

3

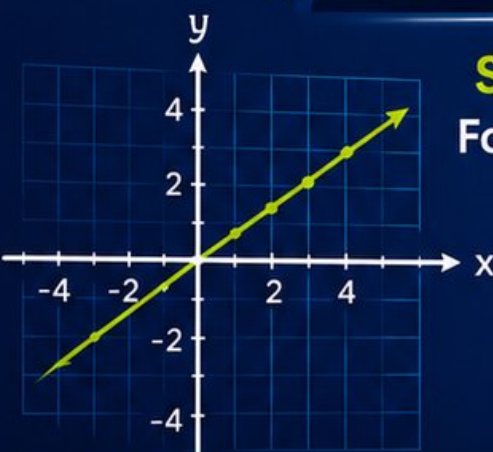
Colorado CMAS

GRADE 8

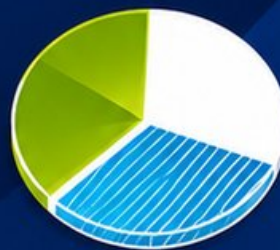
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3

**PRINTED
TESTS**



2

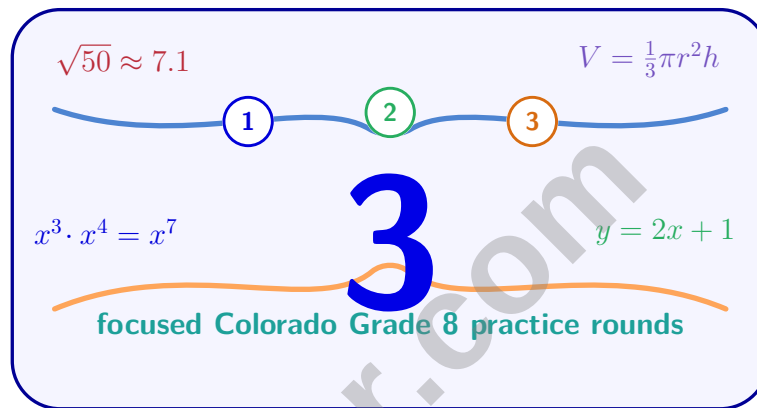
**ONLINE
TESTS**



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

3 Colorado CMAS Grade 8 Math Practice Tests

Targeted CMAS Review for Algebra, Geometry, and Data Skills



Three 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!

Three focused rounds for sharper CMAS math thinking

This book gives you three 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 three-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?

Three CMAS tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
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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Table of Contents



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1) Convert $0.\overline{142857}$ (6-digit repeat) to a fraction.

☐ A. $\frac{1}{6}$

☐ B. $\frac{142857}{100000}$

☐ C. $\frac{142857}{99999}$

☐ D. $\frac{142857}{999999} = \frac{1}{7}$

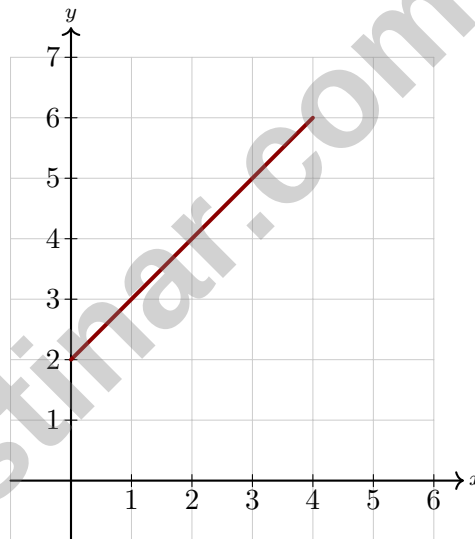
2) A rectangular prism has a square base (length = width) and height equal to the side length of the base. If the surface area is 150 cm^2 , what is the side length of the square base?

☐ A. 3 cm

☐ B. 5 cm

☐ C. 6 cm

☐ D. 7 cm



3)

What is the y -intercept of the line shown?

☐ A. 1

☐ B. 4

☐ C. 3

☐ D. 2



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4) Solve for y : $-4y + 7 = 15$

