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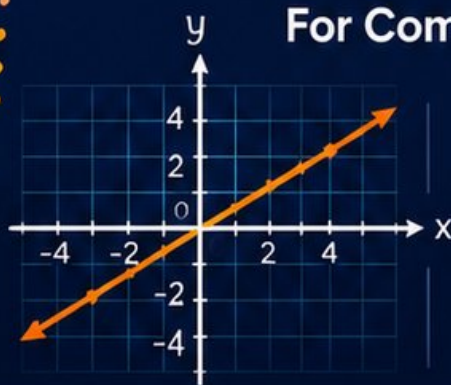
Colorado CMAS

GRADE 8

MATH

PRACTICE TESTS

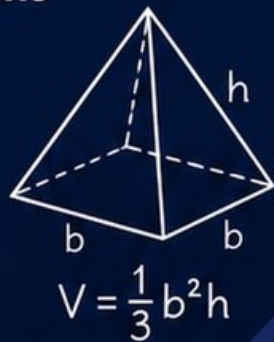
Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$

$$C = 2\pi r$$

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



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



8

 PRINTED
TESTS

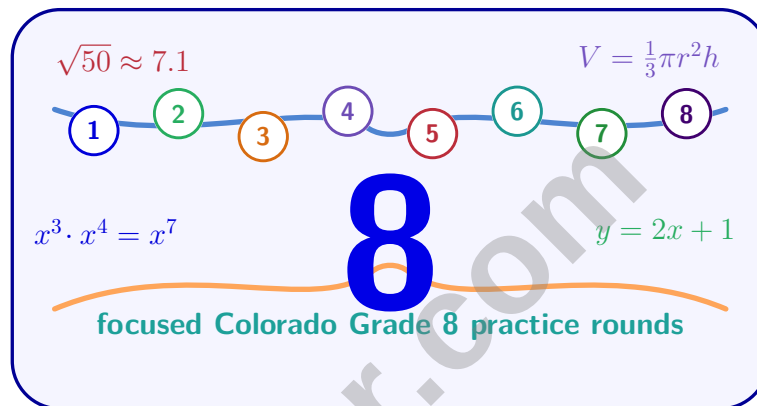
2

 ONLINE
TESTS

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

8 Colorado CMAS Grade 8 Math Practice Tests

Focused Colorado Review for Equations, Transformations, and Data



Eight complete 40-question Grade 8 CMAS 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, Colorado Grade 8 Problem Solver!

Eight focused rounds for sharper CMAS math thinking

This book gives you eight full Grade 8 CMAS 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 Colorado 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.

Colorado 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 CMAS 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.



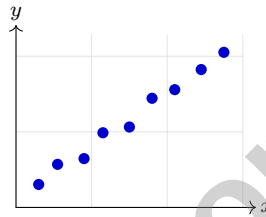
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- 1) A student uses the model $G = 0.5a + 60$ to predict grades based on assignment score a . The model predicts a grade of 85, but the student actually earns 82. Which statement is correct?

- ☐ A. The residual is 3 (model overestimated)
- ☐ B. The residual is -3 (model overestimated)
- ☐ C. The residual is 0 (perfect prediction)
- ☐ D. The model has a slope error



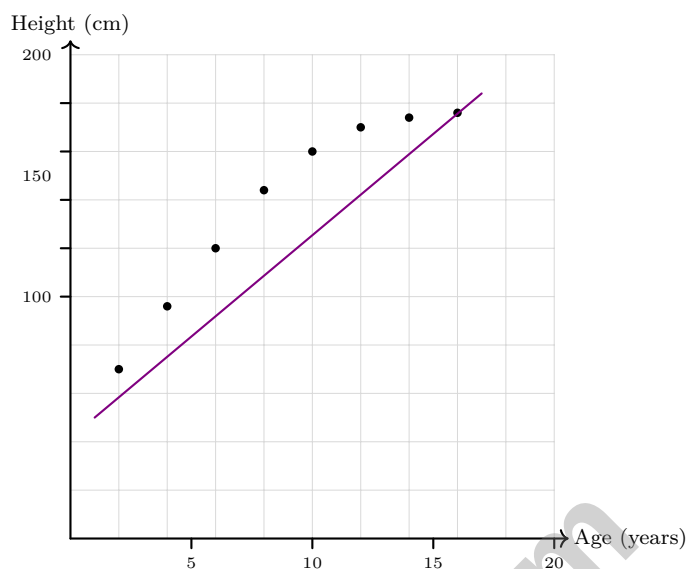
2)

Consider a scatter plot of students' math test scores versus their previous quiz scores. Most points lie close to an imaginary diagonal line, with only a few outliers. Which statement best describes the strength of correlation?

