

3

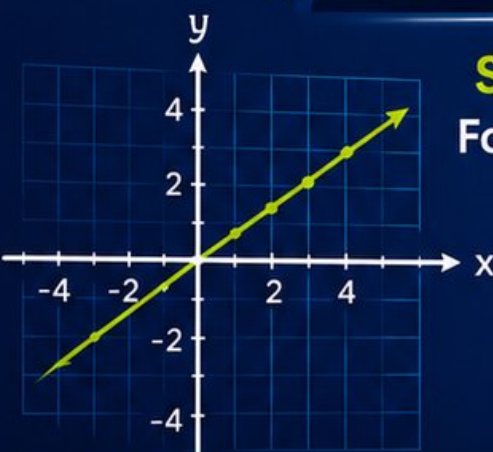
Maryland MCAP

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

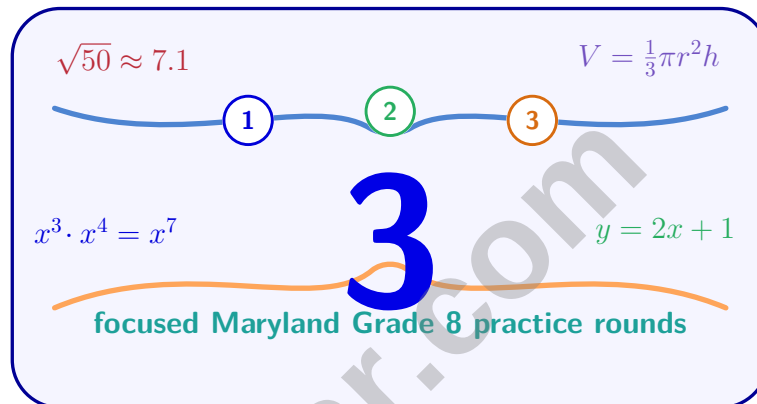
2

 ONLINE TESTS

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

3 Maryland MCAP Grade 8 Math Practice Tests

Compact Maryland Test Prep for Grade 8 Math Growth



Three complete 40-question Grade 8 MCAP 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



Copyright ©

Testinar Inc



Published by Testinar Inc

Testinar.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

This publication is independently produced and has no official connection to any state, district, or national testing program.

Test names and organizational names used herein are the property of their respective trademark holders.



Copyright ©

Welcome, Maryland Grade 8 Problem Solver!

Three focused rounds for sharper MCAP math thinking

This book gives you three full Grade 8 MCAP 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 Maryland 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.

Maryland 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 MCAP 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.



Scan me!
For more practice
& answers

Table of Contents



Testinar.com

1) Solve: $x^7 \cdot x^4 = x^9$.

☐ A. 13

☐ B. 36

☐ C. 5

☐ D. $\frac{9}{4}$

2) A cylinder has radius 5 cm and height 12 cm. What is the lateral surface area (side only, not including the bases)?

☐ A. $60\pi \text{ cm}^2$

☐ B. $120\pi \text{ cm}^2$

☐ C. $150\pi \text{ cm}^2$

☐ D. $300\pi \text{ cm}^2$

3) A line has slope -3 and passes through $(2, 5)$. Which equation represents this line?

☐ A. $y = -3x + 5$

☐ B. $y = 3x - 1$

☐ C. $y = -3x - 1$

☐ D. $y = -3x + 11$

4) Solve for x : $6x + 2 = 5x + 9$

☐ A. $x = 7$

☐ B. $x = -7$

☐ C. $x = 11$

☐ D. $x = 2$

5) Solve: $-3(x - 2) \leq 9$

☐ A. $x \leq -1$

☐ B. $x \leq 1$

☐ C. $x \geq -1$

☐ D. $x \geq 1$

6) Which ordered pair is NOT in the solution region of $x + y \leq 4$?

☐ A. $(1, 2)$

☐ B. $(2, 2)$

☐ C. $(0, 4)$

☐ D. $(3, 2)$



7) Under a reflection across the line $y = x$, the point $(4, 7)$ maps to which point?

☐ A. $(7, 4)$

☐ C. $(4, -7)$

☐ B. $(-4, -7)$

☐ D. $(-7, -4)$

8) Aiden uses a credit card with 18% APR and carries a \$500 balance for 6 months without paying. His friend Bea avoids the credit card and saves \$500 from her paycheck. Which statement best describes the financial difference between them after 6 months?

