

8

Alabama

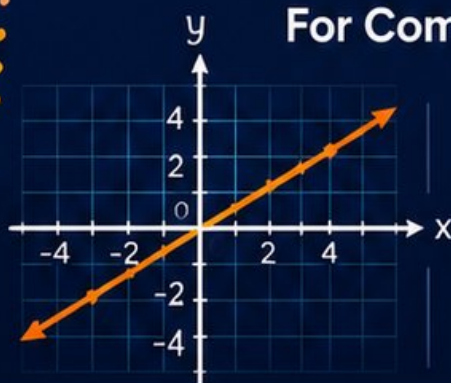
ACAP

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$
$$C = 2\pi r$$
$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}b^2 h$$



8

 PRINTED TESTS

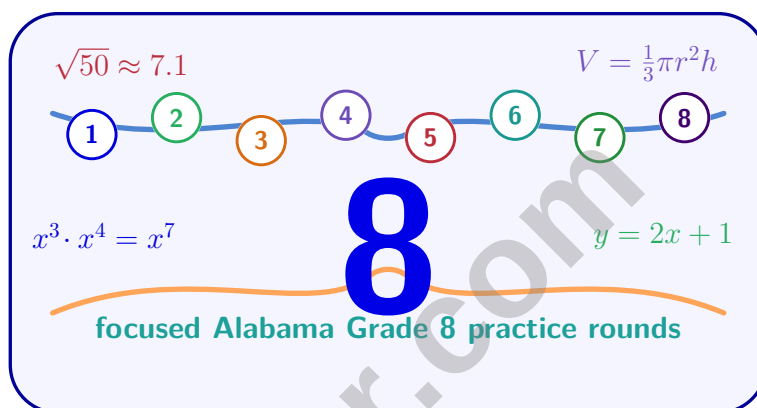
2

 ONLINE TESTS

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

8 Alabama ACAP Grade 8 Math Practice Tests

Standards-Aligned Alabama Practice for Functions, Geometry, Data, and Reasoning



Eight 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!

Eight focused rounds for sharper ACAP math thinking

This book gives you eight 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

An eight-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?

Eight ACAP tests, 320 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 7–8	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) Water drains from a tank at a rate of 3 gallons per minute. The tank starts with 120 gallons. Which equation gives the amount of water W (in gallons) after t minutes?

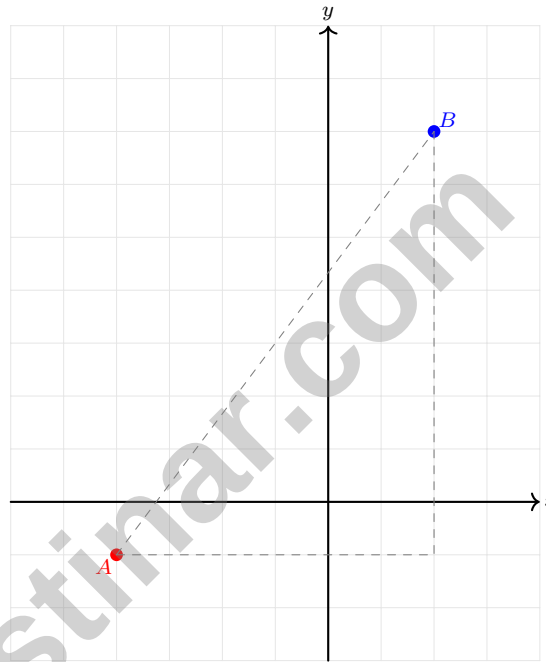
☐ A. $W = -3t + 120$

☐ C. $W = 120t - 3$

☐ B. $W = 3t + 120$

☐ D. $W = 120 - t$

- 2) What is the distance between $(-4, -1)$ and $(2, 7)$?



☐ A. 10

☐ C. $\sqrt{90}$

☐ B. 8

☐ D. 6

- 3) A regular pentagon has all sides equal and all angles equal. What is the measure of each interior angle?

☐ A. 120°

☐ C. 72°

☐ B. 100°

☐ D. 108°



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4) A figure is reflected across a line and then rotated. Which statement is always true?

