

10 Alabama ACAP

GRADE
8
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

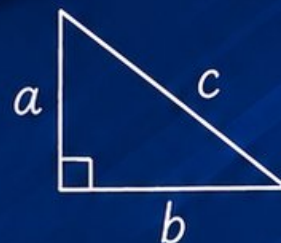
10 PRINTED
TESTS



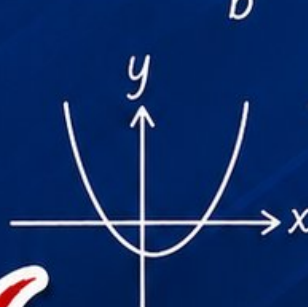
2 ONLINE
TESTS



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



$$y = mx + b$$



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

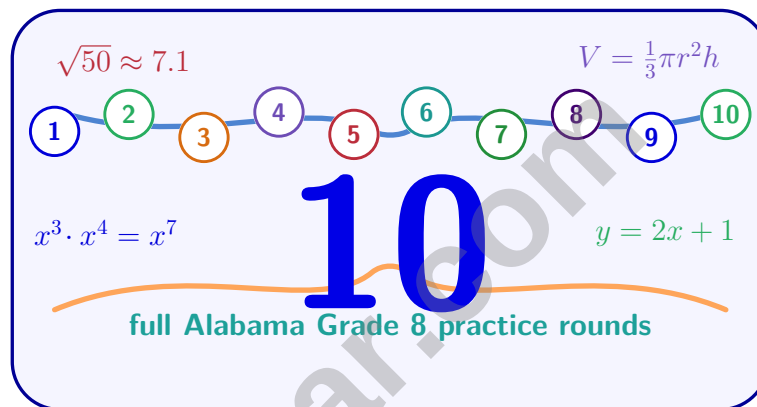


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 Alabama ACAP Grade 8 Math Practice Tests

Standards-Aligned Alabama Practice for Equations, Functions, Geometry, Data, and Probability



Ten 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!

Ten focused rounds for sharper ACAP math thinking

This book gives you ten 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 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 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?

Ten ACAP tests, 400 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.
Test 10	A final Alabama round to show growth across the whole book.
Answer Pages	Compact keys and explanations that show why each answer works.

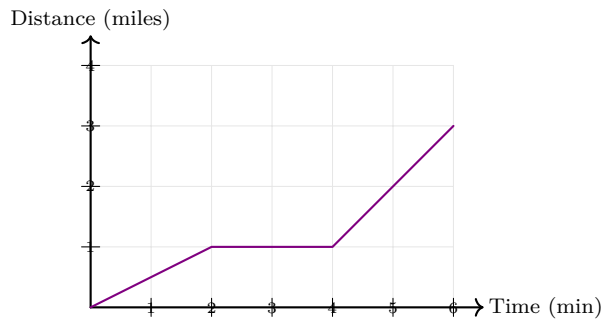
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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& answers

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1)

A runner travels 1 mile in 2 minutes, stops for 2 minutes, then runs 2 more miles in 2 minutes. What is the average speed over the whole journey?

- ☐ A. 0.75 miles/min ☐ C. 1 mile/min
☐ B. 0.5 miles/min ☐ D. 1.5 miles/min

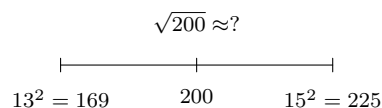
2) A rectangular prism has length 10 cm, width 6 cm, and height 4 cm. The lateral surface area (sides only, not top/bottom) is 128 cm^2 . What is the total surface area?

- ☐ A. 128 cm^2 ☐ C. 248 cm^2
☐ B. 188 cm^2 ☐ D. 308 cm^2

3) Which pair of points lies on the line $y = 3x + 2$?

- ☐ A. (0, 2) and (1, 4) ☐ C. (2, 9) and (3, 11)
☐ B. (1, 5) and (0, 3) ☐ D. (1, 5) and (2, 8)

4) Which is a reasonable approximation for $\sqrt{200}$?



- ☐ A. 12 ☐ C. 16
☐ B. 18 ☐ D. 14



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5) $(2 \times 10^2) \times (3 \times 10^3) \times (5 \times 10^1) = ?$

☐ A. 3×10^6

☐ C. 3×10^7

☐ B. 3×10^8

☐ D. 3×10^5

6) If 6 pounds of almonds cost \$30, what is the constant of proportionality (unit price)?

