

9

Maine

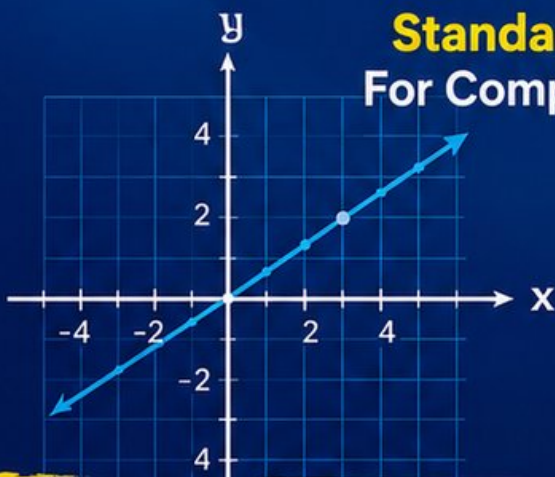
Through Year Assessment

Grade 8

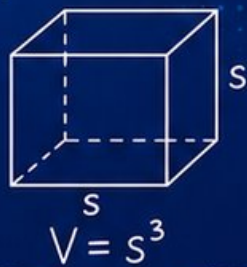
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



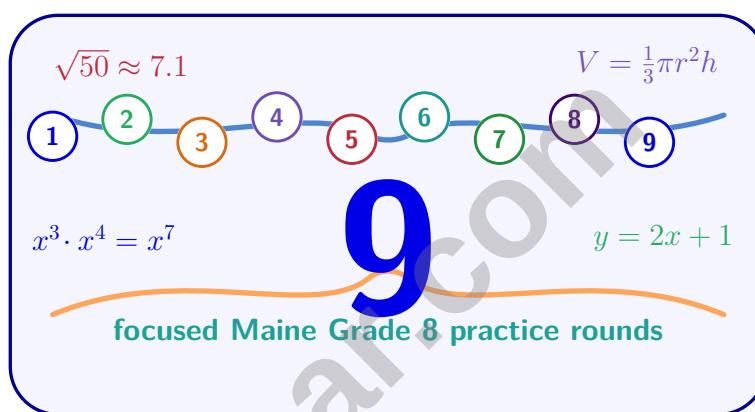
$$2x + 3y = 12$$
$$y = mx + b$$

**9** PRINTED
TESTS**2** ONLINE
TESTS

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

9 Maine Through Year Assessment Grade 8 Math Practice Tests

Targeted Maine Test Prep for Real Numbers, Functions, Geometry, and Probability



Nine complete 40-question Grade 8 Through Year Assessment 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, Maine Grade 8 Problem Solver!

Nine focused rounds for sharper Through Year Assessment math thinking

This book gives you nine full Grade 8 Through Year Assessment 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 Maine 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 nine-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.

Maine 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?

Nine Through Year Assessment tests, 360 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 7–9	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.

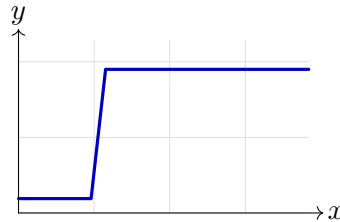


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Table of Contents

★ Practice Test 1	_____	15
★ Practice Test 2	_____	33
★ Practice Test 3	_____	47
★ Practice Test 4	_____	63
★ Practice Test 5	_____	77
★ Practice Test 6	_____	93
★ Practice Test 7	_____	108
★ Practice Test 8	_____	123
★ Practice Test 9	_____	139
Practice Test Answer Keys	_____	155
Practice Test Answers and Explanations	_____	161

- 1) A graph displays cumulative rainfall over a month. Which scenario matches a graph with a steep jump, then a flat section?



