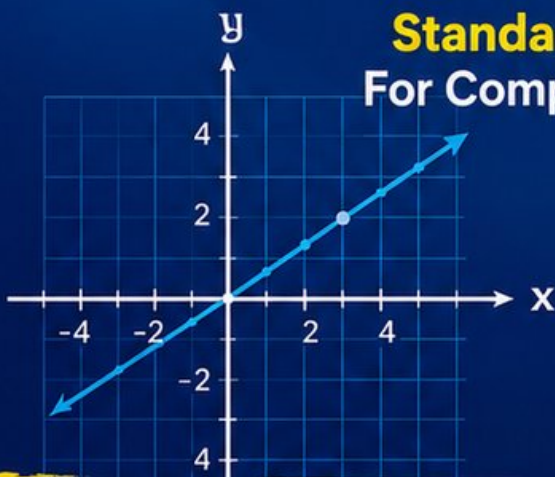
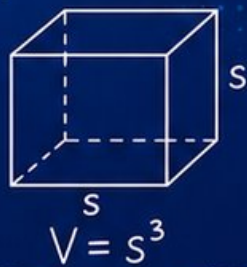


9 Alabama ACAP Grade 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



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



**9 PRINTED
TESTS**

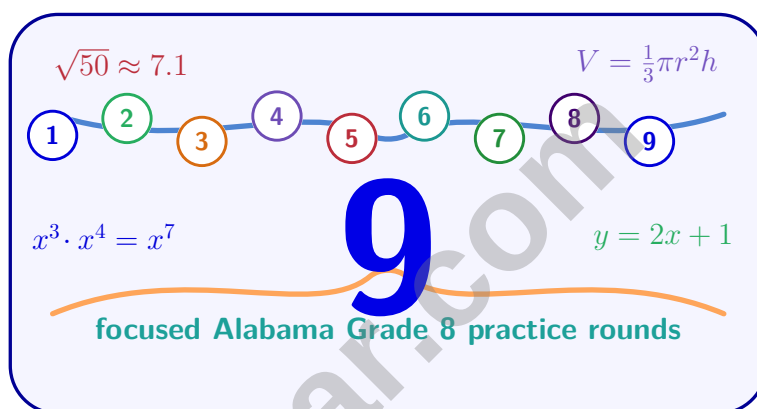


**2 ONLINE
TESTS**

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

9 Alabama ACAP Grade 8 Math Practice Tests

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



Nine 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!

Nine focused rounds for sharper ACAP math thinking

This book gives you nine 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 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.

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?

Nine ACAP 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) If $h(x) = 3x$, what is $h(-2)$?

☐ A. -6

☐ C. -2

☐ B. 6

☐ D. 3

2) Which is larger: $\sqrt{3} \times \sqrt{8}$ or 4.8 ?

☐ A. Cannot be determined

☐ C. They are exactly equal

☐ B. 4.8 is larger

☐ D. $\sqrt{3} \times \sqrt{8}$ is larger

3) Which pair of equations represents perpendicular lines?

☐ A. $y = 3x + 1$ and $y = 3x - 5$

☐ C. $y = 4x - 2$ and $y = 4x + 6$

☐ B. $y = -\frac{3}{5}x + 2$ and $y = \frac{3}{5}x - 1$

☐ D. $y = 2x + 4$ and $y = -\frac{1}{2}x + 1$

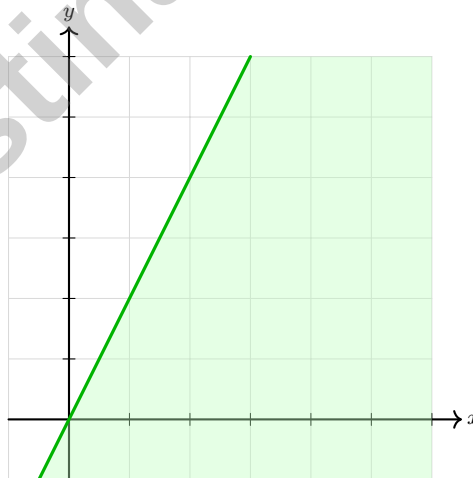
4) What is the solution to $6(x + 2) = 30$?

☐ A. $x = 3$

☐ C. $x = 8$

☐ B. $x = 5$

☐ D. $x = -2$



5)

The graph shows which inequality?