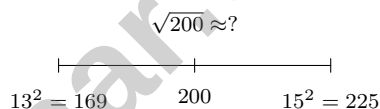
☐ A. Bea should use the credit card instead

☐ C. Aiden gains interest; Bea loses money to inflation

☐ B. Aiden and Bea have the same financial position

☐ D. Aiden owes \$45 more than Bea has; Bea is ahead by at least \$45

9) Which is a reasonable approximation for $\sqrt{200}$?



☐ A. 12

☐ C. 16

☐ B. 18

☐ D. 14

10) $(2 \times 10^2) \times (3 \times 10^3) \times (5 \times 10^1) = ?$

☐ A. 3×10^6

☐ C. 3×10^7

☐ B. 3×10^8

☐ D. 3×10^5



Scan me!
For more practice
& answers

11) A computer downloads files at 15 MB per second. How many MB are downloaded in 2.5 seconds?

☐ A. 30 MB

☐ C. 37.5 MB

☐ B. 35 MB

☐ D. 40 MB

12) Solve: $\begin{cases} y = \frac{1}{3}x + 2 \\ y = -\frac{2}{3}x + 5 \end{cases}$

☐ A. $(2, 7/3)$

☐ C. $(1, 7/3)$

☐ B. $(4, 10/3)$

☐ D. $(3, 3)$

13) Factor $x^2 - x - 20$.

☐ A. $(x - 5)(x + 4)$

☐ C. $(x - 10)(x + 2)$

☐ B. $(x + 5)(x - 4)$

☐ D. $(x - 20)(x + 1)$

14) Why is $y = \sqrt{x}$ considered a function for non-negative x ?

☐ A. Because $\sqrt{x}$ is always positive.

☐ C. Because the square root is the inverse of squaring.

☐ B. Because each input $x \geq 0$ produces exactly one output y .

☐ D. Because x and y are both non-negative.

15) Function $h(x) = -2x + 7$ and function k shown in the table: $(0, 7)$, $(1, 5)$, $(2, 3)$. Which statement is true?

x	0	1	2
$k(x)$	7	5	3

☐ A. h has a steeper slope than k .

☐ C. Both have equal slopes.

☐ B. k has a steeper slope than h .

☐ D. The slopes cannot be compared.



1) Point $D(4, 5)$ undergoes a dilation centered at the origin with scale factor 2. What is the distance from the origin to the dilated point D' ?

- ☐ A. $\sqrt{41}$
☐ B. $2\sqrt{41}$

- ☐ C. 18
☐ D. 9

2) What is $0.\overline{345}$ as a fraction?

- ☐ A. $\frac{345}{1000}$
☐ B. $\frac{3}{45}$

- ☐ C. $\frac{345}{999}$
☐ D. $\frac{342}{990} = \frac{19}{55}$

3) Which value is irrational?

- ☐ A. $\sqrt{16}$
☐ B. $\sqrt{9}$

- ☐ C. $\sqrt{7}$
☐ D. $\sqrt{25}$

4) Is π^2 closer to 9 or 10?

- ☐ A. Closer to 9
☐ B. Cannot be determined

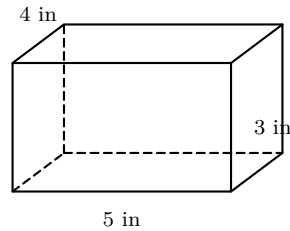
- ☐ C. Exactly 9.5
☐ D. Closer to 10

5) Which pair both simplify to the same value?

- ☐ A. 3.5×10^2 and 350
☐ B. 7.2×10^{-3} and 0.0072

- ☐ C. 1.4×10^5 and 0.14×10^6
☐ D. 4.8×10^{-2} and 4.8×10^{-1}





6)

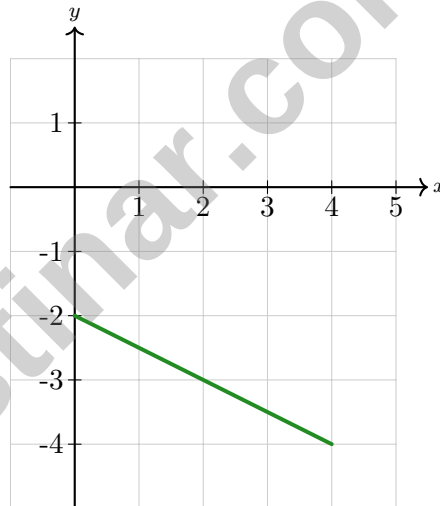
A rectangular prism has dimensions 5 inches $\times$ 4 inches $\times$ 3 inches. If you wrap a ribbon around only the four vertical sides (not the top or bottom), how much area is covered?