☐ A. $y = -8$

☐ C. $y = 2$

☐ B. $y = 8$

☐ D. $y = -2$

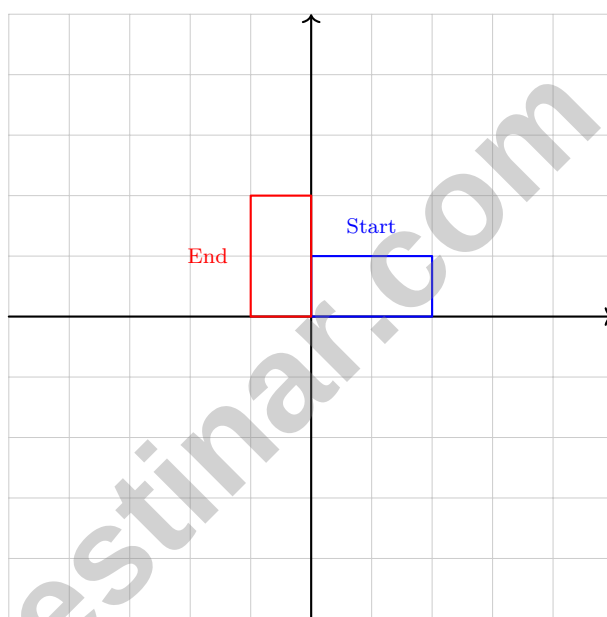
5) A student solves $-6x \geq -24$ and gets $x \geq 4$. What error did they make?

☐ A. Divided incorrectly

☐ C. Forgot to flip the inequality

☐ B. Subtracted instead of dividing

☐ D. Got the correct answer



6)

What transformation maps the blue figure (Start) to the red figure (End)?

☐ A. Reflection across the y -axis

☐ D. 90° clockwise rotation about the origin

☐ B. Reflection across the x -axis

☐ C. 90° counterclockwise rotation about the origin



- 7) A basketball is a sphere with diameter 24 cm. What is its approximate volume? (Use $\pi \approx 3.14$.)
- ☐ A. 904.32 cm³ ☐ C. 7234.56 cm³
☐ B. 1809.56 cm³ ☐ D. 14476.44 cm³
- 8) A car's fuel consumption model is $M = -0.05d + 35$, where M is miles per gallon and d is driving distance in hundreds of miles. What does the slope of -0.05 tell you?
- ☐ A. The car uses 0.05 gallons per mile ☐ C. For every 100 miles driven (1 unit of d), MPG decreases by 0.05
☐ B. The car starts with 35 gallons at $d = 0$ ☐ D. The car loses 0.05 MPG for every gallon used
- 9) Express 5^{-2} as a fraction.
- ☐ A. -25 ☐ C. $\frac{2}{5}$
☐ B. $-\frac{1}{5}$ ☐ D. $\frac{1}{25}$
- 10) If $x^3 = 512$, what is x ?
- ☐ A. 7 ☐ C. 9
☐ B. 10 ☐ D. 8
- 11) Does the table show values from the equation $y = 5x$?
- | | | | |
|-----|---|----|----|
| x | 1 | 2 | 3 |
| y | 5 | 10 | 15 |
- ☐ A. No, should be $y = 5 + x$ ☐ C. Yes, each y -value is 5 times the matching x -value.
☐ B. No, should be $y = x + 5$ ☐ D. No, missing $x = 0$



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1) $(4.0 \times 10^5) + (6.0 \times 10^4) = ?$

☐ A. 10×10^4

☐ B. 10×10^5

☐ C. 1.0×10^6

☐ D. 4.6×10^5

n	4	9	16	25
$\sqrt{n}$	2	3	4	5

2)

Using the table, between which integers does $\sqrt{11}$ lie?

☐ A. 2 and 3

☐ B. 5 and 6

☐ C. 4 and 5

☐ D. 3 and 4

3) Which is the best estimate of $\frac{\pi}{2}$?

☐ A. 1.27

☐ B. 3.14

☐ C. 2.14

☐ D. 1.57

4) Which expression equals 4.25×10^{-1} ?

☐ A. 425

☐ B. 4.25

☐ C. 42.5

☐ D. 0.425

5) If \$3,000 earns \$450 in simple interest over 3 years, what is the annual interest rate?

☐ A. 3%

☐ B. 15%

☐ C. 10%

☐ D. 5%



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6) A rectangular prism has length 8 m, width 5 m, and height 3 m. What is its surface area?

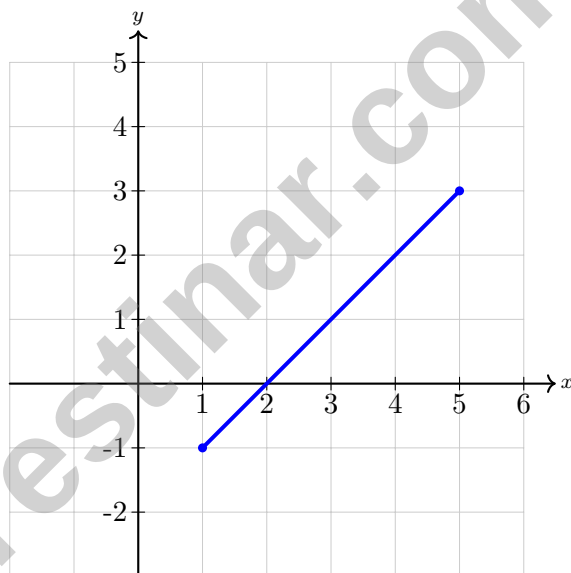
☐ A. 120 m^2

☐ B. 158 m^2

☐ C. 238 m^2

☐ D. 280 m^2

7) If $f(x) = \frac{x-1}{3}$ and $f(x) = 2$, find x .



