

Maryland

MCAP

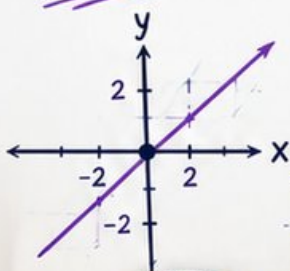
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

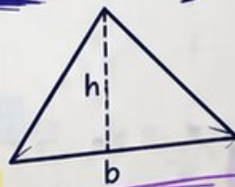
$$y = mx + b$$



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

Practice
Today
Succeed
Tomorrow!

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



7 PRINTED
TESTS



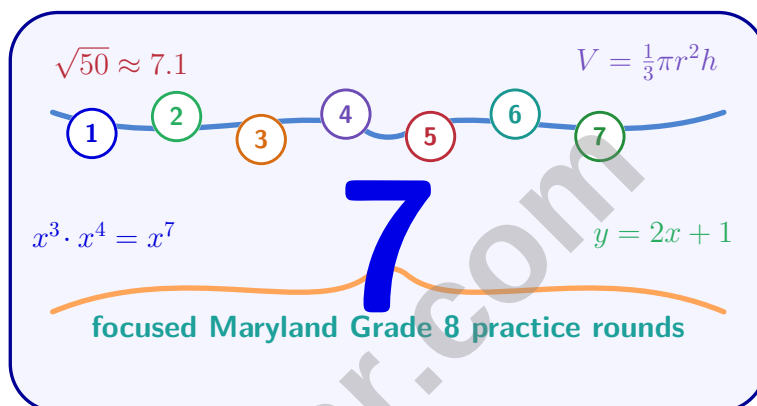
2 ONLINE
TESTS



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

7 Maryland MCAP Grade 8 Math Practice Tests

Grade 8 MCAP Review for Systems, Transformations, and Probability



Seven 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!

Seven focused rounds for sharper MCAP math thinking

This book gives you seven 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 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.

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?

Seven MCAP 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.

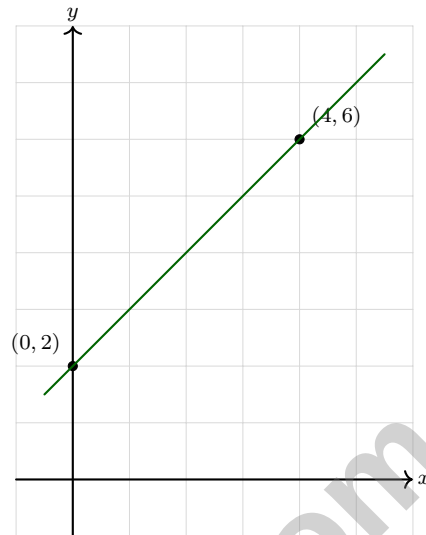


Scan me!
For more practice
& answers

Table of Contents

★ Practice Test 1	_____	13
★ Practice Test 2	_____	28
★ Practice Test 3	_____	43
★ Practice Test 4	_____	60
★ Practice Test 5	_____	76
★ Practice Test 6	_____	92
★ Practice Test 7	_____	108
Practice Test Answer Keys	_____	123
Practice Test Answers and Explanations	_____	128

- 1) The graph shows a linear function. What are the slope and y -intercept?



- ☐ A. Slope = 1, intercept = 2
- ☐ B. Slope = 2, intercept = 1
- ☐ C. Slope = 4, intercept = 6
- ☐ D. Slope = $\frac{1}{2}$, intercept = 4
- 2) A decorative shape consists of a circle (radius 5 cm) with four congruent right triangles arranged around it (each with legs 3 cm and 4 cm). What is the total area? Use $\pi \approx 3.14$.
- ☐ A. 66.5 cm^2
- ☐ B. 90.5 cm^2
- ☐ C. 102.5 cm^2
- ☐ D. 147.5 cm^2
- 3) A bacterium is 9×10^{-6} meters long. A virus is 3×10^{-8} meters long. The bacterium is how many times longer?
- ☐ A. 3×10^3
- ☐ B. 3×10^{-2}
- ☐ C. 3×10^2
- ☐ D. 6×10^{-6}