- ☐ A. The figure changes size
- ☐ B. The angles are no longer equal
- ☐ C. The resulting figure is congruent to the original
- ☐ D. The perimeter increases

5) Point $Z(6, 8)$ is rotated 90° counterclockwise about the origin. What is the image Z' ?

- ☐ A. $(8, 6)$
- ☐ B. $(-8, 6)$
- ☐ C. $(-6, -8)$
- ☐ D. $(6, -8)$

6) A diagonal walkway connects two opposite corners of a rectangular plaza that is 30 m by 40 m. How long is the walkway?

- ☐ A. 35 m
- ☐ B. 50 m
- ☐ C. 70 m
- ☐ D. 1200 m

7) In a catalog of 480 products, 288 are in stock and 192 are on backorder. Among in-stock items, 216 are discounted. What is the joint relative frequency of products that are both in stock and discounted? Express as a decimal.

8) An angle's measure is 8° more than its supplement. Find the angle's measure.

- ☐ A. 86°
- ☐ B. 88°
- ☐ C. 94°
- ☐ D. 96°



9)

	Basketball	Volleyball	Total
Boys	12	8	20
Girls	10	15	25
Total	22	23	45

Based on the table, if one student is selected at random, what is the probability of selecting a girl who plays volleyball?

- ☐ A. $\frac{15}{25}$
☐ B. $\frac{15}{23}$

- ☐ C. $\frac{15}{45}$
☐ D. $\frac{10}{45}$

10) Which set correctly separates rational and irrational numbers?

- ☐ A. Rational: all decimals; Irrational: all square roots
☐ B. Rational: $\sqrt{2}$, $\frac{1}{3}$; Irrational: $0.\bar{3}$, $\sqrt{9}$
☐ C. Rational: π , $0.101001\dots$; Irrational: $\frac{7}{2}$, $\sqrt{16}$
☐ D. Rational: $\sqrt{4}$, 0.5 ; Irrational: π , $\sqrt{10}$

11) Which equals $0.\overline{27}$?

- ☐ A. $\frac{27}{100}$
☐ B. $\frac{1}{27}$

- ☐ C. $\frac{27}{90}$
☐ D. $\frac{27}{99} = \frac{3}{11}$

12) Which is larger: $\sqrt{26}$ or $\sqrt{27}$?

- ☐ A. $\sqrt{26}$
☐ B. Cannot compare
☐ C. They are equal
☐ D. $\sqrt{27}$

13) Divide $\frac{8.4 \times 10^6}{2.1 \times 10^3}$. Express in scientific notation.

- ☐ A. 4×10^2
☐ B. 0.4×10^2
☐ C. 6.3×10^3
☐ D. 4×10^3



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- 1) Quadrilateral ABCD is mapped onto quadrilateral A'B'C'D' by a translation 3 units right and 2 units up. Which statement must be true?

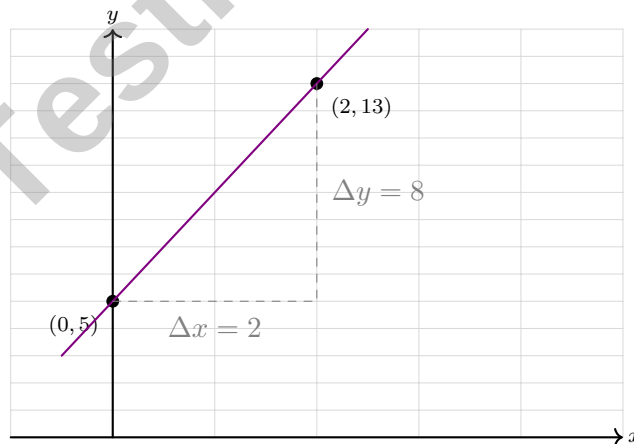
- ☐ A. The perimeters are different ☐ C. Angle A is greater than angle A'
☐ B. The quadrilaterals are congruent ☐ D. Side AB is longer than side A'B'

- 2) A piggy bank has nickels and dimes totaling \$2.75. There are twice as many dimes as nickels. How many nickels are in the bank?