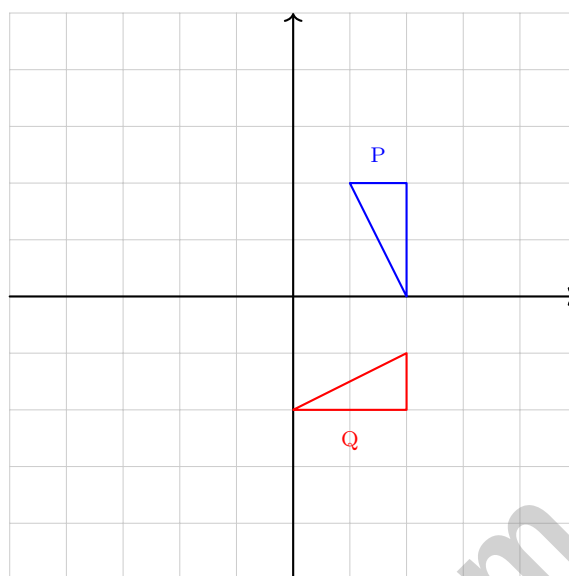
- ☐ A. Heavy rain one day, then no rain for several days
- ☐ B. Light rain every day for a month at a constant rate
- ☐ C. No rain for a week, then a single light drizzle
- ☐ D. Rain that decreases over time
- 2) Solve for y : $\frac{y-3}{2} = 5$

- ☐ A. $y = 13$
- ☐ B. $y = 7$
- ☐ C. $y = 4$
- ☐ D. $y = 10$
- 3) A company allows workers to earn \$12 per hour plus a \$50 bonus. How many hours must they work to earn at least \$170?

- ☐ A. $h < 10$
- ☐ B. $h > 10$
- ☐ C. $h \geq 10$
- ☐ D. $h \leq 10$



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4)

Triangle P is rotated 90° clockwise about the origin to produce triangle Q. Is this correct?

- ☐ A. Yes, the rotation is correct
 ☐ C. No, a 270° counterclockwise rotation would be needed
- ☐ B. No, a 90° counterclockwise rotation would be needed
 ☐ D. No, a 180° rotation would be needed

5) Simplify and estimate $\sqrt{2} \times \sqrt{8}$.

- ☐ A. Approximately 4.5
 ☐ C. Approximately 3.4
- ☐ B. Exactly 8
 ☐ D. Exactly 4

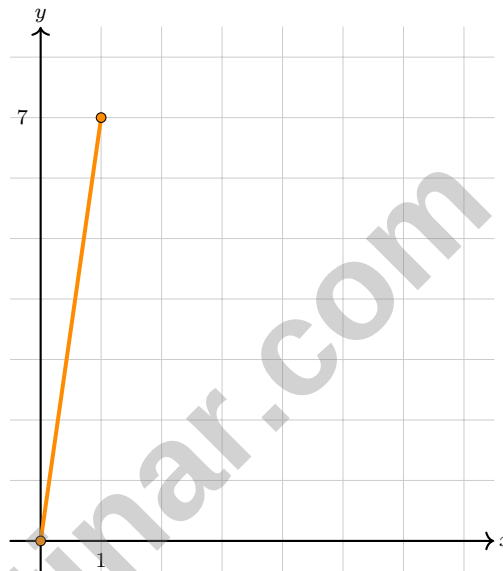
6) A mortgage for \$200,000 at 4% simple interest over 30 years. What is the total interest paid?

- ☐ A. \$80,000
 ☐ C. \$160,000
- ☐ B. \$120,000
 ☐ D. \$240,000



7) A student writes: $\frac{x^8}{x^2} = x^4$. What mistake did the student make?

- ☐ A. Added the exponents instead of subtracting.
- ☐ B. Multiplied the exponents instead of subtracting.
- ☐ C. Divided the exponents instead of subtracting.
- ☐ D. The student is correct.



8)

Equation of the line?

- ☐ A. $y = \frac{1}{7}x$
- ☐ B. $y = x + 7$
- ☐ C. $y = 7x$
- ☐ D. $y = 7 + x$



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1) A figure is dilated by a scale factor of 3. How does the length of each side change?