☐ A. $y > 2x$

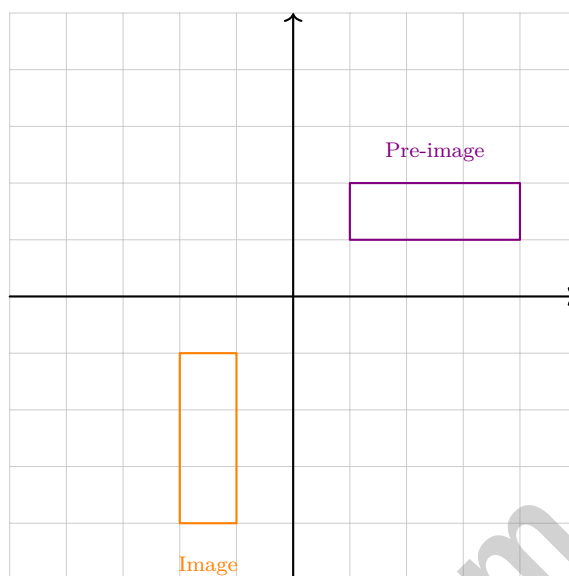
☐ C. $y \geq 2x$

☐ B. $y < 2x$

☐ D. $y \leq 2x$



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6)

Which sequence of transformations was applied?

- ☐ A. Translate 5 units down, then rotate 90°
☐ B. Reflect across the x -axis, then rotate
☐ C. Rotate 90° counterclockwise, then translate 5 units down
☐ D. Dilate by scale factor 2, then translate

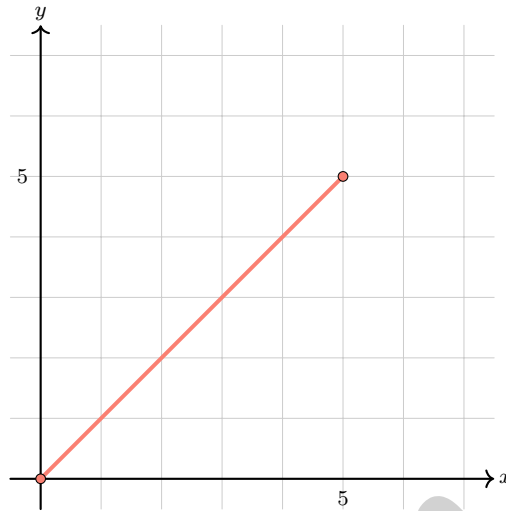
7) Simplify using the laws of exponents: $\frac{x^7}{x^3}$

- ☐ A. x^{10}
☐ B. x^{21}
☐ C. x^4
☐ D. x^{-4}

8) $(5.8 \times 10^6) - (2.3 \times 10^5) = ?$

- ☐ A. 3.5×10^6
☐ B. 8.1×10^6
☐ C. 3.5×10^5
☐ D. 5.57×10^6





9)

The equation is:

☐ A. $y = \frac{1}{5}x$

☐ B. $y = 5x$

☐ C. $y = x$

☐ D. $y = x + 5$

- 10) A company allows workers to earn \$12 per hour plus a \$50 bonus. How many hours must they work to earn at least \$170?

☐ A. $h < 10$

☐ B. $h > 10$

☐ C. $h \geq 10$

☐ D. $h \leq 10$



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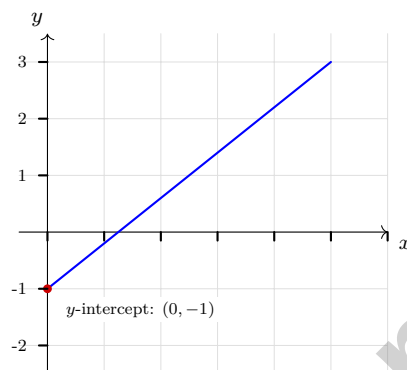
1) Solve: $-3x + 8 < 2$

☐ A. $x > 2$

☐ C. $x > -2$

☐ B. $x < 2$

☐ D. $x < -2$



2)

The best-fit line for a dataset is $y = 0.8x - 1$. Which statement best describes what the intercept represents?

- ☐ A. For every 1-unit increase in x , y increases by 0.8
- ☐ B. The predicted value of y when $x = 0$
- ☐ C. The x -value when $y = 0$
- ☐ D. The maximum value of y

3) A ramp has a horizontal length of 4 feet and rises vertically 3 feet. How long is the ramp surface?

- ☐ A. 5 feet
- ☐ B. 7 feet
- ☐ C. 3.5 feet
- ☐ D. 12 feet



- 4) The height of a ball (in meters) t seconds after being thrown is $h(t) = 20t - 5t^2$. Find $h(2)$.

- 5) Four angles are formed at the intersection of two lines. The sum of three of the angles is 240° . What is the measure of the fourth angle?

