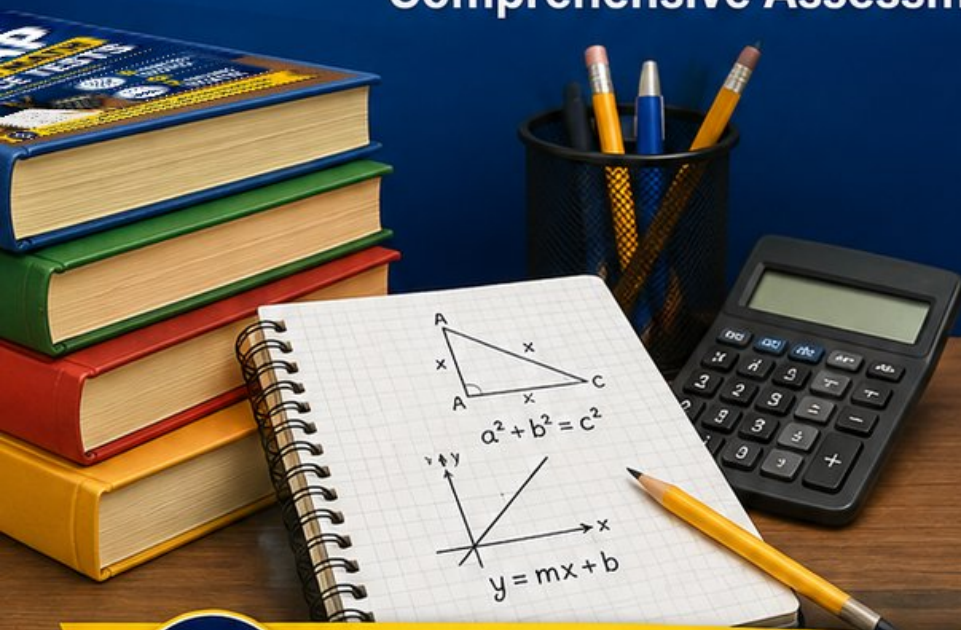


6 Maine

Through Year Assessment

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



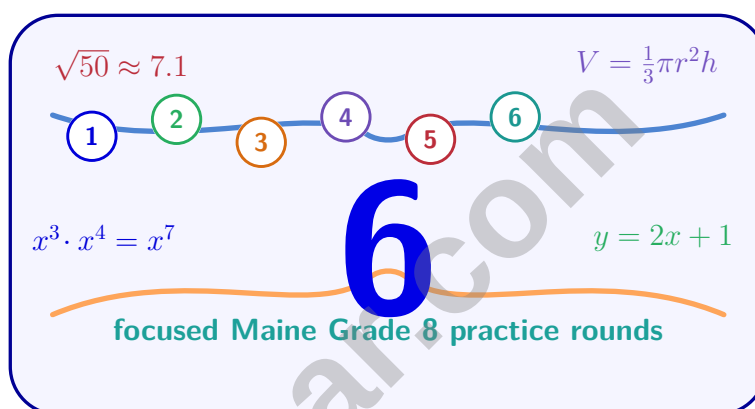
2 ONLINE
TESTS



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

6 Maine Through Year Assessment Grade 8 Math Practice Tests

State-Test Practice for Grade 8 Math Confidence and Skill Growth



Six 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!

Six focused rounds for sharper Through Year Assessment math thinking

This book gives you six 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 six-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?

Six Through Year Assessment tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	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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Decimal Classification	
Terminating	Repeating
0.25 0.5	$0.\overline{33}$ 0.142857

1)

Both categories shown contain rational numbers. Which is irrational?

- ☐ A. 0.1234567 (terminating) ☐ C. $\frac{22}{7}$
☐ B. 0.999... (repeating 9's) ☐ D. 0.3030030003... (non-repeating)

2) Which is larger: $\sqrt{11}$ or 3.5?

- ☐ A. They are equal ☐ C. $\sqrt{11}$
☐ B. Cannot be determined ☐ D. 3.5

3) Is π^2 greater than or less than $(3.1)^2$?