- 3) The first differences of a sequence are $-2, -2, -2, -2$. This indicates a:

- ☐ A. Nonlinear function ☐ C. Exponential function
☐ B. Quadratic function ☐ D. Linear function with negative slope

- 4) A graph shows a line passing through $(0, 5)$ and $(2, 13)$. What is the equation of the line?



- ☐ A. $y = 4x + 5$ ☐ C. $y = 8x + 5$
☐ B. $y = 2x + 5$ ☐ D. $y = 4x + 13$



5) Factor completely: $2x^2 + 10x + 8$.

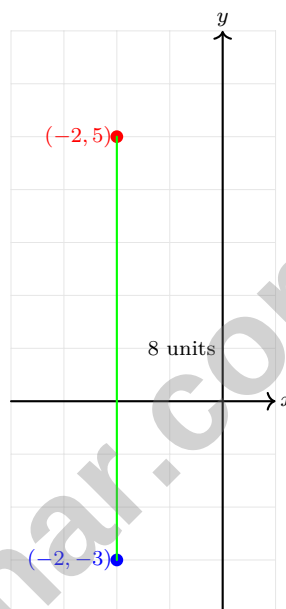
☐ A. $2(x^2 + 5x + 4)$

☐ C. $2(x + 2)(x + 4)$

☐ B. $(x + 2)(2x + 4)$

☐ D. $2x(x + 5) + 8$

6) What is the vertical distance between $(-2, 5)$ and $(-2, -3)$?



☐ A. 3

☐ C. 2

☐ B. 8

☐ D. 5

7) What is the sum of the interior angles of a decagon (10-sided polygon)?

☐ A. 1800°

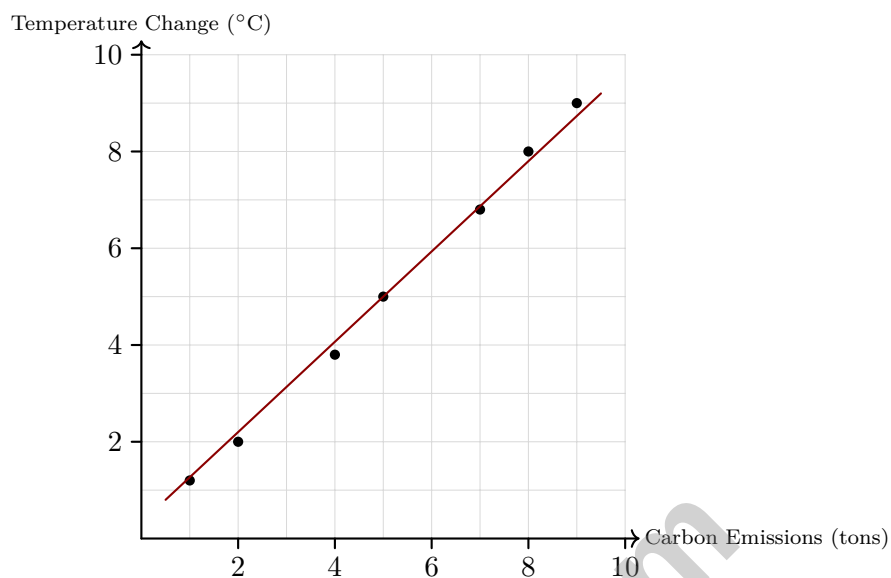
☐ C. 1620°

☐ B. 1260°

☐ D. 1440°



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1)

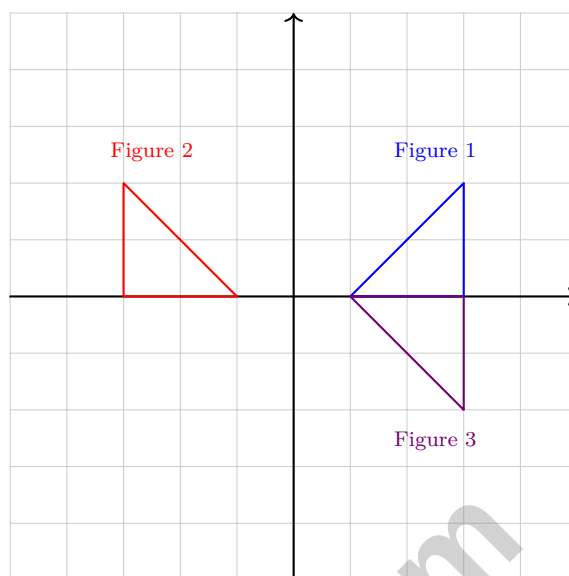
A scientist studies the relationship between carbon emissions and temperature change. The trend line shows a strong positive relationship. Which is the best interpretation?

