

Colorado

CMAS

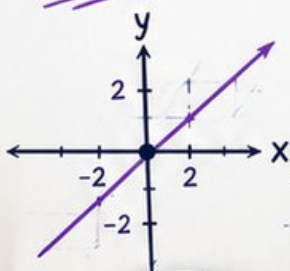
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

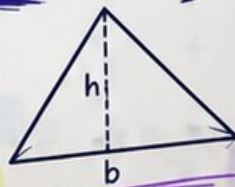
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$



7 PRINTED
TESTS



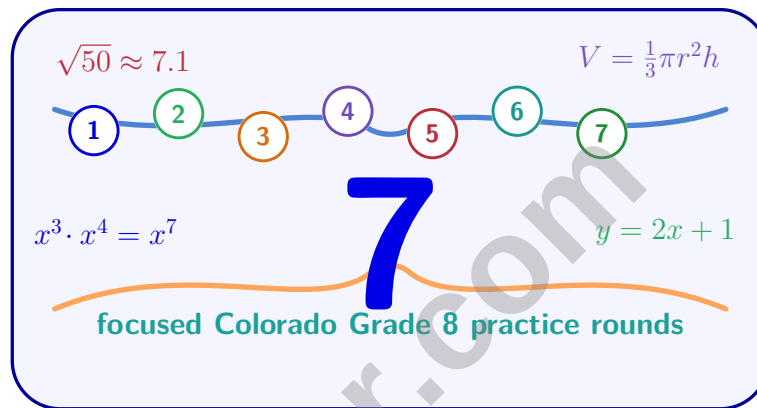
2 ONLINE
TESTS



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

7 Colorado CMAS Grade 8 Math Practice Tests

Targeted CMAS Practice for Grade 8 Reasoning and Problem Solving



Seven 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!

Seven focused rounds for sharper CMAS math thinking

This book gives you seven 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

A seven-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?

Seven CMAS tests, 280 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.
Test 7	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
Answer Pages	Compact keys and explanations that show why each answer works.

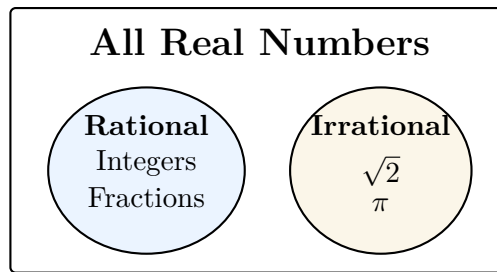
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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& answers

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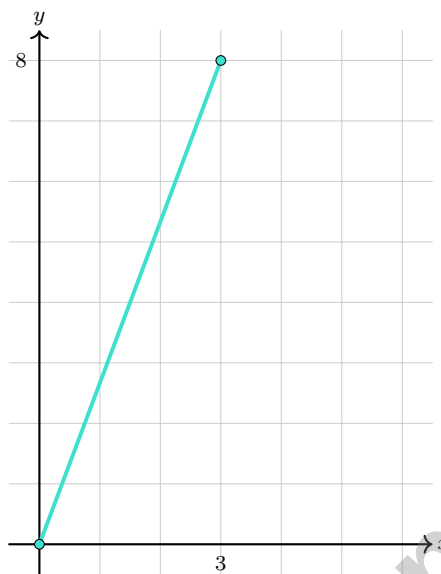
1)

Which statement is true?

- ☐ A. All square roots are irrational ☐ D. Every irrational number can be written as a fraction
☐ B. All integers are rational
☐ C. Some repeating decimals are irrational
- 2) A shape consists of a large triangle (base 16 ft, height 10 ft) with a smaller triangle (base 8 ft, height 5 ft) cut out from its center. What is the remaining area?
- ☐ A. 30 ft² ☐ C. 60 ft²
☐ B. 40 ft² ☐ D. 80 ft²
- 3) 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



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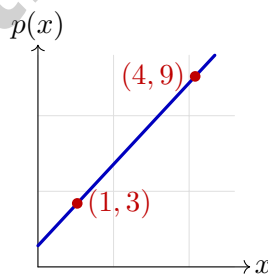


4)

What is y when $x = 6$?

☐ A. 12☐ C. 16☐ B. 14☐ D. 18

- 5) Function p with graph through $(1, 3)$ and $(4, 9)$ (slope shown visually). Function q : “starts at 5, decreases by 2 each unit.” Which has a positive slope?

☐ A. Only p ☐ C. Both p and q ☐ B. Only q ☐ D. Neither p nor q 

6) A transformation maps $(-2, 5)$ to $(2, 5)$. Which transformation is this?

- ☐ A. Reflection across the y -axis ☐ C. Translation left 4
☐ B. Rotation 90° counterclockwise ☐ D. Dilation by scale factor 2

7) Solve for m : $\frac{m}{5} - 2 = 3$. Show all work and verify your solution.

8) Which pair of figures is NOT similar?

- ☐ A. Two circles with radii 3 and 6 ☐ C. A rectangle 2×4 and a rectangle 3×6
☐ B. A 3–4–5 triangle and a 6–8–10 triangle ☐ D. A square 5×5 and a rectangle 5×10

9) 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

10) Which set of side lengths forms a right triangle?