- ☐ A. Cannot be determined ☐ C. Exactly equal to $(3.1)^2$
☐ B. Less than $(3.1)^2$ ☐ D. Greater than $(3.1)^2$

4) A student earns a gross income of \$1,200/month. Taxes and deductions total \$240. What is the net income?

- ☐ A. \$240 ☐ C. \$1,440
☐ B. \$1,200 ☐ D. \$960

5) A scientist measures a particle with mass $m = 10^{-6}$ kilograms. Rewrite this as a fraction.

- ☐ A. $\frac{1}{6}$ kg ☐ C. 10^6 kg
☐ B. -10^6 kg ☐ D. $\frac{1}{10^6}$ kg



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6) Which of the following is irrational?

☐ A. $\sqrt{25}$

☐ B. $\sqrt{144}$

☐ C. $\sqrt{100}$

☐ D. $\sqrt{40}$

7) How many times greater is 8×10^7 than 2×10^5 ?

☐ A. 4 times☐ B. 40 times☐ C. 400 times☐ D. 4,000 times

8) Divide: $\frac{8 \times 10^8}{2 \times 10^3}$

☐ A. 10×10^5

☐ B. 6×10^5

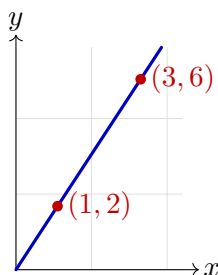
☐ C. 4×10^{11}

☐ D. 4×10^5

9) Does the relation $\{(5, 10), (5, 15), (6, 12)\}$ represent a function?

☐ A. Yes, because all y -values are positive.☐ B. No, because 5 is paired with two different outputs.☐ C. Yes, because there are three ordered pairs.☐ D. No, because 10 and 15 are both outputs.

10) Error in graph interpretation: Graph shows a line through $(1, 2)$ and $(3, 6)$. Student claims slope is $\frac{1}{2}$. What is the error?

☐ A. Student inverted run and rise☐ B. Student used only x -coordinates☐ C. Student used only y -coordinates☐ D. No error; $\frac{1}{2}$ is correct

11) A figure has a perimeter of 24 units. After a dilation by scale factor 0.5, what is the perimeter of the dilated figure?

☐ A. 48 units

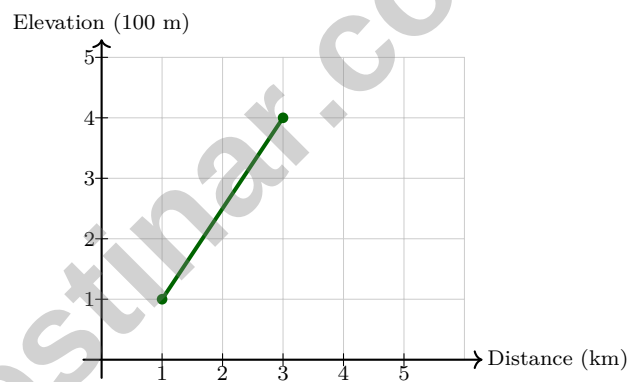
☐ C. 6 units

☐ B. 24 units

☐ D. 12 units

12) A residual plot has residuals 1, -2, 1, 2, -1, 0. What is the greatest absolute residual?

13) The graph shows elevation change during a hike.



What is the slope of the line?

☐ A. $\frac{3}{4}$

☐ C. $\frac{3}{2}$

☐ B. $\frac{2}{3}$

☐ D. 2



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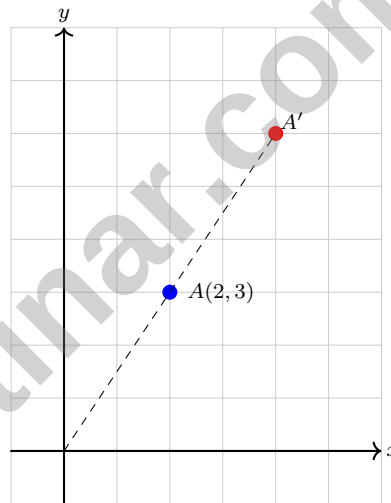
1) A person compares two loans for \$2,000:

Loan	APR	Term
X	5%	2 years
Y	4%	3 years

If the person wants to minimize total borrowing cost, which loan is better?

