choice B is correct.** (8.24) Scale factor is the ratio of a side in $TUVW$ to the corresponding side in $PQRS$: $\frac{5}{10} = \frac{1}{2}$.
- 5) **Choice C is correct.** (8.14) Substitute $t = 3$: $d(3) = 55(3) = 165$ miles.
- 6) **Choice A is correct.** (8.15) Slope of f : $(1 - 5)/(4 - 2) = -4/2 = -2$. Slope of g : -1 . Comparing: -2 is further left on the number line than -1 , so f with slope -2 is more negative than g with slope -1 .
- 7) **The correct answer is 200.** (8.8) Compute $50 \times 4 = 200$.
- 8) **Choice A is correct.** (8.15) The differences are $13 - 5 = 8$, $21 - 13 = 8$, $29 - 21 = 8$. A constant difference of 8 indicates a linear function.
- 9) **Choice A is correct.** (8.16) Correct: $m = \frac{6-3}{3-1} = \frac{3}{2}$. The student used $\frac{\Delta x}{\Delta y} = \frac{2}{3}$ instead of $\frac{\Delta y}{\Delta x}$, so the rise and run were inverted.
- 10) **Choice A is correct.** (8.22) Since the pentagons are congruent, pentagon $PQRST$ has the same properties as $JKLMN$: all sides are equal and all interior angles measure 108° . This makes it a regular pentagon.
- 11) **Choice D is correct.** (8.23) Reflection across $y = -x$ maps $(x, y) \rightarrow (-y, -x)$. Reversing: $(2, -5) \rightarrow (-(-5), -2) = (5, -2)$.
- 12) **Choice B is correct.** (8.25) When parallel lines are cut by a transversal, corresponding angles, alternate interior angles, and alternate exterior angles are all congruent.
- 13) **Choice B is correct.** (8.27) $d = \sqrt{20^2 + 21^2} = \sqrt{400 + 441} = \sqrt{841} = 29$. (This is a 20-21-29 Pythagorean triple.)
- 14) **Choice C is correct.** (8.25) When a transversal cuts two parallel lines, it creates 8 angles: 4 angles of measure 157° (corresponding and vertical angles) and 4 angles of measure 23° (supplements).
- 15) **Choice A is correct.** (8.29) $V = \frac{1}{3} \times (2 \times 2) \times 3 = \frac{1}{3} \times 4 \times 3 = 4 \text{ m}^3 = 4000 \text{ L}$.
- 16) **Choice C is correct.** (8.30) Decompose: rectangle and trapezoid. Rectangle area = $10 \times 4 = 40 \text{ m}^2$. Trapezoid area = $\frac{1}{2}(6 + 10) \times 3 = 24 \text{ m}^2$. Total = $40 + 24 = 64 \text{ m}^2$.
- 17) **Choice C is correct.** (8.25) A heptagon's interior angles add to $(7 - 2) \times 180 = 900^\circ$. The known angles add to $130 + 125 + 140 + 135 + 128 + 132 = 790^\circ$, so the seventh angle is $900 - 790 = 110^\circ$.
- 18) **Choice D is correct.** (8.18) Taller people generally wear larger shoe sizes, forming a clear upward trend. The relationship is positive (both increase together) and reasonably strong.
- 19) **The correct answer is A,B.** (8.6) Division rule: divide coefficients ($6.4 \div 1.6 = 4$, choice A) and subtract exponents ($-3 - (-5) = 2$, choice B). This gives 4×10^2 . Choice C is wrong, choice D incorrectly adds exponents, and choice E has the wrong exponent sign.
- 20) **Choice C is correct.** (8.21) Row-conditional frequency: among HR (row total 120), remote workers are 35. Denominator is the row total, not column or grand total.
- 21) **Choice A is correct.** (8.27) Original data: $\{1, 2, 3\}$, mean = 2. New point must equal 2 to keep mean at 2. New data: $\{1, 2, 2, 3\}$, deviations $\{1, 0, 0, 1\}$. MAD = $2/4 = 0.5$.
- 22) **Choice A is correct.** (8.30) $P(\text{black first}) = \frac{6}{10}$; $P(\text{black second} \mid \text{black first}) = \frac{5}{9}$. Product: $\frac{6}{10} \times \frac{5}{9} = \frac{30}{90} = \frac{1}{3}$.
- 23) **The correct answer is (3, 6).** (8.12) Substitute $y = 2x$ into $x + y = 9$: $x + 2x = 9$, so $3x = 9$, giving $x = 3$. Then $y = 2(3) = 6$.
- 24) **Choice B is correct.** (8.28) From $13^2 + b^2 = 85^2$, we get $169 + b^2 = 7225$, so $b^2 = 7056$ and $b = 84$ (scaled 5-12-13 triple).
- 25) **The correct answer is (3, 4).** (8.11) The integers 3 and 4 multiply to 12 and add to 7.
- 26) **Choice B is correct.** (8.19) Both have slope $m = -2$ but intercepts of 5 and -3 respectively. These are parallel lines.



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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
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