☐ A. 12 in^2

☐ B. 24 in^2

☐ C. 54 in^2

☐ D. 94 in^2



7)

What is the equation of the line shown?

☐ A. $y = -\frac{1}{2}x - 2$

☐ B. $y = -2x - 2$

☐ C. $y = \frac{1}{2}x - 2$

☐ D. $y = 2x - 2$



Scan me!
For more practice
& answers

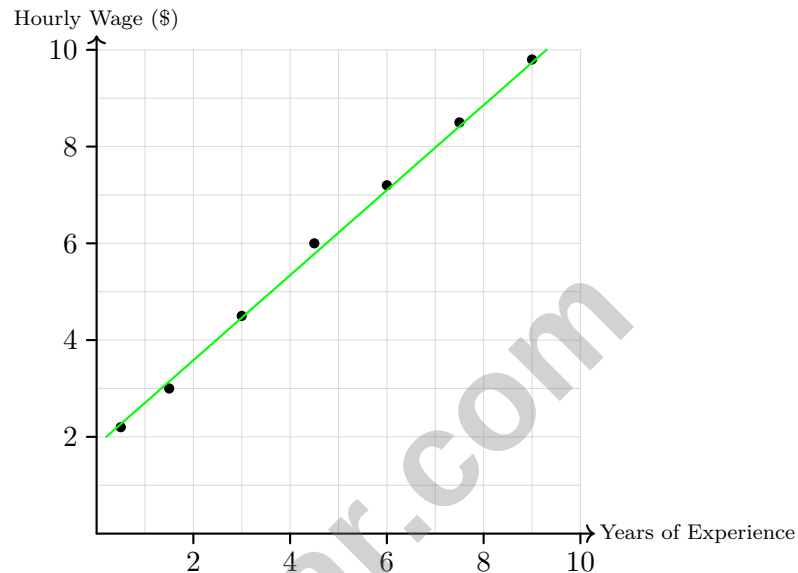
1) Given $f(x) = 2x - 5$, what is $f(4)$?

☐ A. 11

☐ C. -1

☐ B. 3

☐ D. 13



2)

A company tracks years of experience versus hourly wage. Based on the trend line, what is the approximate slope (wage increase per year)?

☐ A. \$1.10 per year

☐ C. \$1 per year

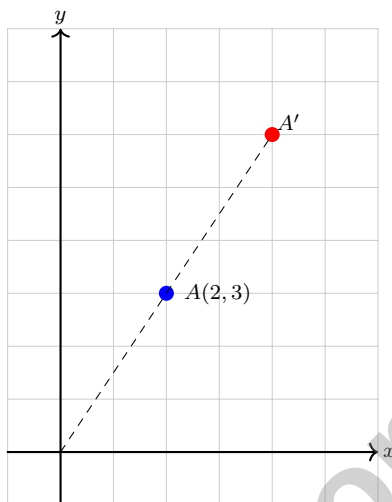
☐ B. \$2 per year

☐ D. \$0.50 per year



Scan me!
For more practice
& answers

- 3) Point A is at $(2, 3)$ and is dilated by a scale factor of 2 from the origin. Where is the dilated point A' ?



- ☐ A. $(1, 1.5)$ ☐ C. $(2, 3)$
☐ B. $(4, 6)$ ☐ D. $(2, 5)$
- 4) A rectangle's length is 4 cm more than its width. If the perimeter is 32 cm, what is the length?



Maryland MCAP 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 Maryland MCAP practice test.