☐ A. Divided by 3

☐ C. Unchanged

☐ B. Multiplied by 3

☐ D. Increased by 3 inches

2) A pyramid has a rectangular base with dimensions x meters by $3x$ meters and a height of 5 m. If the volume is 500 m^3 , what is the value of x ?

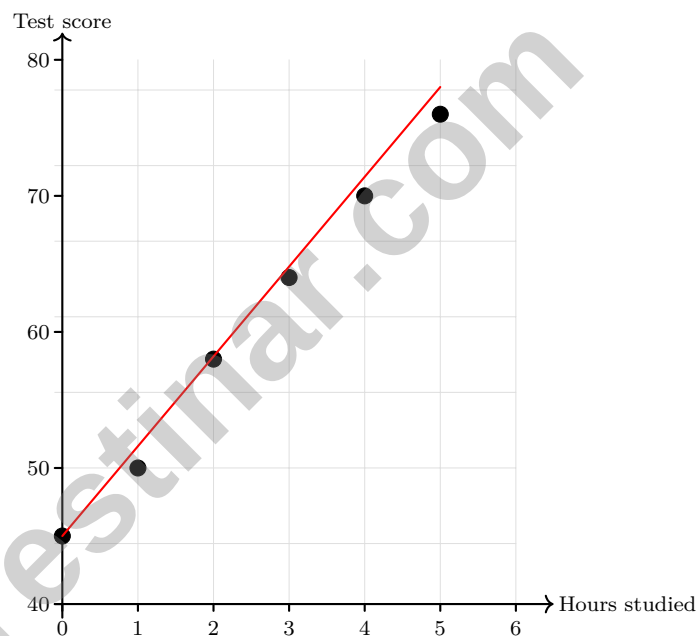
☐ A. 5 m

☐ C. 20 m

☐ B. 10 m

☐ D. 50 m

3)



The scatter plot shows test scores vs. hours studied with a best-fit line. Approximately what test score is predicted for 2.5 hours?

☐ A. 58

☐ C. 64

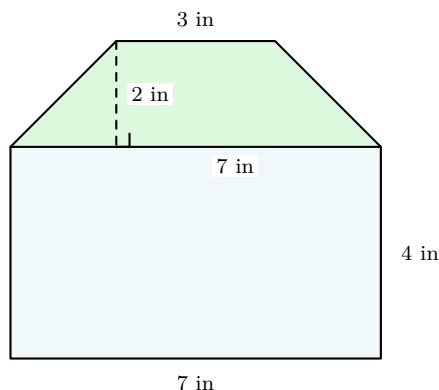
☐ B. 61

☐ D. 70



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- 4) An irregular polygon is decomposed into a rectangle (7 in by 4 in) and a trapezoid (bases 7 in and 3 in, height 2 in). Find the total area.

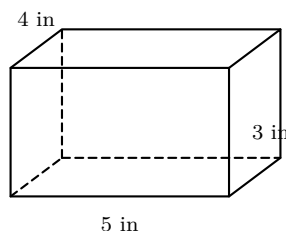


- ☐ A. 28 in^2 ☐ C. 42 in^2
☐ B. 38 in^2 ☐ D. 50 in^2
- 5) Consider the data: $\{3, 6, 9, 12\}$ (mean = 7.5). What is the MAD?
- ☐ A. 2 ☐ C. 3.75
☐ B. 3 ☐ D. 4.5
- 6) A card is drawn from a standard deck. What is the probability that it is either a 5 or a 9?
- ☐ A. $\frac{5}{52}$ ☐ C. $\frac{4}{52}$
☐ B. $\frac{8}{52}$ ☐ D. $\frac{9}{52}$
- 7) Which pair of variables would most likely show a weak or no correlation?
- ☐ A. Height and weight ☐ C. Shoe size and favorite color
☐ B. Temperature and ice cream sales ☐ D. Study hours and test scores



- 1) Function r passes through $(1, 3)$ and $(3, 7)$. Function $s(x) = x + 3$. Which increases faster?

- ☐ A. Function r
☐ C. Both increase equally.
☐ B. Function s
☐ D. Cannot be determined.