Scan me!
For more practice
& answers

- 4) Use elimination to solve:
$$\begin{cases} 3x + 4y = 10 \\ 3x - 2y = 4 \end{cases}$$

☐ A. $(1, \frac{7}{4})$

☐ C. $(0, \frac{5}{2})$

☐ B. $(3, \frac{1}{4})$

☐ D. $(2, 1)$

- 5) The table shows the distance traveled over time. Is this a linear relationship?

Time (h)	1	2	3	4
Distance (mi)	60	120	180	240

☐ A. No, time goes up to 4

☐ C. No, the distances double

☐ B. Yes, the first differences are constant (60 mi)

☐ D. Yes, the ratio of distance to time is not constant

- 6) When two parallel lines are cut by a transversal, two co-interior angles are $(2x + 15)^\circ$ and $(x + 45)^\circ$. What is x ?

☐ A. 40

☐ C. 80

☐ B. 60

☐ D. 120

7)

Value	4	8	12
Freq.	2	3	5

Frequency table: mean = 9.2. Calculate MAD.

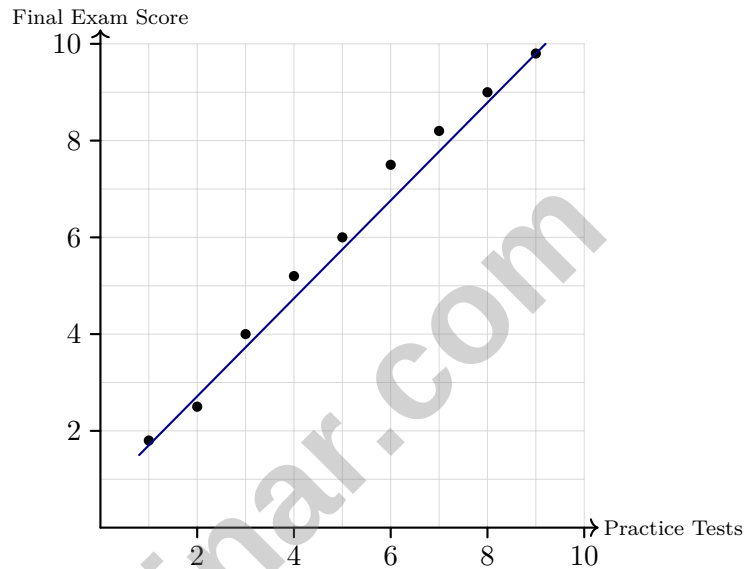
☐ A. 2.0 (forgot to weight by frequency)

☐ D. 4.2 (summed deviations without dividing by n)

☐ B. 2.8

☐ C. 3.4 (used unweighted average of deviations)


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



9)

A student takes 5 practice tests. Based on the trend line, what is the predicted final exam score?

☐ A. Approximately 5

☐ C. Approximately 7

☐ B. Approximately 6

☐ D. Approximately 8

10) Solve: $2(3 - x) \geq 4$

☐ A. $x \geq 1$

☐ C. $x \geq -1$

☐ B. $x \leq -1$

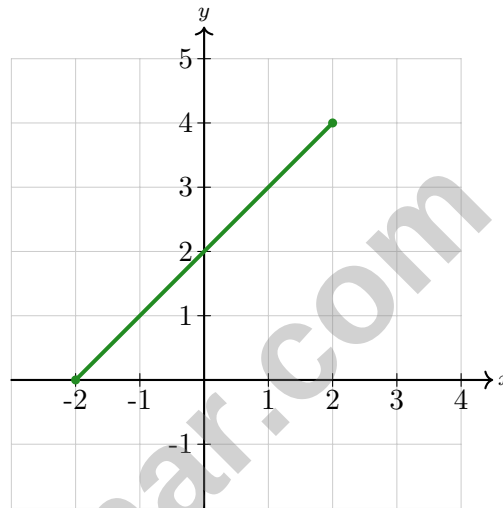
☐ D. $x \leq 1$



Scan me!
For more practice
& answers

1) A student finds the hypotenuse of a 7-24-? right triangle. They calculate $c^2 = 7 + 24 = 31$. Is this method correct?