- ☐ A. As carbon emissions increase, temperature tends to increase on average
☐ B. Temperature change has no relationship to emissions
☐ C. Higher temperatures cause carbon emissions
☐ D. The relationship is random

2) For the inequality $y \leq -\frac{1}{2}x + 3$, which point is in the solution region?

- ☐ A. (0, 5)
☐ B. (0, 0)
☐ C. (2, 4)
☐ D. (4, 4)





3)

If Figure 1 is the original, identify the transformation from Figure 1 to Figure 2 and from Figure 1 to Figure 3.

- | | |
|--|---|
| ☐ A. Both are rotations | ☐ C. Both are translations |
| ☐ B. 1→2 is reflection across y -axis; 1→3 is reflection across x -axis | ☐ D. 1→2 is translation; 1→3 is rotation |

4) $(5.2 \times 10^6) - (1.5 \times 10^6) = ?$

- | | |
|--|---|
| ☐ A. 0.37×10^6 | ☐ C. 3.7×10^0 |
| ☐ B. 6.7×10^6 | ☐ D. 3.7×10^6 |



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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.** (8.16) Initial water is 120 gallons (intercept). Drains 3 gallons per minute (negative slope). Equation: $W = -3t + 120$.
- 2) **Choice A is correct.** (8.27) $d = \sqrt{(2 - (-4))^2 + (7 - (-1))^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$.
- 3) **Choice D is correct.** (8.25) The sum for a pentagon is $(5 - 2) \times 180 = 540^\circ$. Each angle of a regular pentagon is $\frac{540}{5} = 108^\circ$.
- 4) **Choice C is correct.** (8.22) Both reflection and rotation are rigid motions that preserve distances and angles. Any sequence of rigid motions produces a congruent figure.
- 5) **Choice B is correct.** (8.23) The rule for 90° counterclockwise rotation is $(x, y) \rightarrow (-y, x)$. So $(6, 8) \rightarrow (-8, 6)$.
- 6) **Choice B is correct.** (8.28) 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.
- 7) **The correct answer is 0.45.** (8.21) Joint relative frequency: $\frac{216}{480} = 0.45$.
- 8) **Choice C is correct.** (8.25) Let the angle be x . Its supplement is $180 - x$. So $x = (180 - x) + 8 \Rightarrow x = 188 - x \Rightarrow 2x = 188 \Rightarrow x = 94^\circ$.
- 9) **Choice C is correct.** (8.30) Girls playing volleyball: 15. Total students: 45. $P = \frac{15}{45} = \frac{1}{3}$.
- 10) **Choice D is correct.** (8.1) $\sqrt{4} = 2$ (rational), $0.5 = \frac{1}{2}$ (rational), π (irrational), $\sqrt{10}$ (irrational, non-perfect square). All classifications are correct.
- 11) **Choice D is correct.** (8.1) Let $x = 0.\overline{27}$. Then $100x = 27.\overline{27}$. Subtracting: $99x = 27$, so $x = \frac{27}{99} = \frac{3}{11}$.
- 12) **Choice D is correct.** (8.2) Since the square root function is increasing and $26 < 27$, we have $\sqrt{26} < \sqrt{27}$. Therefore $\sqrt{27}$ is larger.
- 13) **Choice D is correct.** (8.5) Divide coefficients and subtract exponents: $\frac{8.4}{2.1} = 4$ and $10^{6-3} = 10^3$, giving 4×10^3 .
- 14) **Choice C is correct.** (8.9) Perpendicular slopes are negative reciprocals. The negative reciprocal of $\frac{3}{4}$ is $-\frac{4}{3}$.
- 15) **Choice A is correct.** (8.11) Subtract 1.5: $0.2x = 1$. Divide by 0.2: $x = 5$.
- 16) **Choice D is correct.** (8.3) Quotient rule for each variable: $\frac{a^4}{a^2} = a^2$ and $\frac{b^3}{b} = b^2$. Result: a^2b^2 .
- 17) **Choice D is correct.** (8.6) Divide coefficients: $3.6 \div 1.2 = 3$. Subtract exponents: $10^{6-2} = 10^4$. Result: 3×10^4 .