- ☐ A. Very weak correlation
- ☐ B. No correlation between the variables
- ☐ C. Strong positive correlation
- ☐ D. Weak negative correlation



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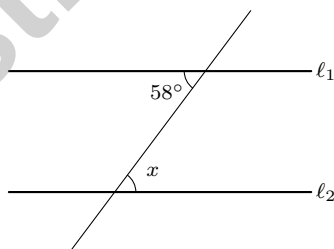


3)

Which statement best describes the trend shown in the scatter plot?

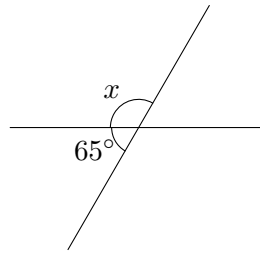
- ☐ A. There is no relationship between age and height
 ☐ C. Height decreases as age increases
☐ B. Age determines height perfectly
 ☐ D. Height increases rapidly with age up to about age 16, then levels off

4) In the diagram, lines ℓ_1 and ℓ_2 are parallel. Find the measure of angle x .



- ☐ A. 58°
☐ C. 122°
☐ B. 68°
☐ D. 180°





5)

Two lines intersect. One angle measures 65° . What is x , the measure of an adjacent angle?

☐ A. 25°
☐ C. 115°
☐ B. 65°
☐ D. 155°

6) Two classes have the same mean test score of 75. Class A has $MAD = 3$, and Class B has $MAD = 8$. What does this tell us?

☐ A. Class B has higher individual scores

☐ C. Class A has more consistent scores

☐ B. Class A has more students

☐ D. Class B performed better overall

7) A deck of cards has 4 aces out of 52 cards. If you draw a card, replace it, and draw again, what is the probability that both draws are aces?

☐ A. $\frac{4}{52}$
☐ C. $\frac{1}{152}$
☐ B. $\frac{16}{2704}$
☐ D. $\frac{8}{52}$

8) If x is a whole number and $\sqrt{x}$ is rational, then x must be:

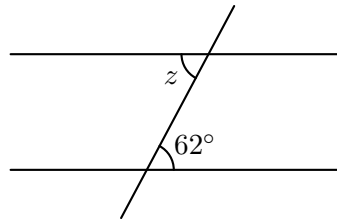
☐ A. Irrational

☐ C. A perfect square

☐ B. Odd

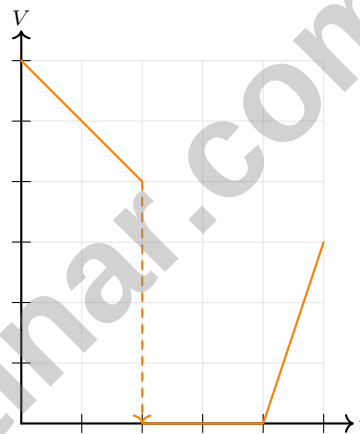
☐ D. Greater than 10


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1)

Two parallel lines are cut by a transversal. The angle marked 62° and angle z are alternate interior angles. What is z ?

☐ A. 28°
☐ C. 118°
☐ B. 62°
☐ D. 148°


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)

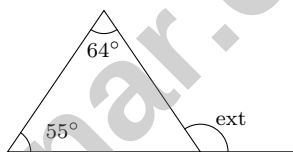

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- 3) A rectangle's length is 4 cm more than its width. If the perimeter is 32 cm, what is the length?

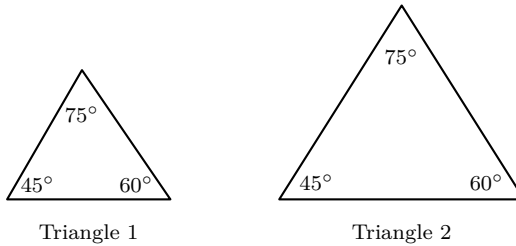
- 4) Point P is translated 6 units left and 8 units up to form point P'. If P is at $(3, -2)$, what are the coordinates of P'?