- ☐ A. Yes; $c = \sqrt{31}$ units ☐ C. Yes; the hypotenuse is 31 units
☐ B. No; they should add the squares: $c^2 = 49 + 576 = 625$, so $c = 25$ ☐ D. No; they forgot to multiply by 2



2)

What is the equation of the line shown?

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

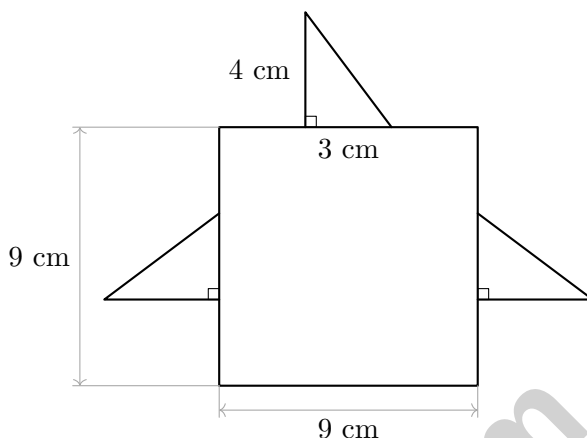
3) What is the solution to $6(x + 2) = 30$?

- ☐ A. $x = 3$ ☐ C. $x = 8$
☐ B. $x = 5$ ☐ D. $x = -2$



Scan me!
For more practice
& answers

- 4) A composite figure has a square base (9 cm by 9 cm) with three congruent right triangles on three sides (base 3 cm, height 4 cm each). What is the total area?



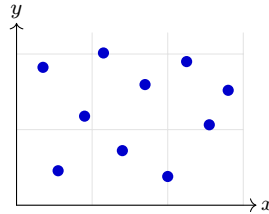
- ☐ A. 81 cm^2
☐ C. 117 cm^2
- ☐ B. 99 cm^2
☐ D. 126 cm^2
- 5) $(4.8 \times 10^{-2}) \times (1.25 \times 10^2) = ?$
- ☐ A. 0.6×10^0
☐ C. 6×10^0
- ☐ B. 6×10^{-1}
☐ D. 6×10^{-4}
- 6) A student solved a system and got $x = 4, y = -2$. Which system did the student solve?
- ☐ A. $2x + y = 6$ and $x - y = 5$
☐ C. $y = -x + 1$ and $y = 2x - 10$
- ☐ B. $3x - y = 14$ and $x + y = 2$
☐ D. $x - 2y = 7$ and $2x + y = 6$
- 7) Which equation is NONLINEAR?
- ☐ A. $y = \frac{5}{2}x - \frac{3}{4}$
☐ C. $y = 4x^{-1}$
- ☐ B. $y = 10 + 0.5x$
☐ D. $y = -8x + 11$



1) The probability of rain tomorrow is $\frac{2}{5}$. What is the probability that it will NOT rain?

- ☐ A. $\frac{3}{5}$
☐ B. $\frac{5}{2}$

- ☐ C. $\frac{1}{5}$
☐ D. $\frac{2}{5}$



2)

A scatter plot of store location distance from downtown (miles) versus average customer income (thousands) shows no clear pattern. The points are scattered randomly. This indicates:

- ☐ A. No correlation between location and customer income
☐ B. Strong positive correlation
☐ C. Strong negative correlation
☐ D. Distance determines income

3) Of 320 patients at a clinic, 200 were prescribed medication and 120 were not. Among those prescribed medication, 160 showed improvement. What is the relative frequency of patients showing improvement among those prescribed medication?