8)

What is the slope of the line shown?

☐ A. 1

☐ B. 2

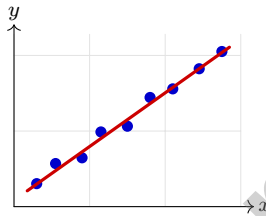
☐ C. 3

☐ D. 4



1) Which statement correctly uses a test point to determine if $(3, 3)$ is in the solution region of $4x - 3y \geq 3$?

- ☐ A. $4(3) - 3(3) = 3$, so it is NOT in the region ☐ C. $4(3) - 3(3) = 12 \geq 3$ TRUE, so it IS in the region
☐ B. $4(3) - 3(3) = 3 \geq 3$ TRUE, so it IS in the region ☐ D. $4(3) - 3(3) = 0 \not\geq 3$, so it is NOT in the region



2)

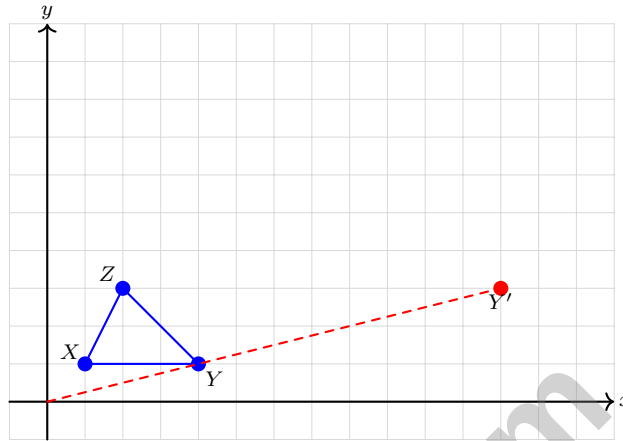
A scatter plot shows the relationship between study time (hours) and quiz performance (percent). Which phrase best completes: “The strength of a linear model depends on...”?

- ☐ A. How close data points cluster to the trend line ☐ C. The total number of data points
☐ B. Whether the line has a positive slope ☐ D. The starting value of the y -intercept



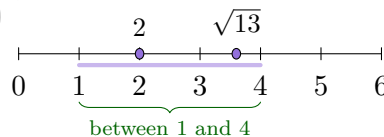
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- 3) Triangle XYZ has vertices at $X(1, 1)$, $Y(4, 1)$, and $Z(2, 3)$. If dilated by scale factor 3 from the origin, where is the vertex that corresponds to Y ?



- ☐ A. $(12, 3)$
☐ C. $(7, 4)$
☐ B. $(4, 1)$
☐ D. $(3, 3)$
- 4) 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
 ☐ C. \$200
☐ B. \$250
 ☐ D. \$500



5)

The highlighted interval contains many irrational numbers between 1 and 4. Should 2 be classified as irrational?

- ☐ A. Yes, because 2 is plotted between 1 and 4
☐ B. It cannot be determined
☐ C. Yes, because $2 = \sqrt{4}$
☐ D. No, because 2 is rational, not irrational