☐ A. $(-3, 6)$ ☐ C. $(-3, -10)$ ☐ B. $(9, 6)$ ☐ D. $(9, -10)$

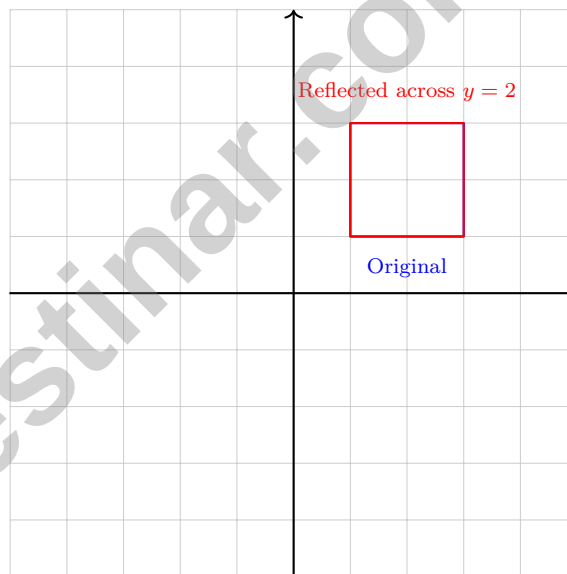
- 5) An exterior angle of a triangle is formed by extending one side. If the two non-adjacent interior angles are 55° and 64° , what is the exterior angle?

☐ A. 64° ☐ C. 109° ☐ B. 89° ☐ D. 119° 

- 1) Two triangles both have angles measuring 45° , 60° , and 75° . Are these triangles necessarily similar?



- ☐ A. No, the sides must also be proportional
☐ B. No, only two angles are given
☐ C. Yes, angles alone determine similarity (AAA)
☐ D. Only if the triangles are congruent



2)

A square with vertices at $(1, 1)$, $(3, 1)$, $(3, 3)$, and $(1, 3)$ is reflected across the line $y = 2$. What are the coordinates of the image of the vertex originally at $(1, 1)$?

- ☐ A. $(1, 1)$
☐ B. $(1, 2)$
☐ C. $(1, 3)$
☐ D. $(1, 4)$



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3) What is $\sqrt{361}$?

☐ A. 18

☐ C. 20

☐ B. 21

☐ D. 19

4) A student graphs $x \leq -1$ but draws a DASHED line instead of solid. What is the consequence?

☐ A. The boundary point $x = -1$ is excluded from the solution

☐ C. The shading direction is flipped

☐ D. The inequality changes to $x > -1$

☐ B. The boundary point $x = -1$ is still included

5) Function $A(t) = 60t$ (mph). Function B passes through $(0, 1)$ and $(5, 5)$ (on distance-time graph, with t in hours). Which travels faster?



☐ A. Function A

☐ C. Both same speed.

☐ B. Function B

☐ D. Cannot be determined.

6) Which table represents a LINEAR function?