Scan me!
For more practice
& answers

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.EE.A.1) Using the product rule, the missing exponent plus 4 must equal 9. So the missing exponent is $9 - 4 = 5$.
- 2) **Choice B is correct.** (8.G.C.9) Lateral surface area $= 2\pi rh = 2\pi(5)(12) = 120\pi$ cm².
- 3) **Choice D is correct.** (8.EE.B.6) Using point-slope form, then converting: $5 = -3(2) + b$ gives $b = 11$, so $y = -3x + 11$.
- 4) **Choice A is correct.** (8.EE.C.7) Subtract $5x$ and 2: $x = 7$.
- 5) **Choice C is correct.** (8.EE.C.7) Distribute: $-3x + 6 \leq 9$. Subtract 6: $-3x \leq 3$. Divide by -3 and flip the inequality: $x \geq -1$.
- 6) **Choice D is correct.** (8.G.B.8) Test $(3, 2)$: $3 + 2 = 5 \not\leq 4$ FALSE. The other points all satisfy $x + y \leq 4$.
- 7) **Choice A is correct.** (8.G.A.1) Reflection across the line $y = x$ swaps coordinates: $(x, y) \rightarrow (y, x)$. So $(4, 7) \rightarrow (7, 4)$. Distractor D represents reflection across $y = -x$.
- 8) **Choice D is correct.** (8.G.B.7) Interest on Aiden's card: $I = 500 \times 0.18 \times 0.5 = \45 . Aiden now owes \$545; Bea has \$500. The credit card cost Aiden \$45 more than not using it.
- 9) **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.
- 10) **Choice C is correct.** (8.EE.A.4) Multiply coefficients: $2 \times 3 \times 5 = 30 = 3 \times 10^1$. Add exponents: $10^{2+3+1} = 10^6$. Combine: $3 \times 10^1 \times 10^6 = 3 \times 10^7$.
- 11) **Choice C is correct.** (8.EE.B.5) Proportional: $y = 15x$. For $x = 2.5$: $y = 15(2.5) = 37.5$ MB.
- 12) **Choice D is correct.** (8.EE.C) Set the expressions equal: $\frac{1}{3}x + 2 = -\frac{2}{3}x + 5$. Add $\frac{2}{3}x$ to both sides: $x + 2 = 5$, so $x = 3$. Then $y = \frac{1}{3}(3) + 2 = 3$. Solution: $(3, 3)$.
- 13) **Choice A is correct.** (8.EE.C.7) Find two numbers that multiply to -20 and add to -1 : -5 and 4 . Check: $-5 \cdot 4 = -20$ and $-5 + 4 = -1$.
- 14) **Choice B is correct.** (8.F.A.1) A function requires each input to have exactly one output. For $y = \sqrt{x}$, each non-negative input x has exactly one non-negative square root.
- 15) **Choice C is correct.** (8.F.A.2) Slope of h : -2 . From k 's table: $(5 - 7)/(1 - 0) = -2$. Both have slope -2 .
- 16) **Choice B is correct.** (8.F.A.3) First differences: $8 - 5 = 3$, $12 - 8 = 4$, $17 - 12 = 5$. Non-constant differences indicate nonlinear growth.
- 17) **Choice A is correct.** (8.F.B.4) Slope: $\frac{48-24}{2-1} = 24$ cupcakes per hour. The line passes through the origin (when $h = 0$, $c = 0$). Equation: $c = 24h$.
- 18) **Choice D is correct.** (8.F.B.5) From $x = 0$ to $x = 3$, the function values drop from 5 to 2, so the function is decreasing over this interval.
- 19) **The correct answer is A, C.** (8.NS.A.1) $\sqrt{169} = 13$ is rational (perfect square). The repeating decimal $0.777\ldots = \frac{7}{9}$ 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).
- 20) **Choice B is correct.** (8.G.A.2) Perimeter of Triangle 1 $= 5 + 5 + 6 = 16$ cm. Even though Triangle 2 is oriented differently (rotated or reflected), congruent figures have equal corresponding sides. Therefore, Triangle 2 also has sides of 5 cm, 5 cm, and 6 cm, giving a perimeter of 16 cm.
- 21) **Choice C is correct.** (8.G.A.5) $180 - 29 - 71 = 80^\circ$.
- 22) **Choice B is correct.** (8.G.B.8) Distance $= \sqrt{(3-0)^2 + (4-0)^2} = \sqrt{9+16} = \sqrt{25} = 5$ miles. (This is a 3-4-5 Pythagorean triple.)
- 23) **Choice A is correct.** (8.G.C.9) Volume of a cone: $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 5^2 \times 12 = \frac{1}{3} \times 942 = 314$ m³.
- 24) **Choice A is correct.** (8.G.B.7) Let the smaller angle be x . Then $3x + x = 90$, so $4x = 90$ and $x = 22.5^\circ$.
- 25) **Choice B is correct.** (8.G.C.9) Base area: $B = \frac{1}{2} \times 6 \times 8 = 24$ in². Volume: $V = \frac{1}{3} \times 24 \times 10 = 80$ in³.
- 26) **Choice A is correct.** (8.G.B.7) Decompose using subtraction: circle minus rectangle. Circle area $= \pi r^2 = 3.14 \times 4^2 = 50.24$ m². Rectangle area $= 8 \times 3 = 24$ m². Remaining $= 50.24 - 24 = 26.24$ m².
- 27) **The correct answer is 0.00047.** (8.EE.A.3) Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.



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!

Use these two additional online practice tests for extra review after the printed tests.

testinar.com/math8

PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better **Results**.