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 D is correct.** **(8.NS.A.1)** Let $x = 0.\overline{142857}$. Multiply by 1,000,000: $1000000x = 142857.\overline{142857}$. Subtract: $999999x = 142857$, giving $x = \frac{1}{7}$.
- 2) **Choice B is correct.** **(8.G.C.9)** Let side length = s . Then $SA = 2(s^2 + s \cdot s + s \cdot s) = 2(s^2 + 2s^2) = 2(3s^2) = 6s^2 = 150$. So $s^2 = 25$, giving $s = 5$ cm.
- 3) **Choice D is correct.** **(8.EE.B.6)** The y -intercept is where the line crosses the y -axis, which occurs at $(0, 2)$.
- 4) **Choice D is correct.** **(8.EE.C.7)** Subtract 7: $-4y = 8$. Divide by -4 : $y = -2$.
- 5) **Choice C is correct.** **(8.EE.C.7)** Dividing by -6 requires flipping: $x \leq 4$, not $x \geq 4$.
- 6) **Choice C is correct.** **(8.G.A.1)** Using $(x, y) \rightarrow (-y, x)$: $(2, 0) \rightarrow (0, 2)$, $(2, 1) \rightarrow (-1, 2)$, matching the End figure.
- 7) **Choice C is correct.** **(8.G.C.9)** Radius $r = 12$ cm. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 1728 = 7234.56$ cm³.
- 8) **Choice C is correct.** **(8.SP.A.3)** The slope -0.05 is the rate of change in M per unit increase in d . Since d is measured in hundreds of miles, each 100-mile interval causes MPG to drop by 0.05.
- 9) **Choice D is correct.** **(8.EE.A.1)** A negative exponent means reciprocal: $5^{-2} = \frac{1}{5^2} = \frac{1}{25}$.
- 10) **Choice D is correct.** **(8.EE.A.2)** Solve $x^3 = 512$ by taking the cube root: $x = \sqrt[3]{512} = 8$.
- 11) **Choice C is correct.** **(8.EE.B.5)** Each value: $y = 5(1) = 5$, $y = 5(2) = 10$, $y = 5(3) = 15$. All match the equation $y = 5x$.
- 12) **Choice A is correct.** **(8.G.B.8)** Test $(0, 0)$: $3(0) + 2(0) = 0 \leq 12$ TRUE. The boundary is included, so use $\leq$.
- 13) **Choice A is correct.** **(8.F.A.2)** $T_{\text{oven}}(10) = 15(10) + 70 = 220$ degrees. Slope of freezer: $(-15 - (-5))/2 = -5$, so $T_{\text{freeze}}(10) = -5 - 5(10) = -55$ degrees. Oven at 220 is much warmer.
- 14) **The correct answer is 0.00047.** **(8.EE.A.3)** Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- 15) **Choice C is correct.** **(8.F.A.3)** Only $y = 6x - 9$ is in the form $y = mx + b$. Options A, B, and D involve exponents, reciprocals, or square roots, making them nonlinear.
- 16) **Choice B is correct.** **(8.F.B.4)** Slope is $\frac{11-7}{2-1} = 4$. When $x = 3$: $y = 11 + 4 = 15$.
- 17) **Choice B is correct.** **(8.F.B.5)** The constant segments at $y = 2$ and $y = 5$ stay below and above $y = 4$. The increasing segment must cross $y = 4$ exactly once.
- 18) **Choice A is correct.** **(8.G.A.2)** Since triangle XYZ is congruent to triangle UVW, triangle UVW must have sides 5 cm, 7 cm, and 9 cm, not 10 cm. The student made an error by changing one of the side lengths.
- 19) **Choice C is correct.** **(8.G.A.3)** The rule $(x, y) \rightarrow (-x, -y)$ describes a 180° rotation about the origin. So $(3, 5) \rightarrow (-3, -5)$.
- 20) **Choice B is correct.** **(8.G.A.5)** Sum: $(2m + 5) + (3m - 10) + (m + 35) = 180 \Rightarrow 6m + 30 = 180 \Rightarrow m = 25^\circ$. Thus angle $A = 2(25) + 5 = 55^\circ$.
- 21) **The correct answer is A, C.** **(8.NS.A.1)** $\sqrt{169} = 13$ is rational (perfect square). The repeating decimal $0.777 \dots = \frac{7}{9}$ is rational. The other values are irrational: $\sqrt{170}$ (non-perfect square), 2π (irrational multiple of π), and $\sqrt{2} + 1$ (irrational plus rational is irrational).
- 22) **Choice B is correct.** **(8.G.B.6, 8.G.B.7)** If area = 50, then side $s = \sqrt{50} = 5\sqrt{2}$. Diagonal = $s\sqrt{2} = 5\sqrt{2} \cdot \sqrt{2} = 10$ units, or use $d^2 = 50 + 50 = 100$, so $d = 10$ units.
- 23) **Choice A is correct.** **(8.G.B.8)** $d = \sqrt{(2 - (-6))^2 + (-7 - 1)^2} = \sqrt{8^2 + (-8)^2} = \sqrt{64 + 64} = \sqrt{128} = 8\sqrt{2}$ units.
- 24) **Choice A is correct.** **(8.G.B.7)** Co-interior angles are supplementary. So $u = 180 - 106 = 74^\circ$.
- 25) **Choice B is correct.** **(8.G.B.7)** $B = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$ cm². $V = \frac{1}{3} \times \frac{1}{4} \times \frac{3}{2} = \frac{3}{24} = \frac{1}{8}$ cm³.
- 26) **Choice B is correct.** **(8.G.B.7)** The square area is $20 \times 20 = 400$ m². Four corner triangles are removed, and each has area $\frac{1}{2} \times 3 \times 3 = 4.5$ m². The octagon area is $400 - 4(4.5) = 382$ m².
- 27) **Choice A is correct.** **(8.G.A.5)** The sum of interior angles in a hexagon is 720° . The known angles add to $85 + 125 + 140 + 110 + 98 = 558^\circ$, so $x = 720 - 558 = 162^\circ$.



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Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for 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**.