- ☐ A. 0.50
☐ B. 0.80
☐ C. 0.67
☐ D. 0.75

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

- ☐ A. $\frac{27}{100}$
☐ B. $\frac{1}{27}$
☐ C. $\frac{27}{90}$
☐ D. $\frac{27}{99} = \frac{3}{11}$



5) Which value is irrational?

☐ A. $0.5 + 0.25$

☐ B. $\frac{1}{2} + \frac{1}{3}$

☐ C. $\sqrt{10} + 1$

☐ D. 2^2

6) A freelancer's gross income is \$5,000/month. After federal tax (15%), state tax (5%), and self-employment tax (15%), what is the net income?

Gross Income
\$5,000
Total Taxes
35%
Net Income
?

☐ A. \$4,250

☐ B. \$3,500

☐ C. \$4,000

☐ D. \$3,250

7) A rectangle has dimensions 6 units by 4 units. If the rectangle is dilated by scale factor 2.5 centered at the origin, what is the perimeter of the dilated rectangle?



8) A student claims $\sqrt{50}$ is between 5 and 6 because 50 is between 5 and 6. What is the student's error?

☐ A. Correct reasoning☐ B. Should use 7 and 8 instead☐ C. $\sqrt{50}$ is actually an integer☐ D. Should compare 50 to perfect squares, not integers

Scan me!