- ☐ A. Need more information ☐ C. They cost the same
☐ B. Loan Y ☐ D. Loan X

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

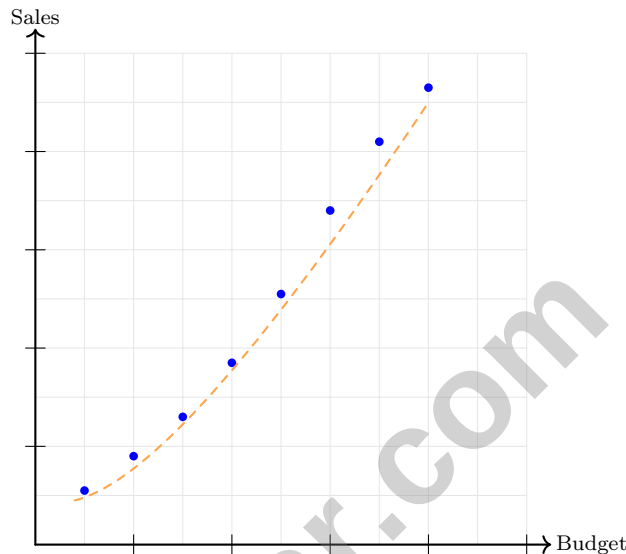


- ☐ A. $(1, 1.5)$ ☐ C. $(2, 3)$
☐ B. $(4, 6)$ ☐ D. $(2, 5)$



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- 3) A scatter plot of advertising budget (thousands of dollars) versus sales revenue (thousands) displays a curved, accelerating upward pattern. Initially, each dollar spent increases sales by 10 dollars; later, each dollar spent increases sales by 25 dollars. Which term describes this relationship?



- ☐ A. Nonlinear (power or exponential) association
☐ B. Weak positive correlation
☐ C. Moderate negative correlation
☐ D. Perfect linear relationship
- 4) A two-way table of 480 products tracks quality and price point:

	Premium	Standard	Total
High Quality	240	80	320
Low Quality	48	112	160
Total	288	192	480

What joint relative frequency represents high-quality premium products?

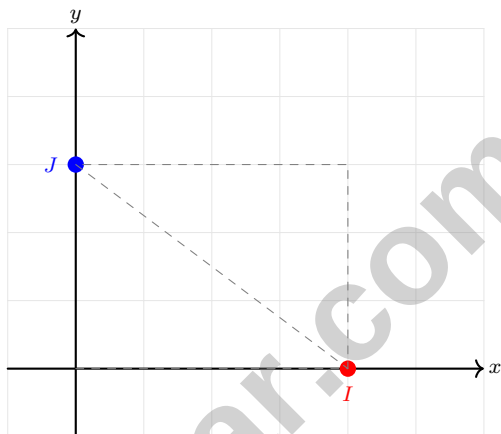
- ☐ A. $\frac{240}{320} = 0.75$
☐ B. $\frac{240}{288} \approx 0.83$
☐ C. $\frac{240}{480} = 0.50$
☐ D. $\frac{320}{480} \approx 0.67$



- 1) Two data sets both have 5 values and mean = 10: Set P: {8, 9, 10, 11, 12} Set Q: {1, 5, 10, 15, 19} Which set has the larger MAD?

- ☐ A. Set P ☐ C. Equal MAD
☐ B. Set Q ☐ D. Cannot compare

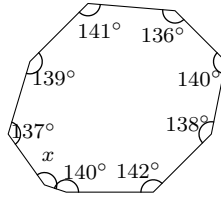
- 2) A coordinate grid shows points $I = (4, 0)$ and $J = (0, 3)$. What is the distance from I to J ?