x	1	2	3	4
y	3	7	11	15

☐ A. Yes, the first differences are constant

☐ C. Yes, all y -values are positive

☐ D. No, the x -values increase

☐ B. No, the y -values are not all even



Colorado CMAS 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 Colorado CMAS practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice B is correct.** (8.SP.A.3) Residual = actual – predicted = $82 - 85 = -3$. Negative residual means the model overestimated (predicted too high).
- 2) **Choice C is correct.** (8.SP.A.1) When most points cluster tightly around an imaginary upward line with few outliers far from it, the correlation is strong. Wide scatter indicates weak correlation.
- 3) **Choice D is correct.** (8.SP.A.2) The data shows steep growth early, flattening near age 15–16. This reflects human biology: rapid growth during childhood and early teens, then plateauing as growth ends in adulthood.
- 4) **Choice A is correct.** (8.G.A.5) Alternate interior angles formed by parallel lines and a transversal are congruent.
- 5) **Choice C is correct.** (8.G.B.7) Adjacent angles on a straight line are supplementary, so they sum to 180° . Thus $x = 180 - 65 = 115^\circ$.
- 6) **Choice C is correct.** (8.G.B.8) A smaller MAD (Class A = 3) indicates less variability and more consistency. Class B's larger MAD (8) shows greater spread in scores.
- 7) **Choice B is correct.** (8.G.B.7) $P(\text{ace and ace}) = \frac{4}{52} \times \frac{4}{52} = \frac{16}{2704}$.
- 8) **Choice C is correct.** (8.NS.A.1) For whole numbers, a rational square root means the square root is actually a whole number. That happens only for perfect squares such as 1, 4, 9, 16, and 25.
- 9) **The correct answer is (3, -5).** (8.G.A.2) A reflection across the x -axis changes the sign of the y -coordinate while keeping the x -coordinate the same. Thus, (3, 5) maps to (3, -5).
- 10) **The correct answer is 540.** (8.G.A.5) Sum = $5 \times 108 = 540^\circ$. Alternatively: $(5 - 2) \times 180 = 3 \times 180 = 540^\circ$.
- 11) **Choice D is correct.** (8.NS.A.2) $7^2 = 49$ and $8^2 = 64$. Since $49 < 53 < 64$, we have $7 < \sqrt{53} < 8$.
- 12) **Choice C is correct.** (8.NS.A.1) Let $x = 0.037$. Then $1000x = 37.037$. Subtracting: $999x = 37$, so $x = \frac{37}{999}$.
- 13) **Choice D is correct.** (8.NS.A.2) $\sqrt{7} \approx 2.646$, so $2\sqrt{7} \approx 5.29$.
- 14) **Choice C is correct.** (8.G.B.7) Total amount to repay: \$10,000 (principal) + \$2,500 (interest) = \$12,500. Five equal annual payments: $\$12,500 / 5 = \$2,500$ per payment. After first payment of \$2,500, remaining owed is $\$12,500 - \$2,500 = \$10,000$.
- 15) **Choice A is correct.** (8.EE.B.6) Slope = $\frac{3-0}{0-(-1)} = 3$. When $x = 0$, $y = 3$, so $b = 3$. Thus $y = 3x + 3$.
- 16) **Choice D is correct.** (8.EE.A.2) $\sqrt{200} = \sqrt{100 \times 2} = 10\sqrt{2} \approx 10 \times 1.41 = 14.1$. So 14 is the closest integer.
- 17) **Choice D is correct.** (8.EE.A.3) Divide: $\frac{3 \times 10^8}{3.4 \times 10^2} = \frac{3}{3.4} \times 10^6 \approx 0.88 \times 10^6 = 8.8 \times 10^5 \approx 880,000$.
- 18) **Choice D is correct.** (8.EE.C.7) Subtract $3x$: $7 = 2$, which is false. No value of x satisfies this equation.
- 19) **The correct answer is 0.75.** (8.SP.A.4) Among dog owners: $\frac{108}{144} = 0.75$. This is a row-conditional frequency.
- 20) **The correct answer is A,B.** (8.F.B.5) From (0, 1) to (2, 5), the function increases, so A is true. From (2, 5) to (4, 5), the function is constant, so B is true. It is not decreasing on $[2, 4]$, the maximum is 5, and the y -intercept is 1.
- 21) **Choice D is correct.** (8.EE.C.7) Dividing by -5 requires flipping $<$ to $>$. The correct step is $x - 1 > -2$, so the correct solution is $x > -1$, not $x < -1$.
- 22) **Choice B is correct.** (8.G.B.7) Trapezoid area = $\frac{1}{2}(b_1 + b_2) \times h = \frac{1}{2}(4 + 6) \times 2 = 10 \text{ m}^2$.
- 23) **The correct answer is 192.** (8.NS.A.2) Multiply the number of choices: $6 \times 8 \times 4 = 192$ different complete meals.
- 24) **Choice D is correct.** (8.EE.A.1) Multiply exponents: $(p^{-2})^3 = p^{-2 \cdot 3} = p^{-6}$.
- 25) **Choice D is correct.** (8.EE.A.4) Divide coefficients: $8 \div 2 = 4$. Subtract exponents: $10^{8-3} = 10^5$. Result: 4×10^5 .
- 26) **Choice C is correct.** (8.EE.B.5) Unit price $k = \frac{9.60}{8} = 1.20$ dollars per song.
- 27) **Choice B is correct.** (8.EE.C) Verify (4, -2) in option B: $3(4) - (-2) = 14$ and $4 + (-2) = 2$. The other choices do not satisfy both equations.
- 28) **Choice A is correct.** (8.EE.C.7) FOIL: $(2x + 5)(3x - 1) = 6x^2 - 2x + 15x - 5 = 6x^2 + 13x - 5$.
- 29) **Choice B is correct.** (8.F.A.1) The domain is the set of all inputs (x -coordinates). From the pairs, the inputs are 1, 3, 5, 7.



Hi, Thoughtful Reader!

◇ A strong Grade 8 test taker is also a strong reader. You practiced turning words, tables, graphs, and diagrams into math decisions. ◇

★ **Remember this:** That skill grows each time you slow down enough to ask what the problem is really telling you and what it is really asking for. This version gave you 8 opportunities to rehearse test-day habits. ★

Reader-to-Solver Skills

- **Circle the Ask:** Make the target visible.
- **Sort Information:** Separate useful facts from extra words.
- **Match Units:** Keep quantities connected.
- **Answer Fully:** Include the value and what it means.

Grade 8 test-day tip: After solving, reread only the final question. Make sure your answer matches it exactly.

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

Jay Daie

Your Reading-and-Math Helper

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!



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PRACTICE. PREPARE. SUCCEED.



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More Practice. More Confidence.
Better Results.