For more practice
& answers

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

+ - 123 × ÷

Testinar.com

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (8.F.B.4) y -intercept is 2 (at $x = 0$). Slope is $\frac{6-2}{4-0} = \frac{4}{4} = 1$.
- 2) **Choice C is correct.** (8.G.B.7) Circle area $= \pi r^2 = 3.14 \times 5^2 = 78.5 \text{ cm}^2$. Each triangle area $= \frac{1}{2} \times 3 \times 4 = 6 \text{ cm}^2$. Four triangles $= 24 \text{ cm}^2$. Total $= 78.5 + 24 = 102.5 \text{ cm}^2$.
- 3) **Choice C is correct.** (8.EE.A.4) Divide: $\frac{9 \times 10^{-6}}{3 \times 10^{-8}} = \frac{9}{3} \times 10^{-6-(-8)} = 3 \times 10^2$.
- 4) **Choice D is correct.** (8.EE.C) Subtract the second from the first: $(3x + 4y) - (3x - 2y) = 10 - 4$, so $6y = 6$, giving $y = 1$. Substitute: $3x + 4(1) = 10$, so $x = 2$. Solution: $(2, 1)$.
- 5) **Choice B is correct.** (8.F.A.3) The differences are $120 - 60 = 60$, $180 - 120 = 60$, $240 - 180 = 60$. Constant differences mean this is a linear relationship with a speed of 60 mi/h.
- 6) **Choice A is correct.** (8.G.A.5) Co-interior angles are supplementary: $(2x + 15) + (x + 45) = 180$, so $3x + 60 = 180$, giving $x = 40$.
- 7) **Choice B is correct.** (8.G.B.8) Expanded data: 4, 4, 8, 8, 8, 12, 12, 12, 12, 12. The mean is 9.2. Deviations: $|4 - 9.2| = 5.2$ (twice), $|8 - 9.2| = 1.2$ (three times), $|12 - 9.2| = 2.8$ (five times). Sum $= 10.4 + 3.6 + 14 = 28$. MAD $= 28/10 = 2.8$.
- 8) **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: $\frac{25}{5} - 2 = 5 - 2 = 3 \checkmark$.
- 9) **Choice B is correct.** (8.SP.A.2) At $x = 5$ on the trend line, the corresponding y -value is approximately 6.
- 10) **Choice D is correct.** (8.EE.C.7) Distribute: $6 - 2x \geq 4$. Subtract 6: $-2x \geq -2$. Divide by -2 (FLIP): $x \leq 1$.
- 11) **Choice C is correct.** (8.EE.C.7) Difference of squares: $(x + 4)(x - 4) = x^2 - 4^2 = x^2 - 16$.
- 12) **Choice C is correct.** (8.F.B.5) The graph shows a flat segment at 100% from hours 0 to 2, indicating no charge change during idle time. From hour 2 onward, the slope is negative (draining). Option D is false because the battery approaches 1.5%, not 0%.
- 13) **Choice C is correct.** (8.G.C.9) Radius $r = 6$ ft. From $V = \pi r^2 h$: $1130.4 = 3.14 \times 36 \times h \Rightarrow h = \frac{1130.4}{113.04} = 10$ ft.
- 14) **Choice C is correct.** (8.F.A.1) For each input x (positive, negative, or zero), there is exactly one output $y = x^2$. For example, both $x = 2$ and $x = -2$ give $y = 4$, but each specific input has one output.
- 15) **Choice B is correct.** (8.G.A.3) A 270° counterclockwise rotation (or 90° clockwise) maps $(x, y) \rightarrow (y, -x)$.
- 16) **The correct answer is 0.** (8.G.B.8) Substitute $(0, 0)$: $0 + 3(0) = 0$.
- 17) **Choice A is correct.** (8.G.B.6, 8.G.B.7) From $15^2 + 20^2 = 225 + 400 = 625$, we get $c = 25$. The difference is $25 - 15 = 10$ (scaled 3-4-5 triple).
- 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 B is correct.** (8.G.B.8) Since both points have $x = -2$, the vertical distance is $|5 - (-3)| = |5 + 3| = 8$.
- 20) **Choice C is correct.** (8.G.C.9) $396 = \frac{1}{3} \times B \times 12 \Rightarrow B = \frac{396 \times 3}{12} = \frac{1188}{12} = 99 \text{ cm}^2$.
- 21) **Choice B is correct.** (8.G.A.5) Using $\frac{(n-2) \times 180}{n} = 150$: $(n-2) \times 180 = 150n \Rightarrow 180n - 360 = 150n \Rightarrow 30n = 360 \Rightarrow n = 12$.
- 22) **Choice A is correct.** (8.SP.A.1) When points are scattered randomly with no visible trend or direction, there is no correlation. An upward trend, downward trend, or tight line all indicate some form of correlation.
- 23) **Choice A is correct.** (8.SP.A.4) Joint relative frequency: $\frac{63}{420} = 0.15 = 15\%$.
- 24) **Choice D is correct.** (8.G.B.7) Red or green: $5 + 3 = 8$ marbles. Total: 15. So $P = \frac{8}{15}$.
- 25) **Choice B is correct.** (8.NS.A.2) Lead attendee: 12 choices. Backup: 11 remaining choices. Using permutation: $\frac{12!}{10!} = 12 \times 11 = 132$.
- 26) **Choice D is correct.** (8.NS.A.1) A decimal that neither terminates nor repeats is irrational. The value 2.718... approximates Euler's number e , which is irrational. The others all terminate or repeat, making them rational.



Hi, Detail Champion!

◇ In Grade 8, small details can change an entire answer: a negative sign, a decimal place, a unit, an exponent, or an inequality symbol. ◇

★ **Remember this:** You practiced noticing those details. That is a serious test skill, and it gets better with every careful review. This version gave you 7 opportunities to rehearse test-day habits. ★

Detail Checks

- **Signs:** Circle negatives before simplifying.
- **Symbols:** Read inequality signs carefully.
- **Decimals:** Line up place values.
- **Units:** Match the unit the question asks for.

Grade 8 test-day tip: Use the final minute on each section for a detail scan, not a full redo.

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

Jay Daie

Your Detail-Check 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! |



2 EXTRA ONLINE PRACTICE TESTS INCLUDED!

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

testinar.com/math8

BUILD CONFIDENCE. SHARPEN SKILLS. ACE YOUR EXAM!