- ☐ A. 5 ☐ C. 1
☐ B. 7 ☐ D. $\sqrt{7}$
- 3) A garden has 8 flowers initially. Each week, 3 new flowers are planted. Which equation gives the total number of flowers f after w weeks?

- ☐ A. $f = 3w + 8$ ☐ C. $f = 11w$
☐ B. $f = 8w + 3$ ☐ D. $f = 3w - 8$





4)

A nonagon (9-sided polygon) has eight interior angles: $140^\circ, 142^\circ, 138^\circ, 140^\circ, 136^\circ, 141^\circ, 139^\circ, 137^\circ$. Find the ninth angle.

☐ A. 145°
☐ C. 150°
☐ B. 147°
☐ D. 152°

5) Triangle with vertices at $(1, 0)$, $(3, 0)$, and $(2, 2)$ is dilated by a scale factor of 0.5 from the origin. What is the area ratio of the new triangle to the original?

☐ A. 0.5

☐ C. 2

☐ B. 0.25

☐ D. 4

6) Multiply: $(4x - 3)(x + 2)$

☐ A. $4x^2 + 5x - 6$
☐ C. $4x^2 + 2x - 6$
☐ B. $4x^2 + 8x - 3x - 6$
☐ D. $4x^2 - 6x + 2$


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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 D is correct.** **(8.NS.A.1)** A decimal that is non-terminating and non-repeating is irrational. The pattern of 0.303, 0.3003, 0.30003, ... never repeats, so this is irrational. $\frac{22}{7}$ is rational, and 0.999... repeats infinitely.
- 2) **Choice D is correct.** **(8.NS.A.2)** $(3.5)^2 = 12.25 > 11$, so $3.5 > \sqrt{11}$. Therefore 3.5 is larger.
- 3) **Choice D is correct.** **(8.NS.A.2)** $(3.1)^2 = 9.61$ and $\pi^2 \approx (3.14159)^2 \approx 9.87$. Since $9.87 > 9.61$, π^2 is greater.
- 4) **Choice D is correct.** **(8.G.B.7)** Net income = Gross income - Deductions = \$1,200 - \$240 = \$960.
- 5) **Choice D is correct.** **(8.EE.A.1)** Negative exponent rule: $10^{-6} = \frac{1}{10^6}$.
- 6) **Choice D is correct.** **(8.EE.A.2)** $\sqrt{40}$ is irrational because 40 is not a perfect square. The others equal 5, 10, and 12 respectively.
- 7) **Choice C is correct.** **(8.EE.A.3)** Divide: $\frac{8 \times 10^7}{2 \times 10^5} = \frac{8}{2} \times 10^{7-5} = 4 \times 10^2 = 400$.
- 8) **Choice D is correct.** **(8.EE.A.4)** Divide coefficients: $8 \div 2 = 4$. Subtract exponents: $10^{8-3} = 10^5$. Result: 4×10^5 .
- 9) **Choice B is correct.** **(8.F.A.1)** Input 5 maps to both 10 and 15, violating the definition of a function.
- 10) **Choice A is correct.** **(8.F.A.2)** Correct slope: $(6-2)/(3-1) = 4/2 = 2$. The student got $\frac{1}{2}$ by putting the run over the rise. Slope is rise over run, so the error is inverting rise (4) and run (2).
- 11) **Choice D is correct.** **(8.G.A.3)** Dilation scales all lengths by the scale factor. Perimeter: $24 \times 0.5 = 12$.
- 12) **The correct answer is 2.** **(8.SP.A.2)** The largest absolute value among the residuals is 2.
- 13) **Choice C is correct.** **(8.EE.B.5)** From (1, 1) to (3, 4): slope = $\frac{4-1}{3-1} = \frac{3}{2}$.
- 14) **Choice C is correct.** **(8.EE.C.8c)** Let w = width. First field: $2(50) + 2w = 180$, so $100 + 2w = 180$, giving $2w = 80$ and $w = 40$ m. Check with second field: $2(60) + 2w = 200$, so $120 + 2w = 200$, giving $w = 40$ m. ✓
- 15) **Choice B is correct.** **(8.F.A.1)** Solve $x - 3 = 5$ for x : $x = 5 + 3 = 8$.
- 16) **Choice D is correct.** **(8.G.A.3)** The rectangular prism has surface area $2(16 + 12 + 12) = 80$ cm². The cube has surface area $6(2^2) = 24$ cm². The shared 2×2 face is counted twice, so subtract $2(4)$. The composite surface area is $80 + 24 - 8 = 96$ cm².