2)

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
☐ C. 54 in^2
☐ B. 24 in^2
☐ D. 94 in^2

- 3) A cone has radius r and height h . If the radius is doubled and the height stays the same, how does the new volume compare to the original?

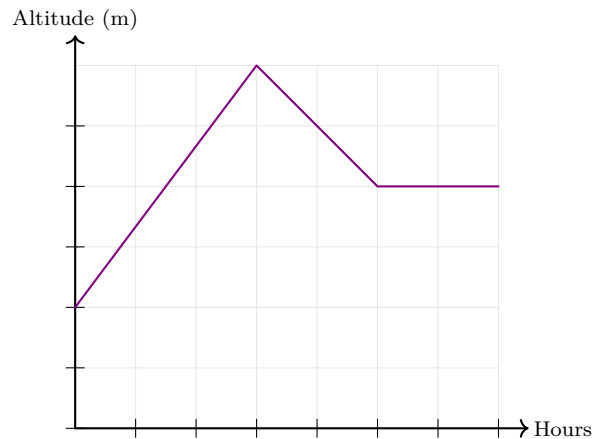
- ☐ A. New volume = Original
 ☐ C. New volume = $4 \times$ Original
☐ B. New volume = $2 \times$ Original
 ☐ D. New volume = $8 \times$ Original

- 4) 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



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5)

A hiker's altitude over 7 hours: rises $[0,3]$, descends $[3,5]$, plateaus $[5,7]$. What is the altitude at hour 5?

☐ A. 1 meter

☐ C. 4 meters

☐ B. 3 meters

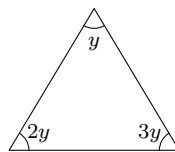
☐ D. 5 meters

6) Two triangles are congruent. If one triangle has angles of $40^\circ, 60^\circ, 80^\circ$, what are the angles of the other triangle?

☐ A. $40^\circ, 60^\circ, 90^\circ$
☐ C. $80^\circ, 60^\circ, 40^\circ$ (different order)

☐ B. $40^\circ, 60^\circ, 80^\circ$
☐ D. $50^\circ, 60^\circ, 70^\circ$

7) What is the value of y in the triangle shown?