☐ A. \$4 per pound

☐ C. \$6 per pound

☐ B. \$8 per pound

☐ D. \$5 per pound

7) Determine the number of solutions for this system:
$$\begin{cases} 3x - 6y = 9 \\ -x + 2y = -3 \end{cases}$$

☐ A. No solution

☐ C. Infinitely many solutions

☐ B. Exactly one solution

☐ D. Two solutions

8) Which is the complete factorization of $6x + 9$?

☐ A. $3(2x + 3)$

☐ C. $9(x + 1)$

☐ B. $6x(1 + \frac{9}{6})$

☐ D. $2x(3 + \frac{9}{2})$

9) Which scenario represents a relation that is NOT a function?

☐ A. A car's speed and time (one time, one speed).

☐ C. A product's barcode and all price changes (one barcode, many prices over time).

☐ B. A student's name and age (one person, one age).

☐ D. A city and its mayor (one city, one mayor).



10) Plant X : $H(d) = 2d + 10$ cm. Plant Y at days 0, 5, 10 has heights 15, 20, 25 cm. Which started taller?

☐ A. Plant X

☐ B. Plant Y

☐ C. Both same.

☐ D. Cannot be determined.

11) A function displays the pattern: $(1, 2), (2, 4), (3, 8), (4, 16)$. What type of function is this?

☐ A. Linear, because y increases

☐ B. Linear, with slope 2 per x -unit

☐ C. Nonlinear, exponential (doubling pattern)

☐ D. Nonlinear, but could still be linear with the right data

12) A music streaming service charges \$8 for premium features plus \$12 per month for access. Which equation represents the total cost T for m months of service?

☐ A. $T = 12m + 8$

☐ B. $T = 8m + 12$

☐ C. $T = 20m$

☐ D. $T = 8m - 12$

13) A holiday savings club requires \$50 monthly deposits for 12 months with no interest. What is the total saved?



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1) Convert $0.4\overline{18}$ to a fraction in simplest form.

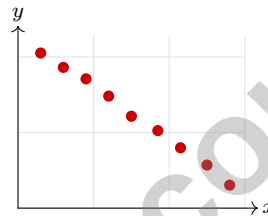
☐ A. $\frac{4}{18}$
☐ B. $\frac{418}{1000}$

☐ C. $\frac{418}{999}$
☐ D. $\frac{414}{990} = \frac{23}{55}$

2) A business profit function is $P(x) = 50x - 200$, where x is the number of units sold. What is the profit when 10 units are sold?

☐ A. \$300
☐ B. \$250

☐ C. \$200
☐ D. \$500



3)

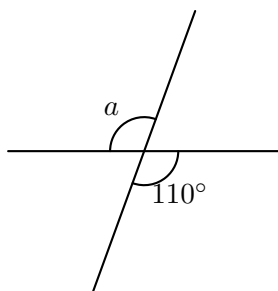
A negative slope on a scatter plot indicates:

- ☐ A. There is no relationship between the variables
☐ B. The line is horizontal

- ☐ C. As x increases, y increases on average
☐ D. As x increases, y decreases on average



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4)

Two lines intersect. One angle is 110° . What is a , the measure of the vertical angle?

☐ A. 70° ☐ C. 140° ☐ B. 110° ☐ D. 155° 5) Which of the following best describes $0.9\bar{9}$?☐ A. Irrational☐ C. Equal to 1, rational☐ B. Between 0 and 1, rational☐ D. Greater than 1, irrational

6) A young professional has debt: credit card \$1,500 at 18% APR, student loan \$10,000 at 4% APR. In one year with no payments, approximately how much additional interest accumulates?

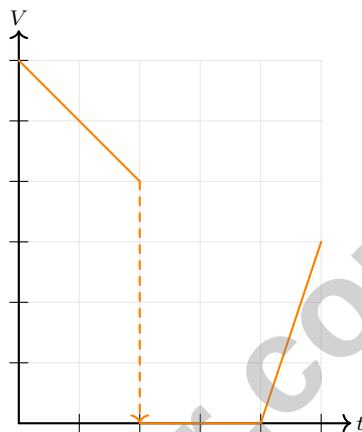
☐ A. \$270☐ C. \$670☐ B. \$400☐ D. \$1,770

7) Convert 950 to scientific notation.

☐ A. 9.5×10^1 ☐ C. 9.5×10^3 ☐ B. 95×10^1 ☐ D. 9.5×10^2 

- 1) A paint shop mixes white and colored paint. They want to make 50 liters of paint that is 60% colored. If they have unlimited supplies of 100% colored and 0% colored (white) paint, how many liters of colored paint do they need?