- ☐ A. 60°
☐ B. 80°

- ☐ C. 120°
☐ D. 240°



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1) Solve by substitution:
$$\begin{cases} x = 4 - y \\ x + 3y = 8 \end{cases}$$

☐ A. (0, 4)

☐ C. (2, 2)

☐ B. (1, 3)

☐ D. (3, 1)

- 2) Two rectangular prisms have the same volume of 120 cm^3 . Prism A has dimensions $10 \times 6 \times 2 \text{ cm}$. Prism B has dimensions $8 \times 5 \times 3 \text{ cm}$. Which prism has the greater surface area?

☐ A. Prism A with $SA = 184 \text{ cm}^2$

☐ C. Prism B with $SA = 158 \text{ cm}^2$

☐ B. Prism A with $SA = 244 \text{ cm}^2$

☐ D. Prism B with $SA = 206 \text{ cm}^2$

- 3) A fitness app models burned calories as $C = 0.08w + 50$, where C is calories and w is weight in pounds. The app predicts a 150-lb person burns 62 calories. A user actually burns 65 calories. Which is true?

☐ A. The model overestimated by 3 calories

☐ C. The residual is -3

☐ B. The model underestimated by 3 calories

☐ D. The model is perfectly accurate

- 4) Which of the following graphs represents a function?

☐ A. A vertical line.

☐ C. A point.

☐ B. A circle.

☐ D. An ellipse centered at the origin.



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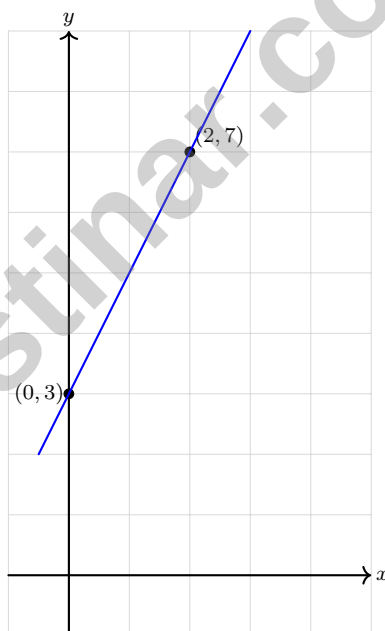
- 5) Function $p(x) = \frac{3}{2}x - 4$ and the table for function q : $(0, 2)$, $(2, 5)$, $(4, 8)$. Which has a steeper slope?

x	0	2	4
$q(x)$	2	5	8

- ☐ A. $p(x)$
☐ C. Both have equal slopes.
- ☐ B. $q(x)$
☐ D. Cannot be determined.
- 6) Which of these is a NONLINEAR function?

- ☐ A. $y = 0.5x - 10$
☐ C. $y = -\frac{2}{3}x + 8$
- ☐ B. $y = 15 - 2x$
☐ D. $y = x^3$

- 7) The graph shows a linear function passing through points $(0, 3)$ and $(2, 7)$.



What is the slope of the line?

