

10 Maine

Through Year Assessment

GRADE
8
MATH

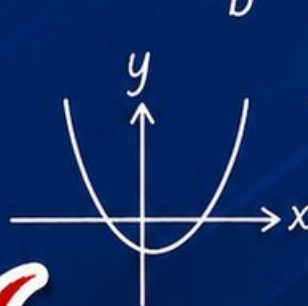
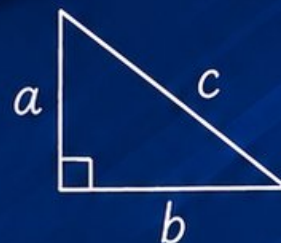
PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

10 PRINTED TESTS 

2 ONLINE TESTS 

- ✓ Build Confidence
- ✓ Master Key Math Skills
- ✓ Answer Explanations for Every Question
- ✓ Test-Taking Strategies That Work



$$3x - 7 = 2(x + 5)$$
$$x = 17$$

$$y = mx + b$$

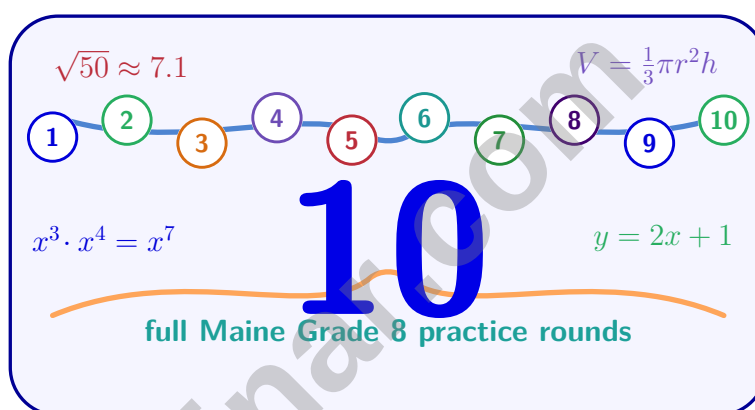


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 Maine Through Year Assessment Grade 8 Math Practice Tests

Maine Grade 8 Through Year Assessment Practice for lighthouse-clear review of functions, exponent reasoning, equations, geometry, inference, and probability



Ten complete 40-question Grade 8 Through Year Assessment practice rounds with linear relationships, scientific notation, real numbers, equations, functions, 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!

Ten focused rounds for sharper Maine Through Year Assessment math thinking

This book gives you ten full Grade 8 Through Year Assessment math practice tests. Each round is built to help you notice structure, compare quantities, use linear reasoning, handle real numbers, and explain your thinking with care.

Grade 8 standards focus: This page supports **Graphing Linear Inequalities in Two Variables** (8.EE.C.8c): Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the.... The same routine helps with **Using a Linear Model** (8.SP.A.3): Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting slope and intercept.

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 ten-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 a proportion, equation, diagram, number line, 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.

Grade 8 standards focus: Keep the routine connected to **Volume of Pyramids** (8.G.B.7): Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. You will also meet **Graphing Linear Inequalities in Two Variables** (8.EE.C.8c): Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the....

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?

Ten Maine Through Year Assessment tests, 400 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Linear relationships, integer exponents, scientific notation, real-number reasoning, and careful reading.
Tests 4–6	Expressions, equations, inequalities, transformations, geometry, and multi-step problem solving.
Tests 7–9	Data analysis, probability, mixed review, stamina, and choosing efficient strategies.
Test 10	A final Maine round to show growth across the whole book.
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.

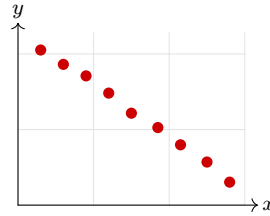
Grade 8 standards focus: Use these habits while practicing **Mean Absolute Deviation** (8.G.B.8): Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. A second useful connection is **Interior Angles of Polygons** (8.G.A.5): Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and....



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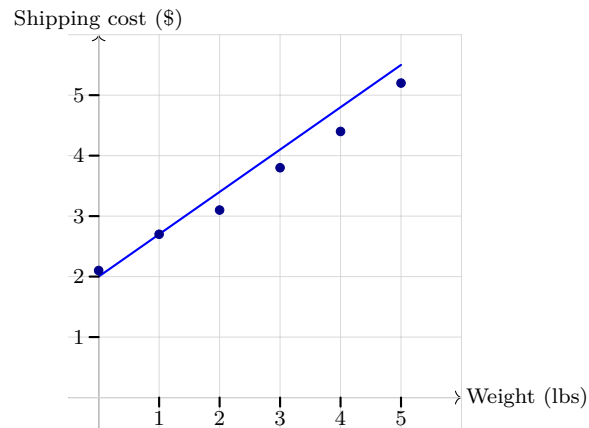
1)

A scatter plot represents average monthly temperature ($^{\circ}\text{C}$) versus average monthly heating costs (\$). The correlation is strong and negative. What is the most logical explanation?