- ☐ A. 20 L ☐ C. 30 L
☐ B. 40 L ☐ D. 45 L



2)

A tank scenario: drains linearly $[0,2]$, pumped dry $[2,2]$, refills $[4,5]$. Identify the discontinuity.

- ☐ A. At $t = 2$ (vertical jump down from 4 to 0) ☐ C. At $t = 5$ (final value unclear)
☐ B. At $t = 4$ (gap in time) ☐ D. No discontinuities (function is continuous)
- 3) A television screen is advertised as having a diagonal of 50 inches. If the width is 40 inches, what is the height?

- ☐ A. 10 inches ☐ C. 45 inches
☐ B. 30 inches ☐ D. 90 inches



4) Three points lie on the same line: $(1, 5)$, $(3, 9)$, and $(x, 13)$. What is the value of x ?

☐ A. 4

☐ C. 6

☐ B. 7

☐ D. 5

5) A point $Q(6, 8)$ is dilated to $Q'(3, 4)$. If the dilation center is the origin, what is the scale factor?

☐ A. 2

☐ C. 3

☐ B. $\frac{1}{2}$

☐ D. $\frac{1}{3}$

6) Which equation is LINEAR?

☐ A. $y = 5 - 3x^2$

☐ C. $y = 7 + 2x$

☐ B. $y = \sqrt{x + 4}$

☐ D. $y = \frac{10}{x}$

7) A line passes through the points $(1, 5)$ and $(4, 11)$. What is the slope of the line?

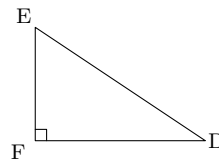
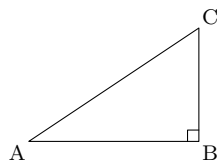
☐ A. 2

☐ C. $\frac{2}{3}$

☐ B. 3

☐ D. 6

8) Two congruent right triangles are positioned differently. Triangle 1 has a right angle at vertex B. Triangle 2 has a right angle at vertex F. What can you conclude?