- 17) **Choice A is correct.** **(8.G.A.1)** Apply the translation rule to the second point: $(-2, 4) \rightarrow (-2 + 5, 4 - 3) = (3, 1)$.
- 18) **Choice D is correct.** **(8.EE.B.6)** Using $y = mx + b$ where m is slope and b is y -intercept: $y = 4x + 6$.
- 19) **Choice A is correct.** **(8.EE.C.7)** Subtract x and 6: $x = 6$. Check: $2(6) + 6 = 18$ and $6 + 12 = 18$ ✓. (Distractor B: arithmetic error; C: adding instead of subtracting.)
- 20) **The correct answer is $\frac{1}{6}$.** **(8.G.B.7)** Favorable outcomes: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1). That's 6 of 36. $P = \frac{6}{36} = \frac{1}{6}$.
- 21) **Choice D is correct.** **(8.EE.C.7a)** Distribute: $6 - 2x \geq 4$. Subtract 6: $-2x \geq -2$. Divide by -2 (FLIP): $x \leq 1$.
- 22) **The correct answer is A,C.** **(8.G.A.4)** Correct: (A) All linear measurements (sides, perimeter) are multiplied by 2.5. (C) Area is multiplied by $(2.5)^2 = 6.25$. Incorrect: (B) Angles are congruent in dilation, not scaled. (D) Perimeter is multiplied, not divided, by 2.5. (E) Dilation preserves shape; polygon type does not change.
- 23) **Choice D is correct.** **(8.EE.C.8c)** Test (3, 2): $3 + 2 = 5 \leq 4$ FALSE. The other points all satisfy $x + y \leq 4$.
- 24) **Choice C is correct.** **(8.G.A.5)** Let angles be $3x$, $4x$, and $5x$. Sum: $3x + 4x + 5x = 180 \Rightarrow 12x = 180 \Rightarrow x = 15^\circ$. Smallest angle: $3x = 45^\circ$.
- 25) **Choice B is correct.** **(8.G.B.7)** $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 64 \times 24 = \frac{1}{3} \times 4815.36 = 1605.12$ cm³.
- 26) **Choice C is correct.** **(8.SP.A.3)** Substitute $x = 6$: $R = 20 + 3(6) = 20 + 18 = \38 .
- 27) **Choice D is correct.** **(8.EE.B.5)** A proportional equation has the form $y = kx$ (passes through origin, no constant term). Only $y = -5x$ fits this form.
- 28) **Choice C is correct.** **(8.EE.C.8a)** The two lines intersect at the marked point, which is (1, 1).



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Hi, Math Hero!

◇ This deep and steady book gave you six full Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. You showed up for Grade 8 practice again and again. That is what real growth looks like: steady effort, honest review, and a willingness to try. ◇

★ **Remember this:** A math hero is not someone who never misses a question. A math hero learns from the miss and comes back stronger. ★

Hero Habits

- **Courage:** You try problems that are not automatic.
- **Honesty:** You review what needs work.
- **Patience:** You let skills grow over time.
- **Pride:** You recognize the effort you gave.

Grade 8 test-day tip: Save one solved problem you are proud of. Looking back at progress helps motivation stay strong.

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

Jay Daie

Your Math Hero Guide

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 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!

WHAT'S INSIDE?



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Questions designed to cover essential Grade 8 math standards.



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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.



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 |
| | ✓ And More! |



6 PRINTED TESTS



2 ONLINE TESTS



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