- ☐ A. 7, 10, 12 ☐ C. 4, 5, 10
☐ B. 6, 8, 10 ☐ D. 1, 2, 4



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1) A two-way table of 120 people shows:

	Owns Car	No Car	Total
Urban	24	36	60
Rural	45	15	60
Total	69	51	120

What is the joint frequency of rural people who own a car?

☐ A. $\frac{60}{120}$

☐ B. $\frac{45}{60}$

☐ C. $\frac{45}{120}$

☐ D. $\frac{45}{69}$

2) The elevation rises 500 feet over a horizontal distance of 2000 feet. What is the slope?

3) Which is the solution to $4(2x - 1) = 3x + 9$?

☐ A. $x = 1$

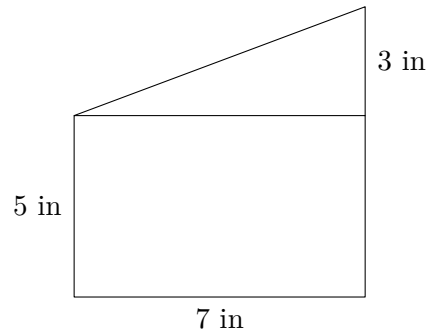
☐ B. $x = 3$

☐ C. $x = \frac{13}{5}$

☐ D. $x = -5$



- 4) A composite figure is made of a rectangle (7 in by 5 in) with a right triangle ($base = 7$ in, $height = 3$ in) on one side. Find the total area.



- ☐ A. 24.5 in^2
☐ C. 45.5 in^2
☐ B. 35 in^2
☐ D. 56 in^2
- 5) Juan borrows \$1,200 at 8% simple interest. If he repays the loan in 2 years, what is the total amount he owes?
- ☐ A. \$1,200
 ☐ C. \$1,392
☐ B. \$1,292
 ☐ D. \$1,512
- 6) A farmer plants rows of corn. Each row contains 20 plants. The relationship between rows (x) and total plants (y) is proportional. How many plants are in 8 rows?
- ☐ A. 120 plants
 ☐ C. 160 plants
☐ B. 140 plants
 ☐ D. 180 plants
- 7) 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?

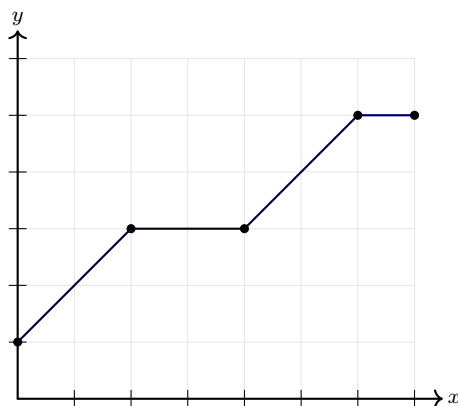
x	0	2	4
$q(x)$	2	5	8

- ☐ A. $p(x)$
☐ C. Both have equal slopes.
☐ B. $q(x)$
☐ D. Cannot be determined.



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1)



Identify all intervals where the function is increasing.

- ☐ A. $[0, 2]$ only
☐ B. $[0, 2]$ and $[4, 6]$
☐ C. $[2, 4]$ and $[4, 6]$
☐ D. $[0, 2]$, $[4, 6]$, and $[6, 7]$

2)



Looking at the scatter plot above, approximately what is the profit when the cost is \$60?

- ☐ A. \$80
☐ B. \$60
☐ C. \$40
☐ D. \$20



- 3) A data set with 10 values has $MAD = 0$, and all values are 100. If one value changes from 100 to 120, what is the new MAD?

- ☐ A. 0 ☐ C. 3.6
☐ B. 2 ☐ D. Cannot be determined

4)

	Fiction	Science
Hardcover	8	5
Paperback	4	3

A library shelf has the books shown. If two books are selected without replacement, what is the probability both are hardcover fiction?

- ☐ A. $\frac{8}{20}$ ☐ C. $\frac{28}{400}$
☐ B. $\frac{64}{400}$ ☐ D. $\frac{14}{95}$
- 5) An exterior angle of a triangle measures 148° . If one of the remote interior angles is 85° , find the other remote interior angle.

- 6) Two complementary angles have measures of x and $2x + 6$. Write and solve an equation to find both angle measures.