☐ A. The hypotenuses are different lengths

☐ C. Triangle 1 is larger than Triangle 2

☐ B. The triangles have the same side lengths

☐ D. The angles are all different



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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 B is correct.** (8.17) Total distance = 3 miles. Total time = 6 minutes. Average speed = $3 \div 6 = 0.5$ miles/min. The flat segment adds time but no distance.
- 2) **Choice C is correct.** (8.30) Lateral area = $2(10)(4) + 2(6)(4) = 80 + 48 = 128 \text{ cm}^2$ ✓. Area of two bases = $2(10)(6) = 120 \text{ cm}^2$. Total = $128 + 120 = 248 \text{ cm}^2$.
- 3) **Choice D is correct.** (8.20) Check (1, 5): $5 = 3(1) + 2 = 5$ ✓. Check (2, 8): $8 = 3(2) + 2 = 8$ ✓.
- 4) **Choice D is correct.** (8.4) $\sqrt{200} = \sqrt{100 \times 2} = 10\sqrt{2} \approx 10 \times 1.41 = 14.1$. So 14 is the closest integer.
- 5) **Choice C is correct.** (8.6) Multiply coefficients: $2 \times 3 \times 5 = 30 = 3 \times 10^1$. Add exponents: $10^{2+3+1} = 10^6$. Combine: $3 \times 10^1 \times 10^6 = 3 \times 10^7$.
- 6) **Choice D is correct.** (8.8) Unit price $k = \frac{30}{6} = 5$ dollars per pound.
- 7) **Choice C is correct.** (8.12) Simplify the first equation by dividing by 3: $x - 2y = 3$. Multiply the second by -1 : $x - 2y = 3$. They are the same equation, so infinitely many solutions.
- 8) **Choice A is correct.** (8.11) The GCF of 6x and 9 is 3. Factor: $6x + 9 = 3(2x + 3)$.
- 9) **Choice C is correct.** (8.13) Each barcode corresponds to a product, but the price can change multiple times, giving the barcode multiple price outputs. The other options satisfy the one-input-one-output rule.
- 10) **Choice B is correct.** (8.15) X at day 0: 10 cm. Y at day 0: 15 cm. Since $15 > 10$, Y started taller.
- 11) **Choice C is correct.** (8.15) The y-values double with each unit increase in x (2, 4, 8, 16). This exponential growth pattern is nonlinear; first differences are not constant (2, 4, 8).
- 12) **Choice A is correct.** (8.16) One-time premium feature fee is \$8 (intercept). Monthly service cost is \$12 (slope). Total is $T = 12m + 8$.
- 13) **The correct answer is \$600.** (8.30) $50 \times 12 = \$600$.
- 14) **The correct answer is 4.** (8.3) $(2x^3)^2 = 4x^6$. With $x = 1$, the value is 4.
- 15) **Choice B is correct.** (8.22) Congruent figures have equal corresponding sides. The congruent trapezoid has the same parallel sides: 8 cm and 12 cm.
- 16) **Choice A is correct.** (8.23) Points $(1, 1) \rightarrow (-1, 1)$ and $(3, 3) \rightarrow (-3, 3)$. The y-coordinates are unchanged while x-coordinates negate, confirming reflection across the y-axis.
- 17) **Choice B is correct.** (8.25) Alternate interior angles are on opposite sides of the transversal and between the parallel lines.
- 18) **Choice C is correct.** (8.30) Volume of a cylinder: $V = \pi r^2 h \approx 3.14 \times 3^2 \times 10 = 3.14 \times 90 = 282.6 \text{ cm}^3$.
- 19) **Choice C is correct.** (8.29) Prism: $V_p = B \times h = 25 \times 15 = 375 \text{ cm}^3$. Pyramid: $V_{py} = \frac{1}{3} \times 25 \times 15 = 125 \text{ cm}^3$. Ratio: $\frac{375}{125} = 3$.
- 20) **Choice A is correct.** (8.30) Square area = $8 \times 8 = 64 \text{ m}^2$. Each triangle area = $\frac{1}{2} \times 4 \times 2 = 4 \text{ m}^2$. Two triangles = 8 m^2 . Remaining = $64 - 8 = 56 \text{ m}^2$.
- 21) **The correct answer is B,E.** (8.30) There are 10 marbles total. B is true because $P(\text{blue}) = \frac{3}{10}$. E is true because $P(\text{red or blue}) = \frac{5+3}{10} = \frac{8}{10} = \frac{4}{5}$. A is false because $P(\text{red}) = \frac{1}{2}$. C is false because $P(\text{green}) = \frac{1}{5}$. D is false because $P(\text{yellow}) = 0$.
- 22) **Choice B is correct.** (8.18) The downward trend shows negative correlation: as exercise increases, resting heart rate decreases. This is a typical physiological response.
- 23) **Choice D is correct.** (8.21) Marginal relative frequency for takeout: $\frac{325}{500} = 0.65$.
- 24) **The correct answer is -4.** (8.11) Solving gives $x > -4$, so the boundary value is -4.
- 25) **Choice B is correct.** (8.27) Deviations: $|3 - 5.5| = 2.5$ (twice), $|5 - 5.5| = 0.5$ (three times), $|7 - 5.5| = 1.5$ (twice), $|9 - 5.5| = 3.5$. Sum = $5 + 1.5 + 3 + 3.5 = 13$. MAD = $13/8 = 1.625 \approx 1.63$.
- 26) **Choice B is correct.** (8.28) The correct calculation uses the Pythagorean Theorem: $5^2 + b^2 = 13^2$ gives $25 + b^2 = 169$, so $b = 12$. The student's error was subtracting instead of using $a^2 + b^2 = c^2$.
- 27) **Choice A is correct.** (8.27) $d = \sqrt{(3 - (-1))^2 + (1 - (-2))^2} = \sqrt{4^2 + 3^2} = \sqrt{16 + 9} = \sqrt{25} = 5$.



Hi, Calm Solver!

◇ This full-length book gave you ten complete Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. A calm mind can see choices more clearly. That matters in Grade 8, where one problem may have several possible entry points. ◇

★ **Remember this:** You practiced building calm by doing full tests. Each completed page is rehearsal for staying steady when the real test feels serious. ★

Calm-Test Moves

- **Pause:** Give your brain one quiet second.
- **Choose:** Pick the first useful step.
- **Continue:** Do not demand perfection immediately.
- **Check:** Use review time wisely.

Grade 8 test-day tip: If you feel rushed, slow your reading for one sentence. Clear reading saves time.

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

Jay Daie

Your Calm-Test 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
- ✓ Expressions & Equations
- ✓ Inequalities
- ✓ Functions
- ✓ Geometry
- ✓ Ratios & Proportions
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement
- ✓ Pythagorean Theorem
- ✓ Surface Area & Volume
- ✓ 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