- ☐ A. 2
- ☐ B. 3
- ☐ C. $\frac{1}{2}$
- ☐ D. $\frac{2}{7}$



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.** (8.14) Substitute $x = -2$: $h(-2) = 3(-2) = -6$.
- 2) **Choice D is correct.** (8.2) $\sqrt{3} \times \sqrt{8} = \sqrt{24} = 2\sqrt{6} \approx 4.899$. That is greater than 4.8, so the product is larger.
- 3) **Choice D is correct.** (8.9) Perpendicular slopes are negative reciprocals. Here, 2 and $-\frac{1}{2}$ are negative reciprocals.
- 4) **Choice A is correct.** (8.11) Distribute: $6x + 12 = 30$. Subtract 12: $6x = 18$. Divide by 6: $x = 3$.
- 5) **Choice D is correct.** (8.12) SOLID line (includes boundary) and shading BELOW the line indicates $y \leq 2x$.
- 6) **Choice C is correct.** (8.22) A 90° counterclockwise rotation sends the rectangle to a vertical position. Translating that rotated image 5 units down matches the orange image.
- 7) **Choice C is correct.** (8.3) When dividing powers with the same base, subtract exponents: $\frac{x^7}{x^3} = x^{7-3} = x^4$.
- 8) **Choice D is correct.** (8.6) Rewrite with common exponent: $5.8 \times 10^6 - 0.23 \times 10^6 = (5.8 - 0.23) \times 10^6 = 5.57 \times 10^6$.
- 9) **Choice C is correct.** (8.8) Slope $k = \frac{5}{5} = 1$. The line has a 45-degree angle, so $y = x$.
- 10) **Choice C is correct.** (8.11) Set up: $12h + 50 \geq 170$. Subtract 50: $12h \geq 120$. Divide by 12: $h \geq 10$ hours.
- 11) **Choice B is correct.** (8.13) The segment starts at $x = 0$ and ends at $x = 4$. The domain includes all x -values in this range: $[0, 4]$.
- 12) **Choice B is correct.** (8.15) A rate: 0.15. B rate: $(80 - 55)/(200 - 100) = 25/100 = 0.25$. Since $0.25 > 0.15$, B is higher.
- 13) **Choice B is correct.** (8.15) $y = \frac{3}{4}x + 2$ perfectly matches the linear form $y = mx + b$ with $m = \frac{3}{4}$ and $b = 2$. Fractional slopes do not make a function nonlinear.
- 14) **Choice A is correct.** (8.16) Initial length is 10 cm (when $w = 0$). Change from 2 to 4 weights: length goes from 14 to 18 cm, a change of 4 cm for 2 weights, so slope is 2. Equation: $L = 2w + 10$.
- 15) **Choice D is correct.** (8.22) Rotation is a rigid motion that preserves shape and size. Rectangle M'N'O'P' is congruent to MNOP (same dimensions, though the length and width labels may have switched visually).
- 16) **The correct answer is 12.** (8.20) Set $y = 12$: $12 = -3x + 48 \Rightarrow -3x = -36 \Rightarrow x = 12$.
- 17) **Choice C is correct.** (8.25) Co-interior angles (also called same-side interior or consecutive interior angles) are on the same side of the transversal and between the parallel lines.
- 18) **Choice B is correct.** (8.29) $343 = \frac{1}{3} \times s^2 \times 7$, so $s^2 = 147$. Therefore $s = \sqrt{147} = 7\sqrt{3}$ cm.
- 19) **The correct answer is A,D.** (8.23) Reflection across the x -axis maps (x, y) to $(x, -y)$, so $(0, 1) \rightarrow (0, -1)$ and $(2, 3) \rightarrow (2, -3)$. A dilation by scale factor 1 does not change the figure, so option D also results in the same reflection. Reflection across $y = 1$ would not map the whole rectangle to the purple image.
- 20) **Choice D is correct.** (8.2) $(2.4)^2 = 5.76 < 6$, so $2.4 < \sqrt{6}$. Therefore $\sqrt{6}$ is greater than 2.4.
- 21) **Choice C is correct.** (8.4) Area of a square $= s^2 = 9^2 = 81$ cm².
- 22) **Choice C is correct.** (8.12) Both equations have slope 2. If $c \neq 3$, the lines are parallel and have no solution. If $c = 3$, the equations are identical and there are infinitely many solutions.
- 23) **Choice C is correct.** (8.11) GCF is 3: $3x^2 + 6x + 3 = 3(x^2 + 2x + 1) = 3(x + 1)^2$.
- 24) **Choice B is correct.** (8.17) Cost equals price times quantity, which is a linear function with constant slope. A is oscillating, C and D are exponential.
- 25) **Choice B is correct.** (8.27) $d = \sqrt{(10 - 1)^2 + (13 - 1)^2} = \sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = 15$.
- 26) **Choice B is correct.** (8.25) An interior angle and its adjacent exterior angle are supplementary—they form a straight line and sum to 180° .
- 27) **Choice C is correct.** (8.9) The rate of change is the hourly cost, which is \$3 per hour. The slope is 3.
- 28) **Choice A is correct.** (8.19) The slope represents the rate of change. A slope of 8 means for every 1-unit increase in x , y increases by 8 units.
- 29) **Choice A is correct.** (8.12) Let a = adult tickets and s = student tickets. Then $a + s = 120$ and $15a + 8s = 1520$. Substitute $a = 120 - s$: $15(120 - s) + 8s = 1520$, so $1800 - 7s = 1520$. Then $7s = 280$, so $s = 40$.



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Hi, Strategy Solver!

◇ Grade 8 math rewards students who think before they calculate. You practiced choosing strategies, not just hunting for answers. This high-stamina book gave you nine substantial Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** That matters because stronger math students do not use one method for every question. They notice the structure and choose the tool that fits. ★

Strategy Moves

- **Estimate:** Know the neighborhood of the answer.
- **Simplify:** Rewrite numbers in friendlier forms.
- **Model:** Draw what the words describe.
- **Verify:** Put the answer back into the problem.

Grade 8 test-day tip: Pause for ten seconds before hard questions. A short plan can save several minutes.

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

Jay Daie

Your Strategy Guide

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

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- | | |
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| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
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| ✓ Linear Equations | ✓ Transformations |
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