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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.NS.A.1)** Any integer n can be written as $\frac{n}{1}$, so every integer is rational. Choice A is false because square roots of perfect squares, such as $\sqrt{25}$, are rational. Choice C is false because repeating decimals are always rational. Choice D is false because numbers that can be written as a fraction are rational, not irrational.
- 2) **Choice C is correct.** **(8.G.B.7)** Large triangle = $\frac{1}{2} \times 16 \times 10 = 80 \text{ ft}^2$. Small triangle = $\frac{1}{2} \times 8 \times 5 = 20 \text{ ft}^2$. Remaining = $80 - 20 = 60 \text{ ft}^2$.
- 3) **Choice C is correct.** **(8.G.B.7)** Credit card interest: $1500 \times 0.18 = \$270$. Student loan interest: $10000 \times 0.04 = \$400$. Total: $\$270 + \$400 = \$670$.
- 4) **Choice C is correct.** **(8.EE.B.5)** Slope $k = \frac{8}{3}$. Equation: $y = \frac{8}{3}x$. At $x = 6$: $y = \frac{8}{3}(6) = 16$.
- 5) **Choice A is correct.** **(8.F.A.2)** Slope of p : $(9 - 3)/(4 - 1) = 6/3 = 2 > 0$. Slope of q : $-2 < 0$ (decreases). Only p is positive.
- 6) **Choice A is correct.** **(8.G.A.3)** The y -coordinate stays the same while the x -coordinate negates. This is reflection across the y -axis: $(x, y) \rightarrow (-x, y)$.
- 7) **The correct answer is $m = 25$.** **(8.EE.C.7)** Add 2 to both sides: $\frac{m}{5} = 5$. Multiply both sides by 5: $m = 25$. Verify: $\frac{25}{5} - 2 = 5 - 2 = 3 \checkmark$.
- 8) **Choice D is correct.** **(8.G.A.4)** The square has aspect ratio 1 : 1 while the rectangle has aspect ratio 1 : 2. Different aspect ratios mean they are not similar.
- 9) **Choice A is correct.** **(8.F.A.3)** The differences are $13 - 5 = 8$, $21 - 13 = 8$, $29 - 21 = 8$. A constant difference of 8 indicates a linear function.
- 10) **Choice B is correct.** **(8.G.B.6, 8.G.B.7)** Check: $6^2 + 8^2 = 36 + 64 = 100 = 10^2$. This is a scaled 3-4-5 triple (all multiplied by 2).
- 11) **Choice A is correct.** **(8.G.B.8)** $d = \sqrt{(2 - (-4))^2 + (7 - (-1))^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$.
- 12) **Choice C is correct.** **(8.G.A.5)** 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 $900 - 790 = 110^\circ$.
- 13) **The correct answer is -4 .** **(8.EE.C.7)** Solving gives $x > -4$, so the boundary value is -4 .
- 14) **Choice A is correct.** **(8.SP.A.3)** In $d = mt + b$ form, $m = 45$ is the slope. Here it represents speed: 45 miles per hour.
- 15) **Choice B is correct.** **(8.F.B.4)** Linear functions have constant slope. Option B: slope from 1 to 2 is $\frac{8-5}{1} = 3$; from 2 to 3 is $\frac{11-8}{1} = 3$. Constant, so linear.
- 16) **Choice B is correct.** **(8.F.B.5)** The highest point on the graph is at the second vertex, $(2, 3)$. All other points are lower.
- 17) **Choice A is correct.** **(8.G.A.2)** 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.
- 18) **The correct answer is B,E.** **(8.EE.B.6)** The equation has slope $-\frac{2}{3}$ and y -intercept 5, so B and E are correct. The point $(5, 0)$ is not on the line because $-\frac{2}{3}(5) + 5 = \frac{5}{3}$, not 0. A perpendicular line would have slope $\frac{3}{2}$, not $-\frac{3}{2}$.
- 19) **Choice A is correct.** **(8.G.A.5)** Alternate exterior angles are congruent when lines are parallel.
- 20) **Choice B is correct.** **(8.G.B.7)** Let the smaller angle be x . Then $x + (x + 18) = 90$, so $2x + 18 = 90$, giving $x = 36^\circ$.
- 21) **Choice B is correct.** **(8.G.B.7)** $B = 230^2 = 52900 \text{ m}^2$. $V = \frac{1}{3} \times 52900 \times 147 \approx \frac{7776300}{3} \approx 2.6 \times 10^6 \text{ m}^3$.
- 22) **The correct answer is 3.** **(8.G.B.8)** The boundary line is $y = 3$.
- 23) **Choice C is correct.** **(8.SP.A.1)** We expect more rain to support taller plants. A cluster of plants that receives high rainfall but stays very short is unexpected and deserves investigation (possible causes: poor soil, disease, insufficient sunlight).
- 24) **Choice A is correct.** **(8.SP.A.4)** This is a column-conditional frequency. Among tea drinkers (90 total), afternoon drinkers are 40. Relative frequency: $\frac{40}{90} \approx 0.44$.
- 25) **Choice A is correct.** **(8.G.B.8)** 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 = $2/4 = 0.5$.



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Hi, Smart Reviewer!

◇ The best learning often happens after the test, when you look back and notice what worked and what needs attention. This broad and demanding book gave you seven strong Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** You can use these practice tests as a map. The questions you solved quickly show strengths; the questions you missed show where to train next. ★

Review Routine

- **Sort:** Group mistakes by skill.
- **Reread:** Check whether the question was misunderstood.
- **Resolve:** Do the problem again without looking.
- **Record:** Write the lesson in one sentence.

Grade 8 test-day tip: Review in short focused sessions. Ten careful minutes can be more useful than an hour of rushing.

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

Jay Daie

Your Review Coach

PRACTICE TODAY SUCCEED TOMORROW!

Give your child the confidence and skills they need with **7 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!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

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 | ✓ 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! |



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