☐ A. 18°
☐ C. 36°
☐ B. 30°
☐ D. 45°


Maine Through Year Assessment 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 Maine Through Year Assessment practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** **(8.F.B.5)** Cumulative rainfall never decreases. A steep jump indicates heavy rainfall over a short time; a flat section means zero rainfall. B would show a gradual, constant increase (not steep). C would be a small jump then flat. D is impossible for cumulative data.
- 2) **Choice A is correct.** **(8.EE.C.7)** Multiply by 2: $y - 3 = 10$. Add 3: $y = 13$.
- 3) **Choice C is correct.** **(8.EE.C.7a)** Set up: $12h + 50 \geq 170$. Subtract 50: $12h \geq 120$. Divide by 12: $h \geq 10$ hours.
- 4) **Choice A is correct.** **(8.G.A.1)** A 90° clockwise rotation maps (x, y) to $(y, -x)$. For example, $(1, 2) \rightarrow (2, -1)$ and $(2, 0) \rightarrow (0, -2)$, matching triangle Q.
- 5) **Choice D is correct.** **(8.NS.A.2)** $\sqrt{2} \times \sqrt{8} = \sqrt{16} = 4$ exactly. Perfect pair product.
- 6) **Choice D is correct.** **(8.G.B.7)** Interest: $I = 200000 \times 0.04 \times 30 = \$240,000$.
- 7) **Choice C is correct.** **(8.EE.A.1)** Correct answer: $\frac{x^8}{x^2} = x^{8-2} = x^6$, not x^4 . The student likely divided: $8 \div 2 = 4$.
- 8) **Choice C is correct.** **(8.EE.B.5)** Slope $k = \frac{7}{1} = 7$. Passes through origin, so $y = 7x$.
- 9) **Choice D is correct.** **(8.EE.B.6)** The slope is the rate of change: $\frac{\Delta y}{\Delta x} = \frac{3}{1} = 3$ (each increase of 1 in x gives 3 more in y).
- 10) **Choice A is correct.** **(8.EE.C.8a)** Parallel lines have the same slope but different y -intercepts. Both equations $y = 2x + 1$ and $y = 2x - 3$ have slope 2 but different intercepts (1 and -3). Option D is the same line (infinitely many solutions).
- 11) **Choice A is correct.** **(8.EE.C.7)** GCF of $4x$ and 12 is 4. Factor: $4x + 12 = 4(x + 3)$.
- 12) **Choice A is correct.** **(8.EE.C.8c)** DASHED line (strict inequality) and shading ABOVE (greater than) indicate $y > \frac{1}{2}x + 1$.
- 13) **Choice C is correct.** **(8.F.A.3)** Rewrite as $y = -5x + 2$. In the form $y = mx + b$, the slope $m = -5$ and the y -intercept $b = 2$.
- 14) **Choice B is correct.** **(8.G.A.2)** Figures A and C are both 4×2 rectangles. Figure B is a 2×2 square, so it is not congruent to either rectangle.
- 15) **Choice B is correct.** **(8.G.B.8)** Distance in units: $\sqrt{(5-2)^2 + (6-2)^2} = \sqrt{9+16} = 5$ units. In kilometers: $5 \times 2 = 10$ km.
- 16) **Choice B is correct.** **(8.G.A.5)** Sum of angles in a pentagon is 540° . Two angles are 120° each, totaling 240° . The remaining three angles sum to $540 - 240 = 300^\circ$. Each of the three equal angles: $\frac{300}{3} = 100^\circ$.
- 17) **Choice D is correct.** **(8.EE.A.2)** Solve $x^2 = 144$ by taking the positive square root: $x = \sqrt{144} = 12$.
- 18) **Choice D is correct.** **(8.EE.A.4)** Multiply the coefficients and add the exponents: $(3 \times 2) \times 10^{4+5} = 6 \times 10^9$.
- 19) **Choice A is correct.** **(8.F.A.1)** The ratio is 2 cups flour : 3 eggs. For e eggs, flour needed is $\frac{2}{3} \times e = \frac{2e}{3}$.
- 20) **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.
- 21) **The correct answer is A,D.** **(8.G.A.5)** A: Corresponding angles formed by parallel lines and a transversal are congruent—TRUE. B: Not all angles are equal; some are supplementary—FALSE. C: Alternate interior angles are congruent, not supplementary—FALSE. D: Alternate exterior angles are congruent—TRUE. E: Co-interior angles are supplementary (sum to 180°), not complementary—FALSE.
- 22) **Choice A is correct.** **(8.F.B.4)** Slope is $\frac{\Delta P}{\Delta t} = \frac{6}{3} = 2$ thousand per year from $t = 0$ to $t = 3$ (or any consecutive pair).
- 23) **The correct answer is 66.67.** **(8.EE.A.3)** Divide: $\frac{8 \times 10^{-6}}{1.2 \times 10^{-7}} = \frac{8}{1.2} \times 10^1 = 6.67 \times 10^1 \approx 66.67$.
- 24) **Choice B is correct.** **(8.G.A.3)** The pre-image $(1, 2)$ maps to image $(-1, 2)$, confirming reflection across the y -axis: $(x, y) \rightarrow (-x, y)$.
- 25) **Choice A is correct.** **(8.G.B.7)** Angles on a straight line sum to 180° . So $x + 2x + 3x = 180$, which gives $6x = 180$ and $x = 30^\circ$.
- 26) **Choice D is correct.** **(8.SP.A.4)** The marginal frequency for middle school is the row total: $55 + 70 = 125$.



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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 9 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

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

Help your child excel in math with **9 full-length Grade 8 practice tests** designed to reflect real test formats and cover all key math standards.

With a wide variety of questions and real-world applications, this book builds the skills and confidence students need to achieve their best!



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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Better **Results**.