- 18) **Choice A is correct.** (8.13) Option A fails the function test: input 3 maps to both 1 and 2. The other options each have unique input-output pairs.
- 19) **The correct answer is B, C.** (8.11) $(x + 6)^2 = (x + 6)(x + 6) = x^2 + 12x + 36$. Choice B is the expanded form, and choice C is the factored form. Choice A ignores the middle term. Choice D has an error. Choice E is a different factorization that does not equal $(x + 6)^2$.
- 20) **Choice C is correct.** (8.15) Both have slope $\frac{1}{2}$. Intercepts are 3 and -2 . Parallel lines.
- 21) **Choice D is correct.** (8.2) $\sqrt{5} \times \sqrt{20} = \sqrt{100} = 10$ exactly. This is a perfect pair.
- 22) **Choice D is correct.** (8.4) $5^2 = 25$ and $6^2 = 36$. Since 35 is between these but closer to 36, $\sqrt{35} \approx 5.92$, closest to 5.8 among the choices.
- 23) **The correct answer is 5.** (8.27) Mean = 12.5. Deviations: $|5 - 12.5| = 7.5$, $|10 - 12.5| = 2.5$, $|15 - 12.5| = 2.5$, $|20 - 12.5| = 7.5$. Sum = 20. MAD = $20/4 = 5$.
- 24) **Choice C is correct.** (8.8) Slope = $\frac{2}{7} \approx 0.286 \approx 0.29$. This is a shallow line (slope less than 1).
- 25) **Choice C is correct.** (8.12) For a system to have no solution, the lines must be parallel. This requires the same slope but different y -intercepts.
- 26) **Choice C is correct.** (8.17) From 3 to 5 hours, the elevation drops from 3m to 1m, indicating a downhill segment (decreasing function).
- 27) **Choice C is correct.** (8.25) In an isosceles triangle, the two base angles are equal. If the vertex angle is 40° , then $40 + 2x = 180$, so $x = 70^\circ$.



Hi, Progress Maker!

◇ You have done more than complete a set of tests. You have rehearsed the habits that make Grade 8 math feel less surprising. ◇

★ **Remember this:** Progress is not always loud. Sometimes it looks like fewer careless errors, clearer work, better pacing, and more confidence when a problem is unfamiliar. You practiced across 8 full Grade 8 practice tests, and that repeated effort matters. ★

Signs of Growth

- **Clear Work:** Your steps are easier to follow.
- **Better Pacing:** You know when to move on and return.
- **Stronger Checks:** You catch mistakes earlier.
- **Calmer Thinking:** You know what to try next.

Grade 8 test-day tip: Keep one short list of mistakes you often make, then check that list before each practice session.

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

Jay Daie

Your Growth Coach

PRACTICE TODAY, SUCCEED TOMORROW!

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror 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.



BUILD SKILLS & BOOST CONFIDENCE

Strengthen understanding and feel prepared for test day.



COVERS ALL ESSENTIAL TOPICS

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Ratios & Proportional Relationships
- ✓ Linear Equations
- ✓ Functions
- ✓ Geometry
- ✓ Measurement & Data
- ✓ Statistics & Probability
- ✓ Pythagorean Theorem
- ✓ Volume & Surface Area
- ✓ Transformations
- ✓ Inequalities
- ✓ Data Analysis & Graphing
- ✓ And More!



2 EXTRA ONLINE PRACTICE TESTS INCLUDED!

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PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better Results.