- ☐ A. Warmer months require more heating
☐ B. Cold months decrease heating costs
☐ C. Warmer months require less heating
☐ D. Temperature has no effect on heating
- 2) A rectangular prism has length $\frac{3}{2}$ ft, width 1 ft, and height $\frac{1}{2}$ ft. What is its surface area?
- ☐ A. $\frac{11}{4}$ ft^2
☐ B. $\frac{11}{2}$ ft^2
☐ C. 7 ft^2
☐ D. $\frac{15}{2}$ ft^2
- 3) A cone and a cylinder have the same radius r and height h . How do their volumes compare?
- ☐ A. Cone volume = Cylinder volume
☐ B. Cone volume = $\frac{1}{3}$ Cylinder volume
☐ C. Cone volume = $\frac{1}{2}$ Cylinder volume
☐ D. Cone volume = $3 \times$ Cylinder volume



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4)

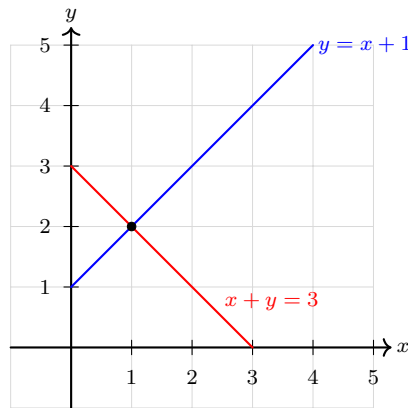
What is the y -intercept of the best-fit line?

☐ A. \$0☐ C. \$2.50☐ B. \$2☐ D. \$5

5) A bike travels at 12 miles per hour. The equation is $d = 12t$, where d is distance in miles and t is time in hours. How far does the bike travel in 3.5 hours?

☐ A. 30 miles☐ C. 42 miles☐ B. 36 miles☐ D. 48 miles

6) Use the graph below to find the solution to the system of $y = x + 1$ and $x + y = 3$.


☐ A. (1, 2)

☐ B. (0, 3)

☐ C. (2, 1)

☐ D. (3, 0)

7) Multiply: $(x + 7)(x - 1)$

☐ A. $x^2 + 6x - 7$
☐ B. $x^2 - 7$
☐ C. $x^2 + 7x - 1$
☐ D. $x^2 + 8x - 7$

8) If $3^a \cdot 3^5 = 3^{12}$, what is the value of a ?

9) Plan A costs \$15 per month: $A(m) = 15 + 0.10m$. Plan B shown in table: (0, \$20), (100, \$25), (200, \$30), (300, \$35). Which plan has the higher base cost?

m	0	100	200	300
Plan B	\$20	\$25	\$30	\$35

☐ A. Plan A

☐ B. Plan B

☐ C. Both cost the same.

☐ D. Cannot be determined.


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1) If $f(x) = x^2 - 4x + 3$, what is $f(2)$?

☐ A. -1
☐ C. 3
☐ B. 0
☐ D. 7

2) A model car is 12 cm long. The actual car is 4.8 m long. What is the scale factor from the model to the actual car?

☐ A. 40
☐ C. 0.4
☐ B. 4
☐ D. 0.25

3) The number $\sqrt[3]{8}$ (cube root of 8) is:

☐ A. Irrational

☐ C. 2.67
☐ B. Between 8 and 16

☐ D. 2, which is rational

4) A teacher selects 2 students from a class of 6 to be line leaders. The first student is the main leader and the second is the assistant. In how many ways can this be done?

☐ A. $6 + 5 = 11$
☐ C. $\binom{6}{2} = 15$
☐ B. $6 \times 5 = 30$
☐ D. $6^2 = 36$

5) Convert $0.\overline{27}$ to a fraction in simplest form.

☐ A. $\frac{27}{100}$
☐ C. $\frac{27}{90}$
☐ B. $\frac{27}{99}$
☐ D. $\frac{5}{18}$

6)



Based on the number line, which decimal is closest to $\sqrt{60}$?

☐ A. 7.5
☐ C. 7.8
☐ B. 7.9
☐ D. 7.7


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7) Which is the best estimate of $\sqrt{48}$?

☐ A. 6.5

☐ C. 6.9

☐ B. 7.0

☐ D. 8.2

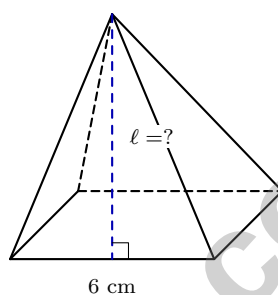
8) Which is arranged from smallest to largest?

☐ A. $2 \times 10^1, 2 \times 10^{-3}, 2 \times 10^{-1}$

☐ C. $2 \times 10^{-1}, 2 \times 10^{-3}, 2 \times 10^1$

☐ B. $2 \times 10^1, 2 \times 10^{-1}, 2 \times 10^{-3}$

☐ D. $2 \times 10^{-3}, 2 \times 10^{-1}, 2 \times 10^1$



9)

A square pyramid has a square base with side 6 cm and total surface area 96 cm^2 . Find the slant height ℓ .

☐ A. 4 cm

☐ C. 6 cm

☐ B. 5 cm

☐ D. 8 cm



1) A plant grows at a constant rate. After 2 weeks it is 8 inches tall. After 6 weeks it is 14 inches tall. What is the rate of growth per week (slope)?

- ☐ A. 1.5 inches per week
☐ B. 3.5 inches per week

- ☐ C. 2 inches per week
☐ D. 7 inches per week

2) Evaluate $(x + 9)^2$ when $x = 1$.

3) Which ordered pair, if added to $\{(1, 2), (2, 4), (3, 6)\}$, would make it NOT a function?

- ☐ A. (4, 8)
☐ B. (3, 8)

- ☐ C. (2, 4)
☐ D. (5, 10)

4) A transformation maps the point $(3, 5)$ to $(-3, -5)$. Which of the following best describes this transformation?

- ☐ A. Reflection across the x -axis
☐ B. Reflection across the y -axis

- ☐ C. Rotation 180° about the origin
☐ D. Dilation by scale factor 2

5) A gym offers two membership plans. Plan A costs \$50 upfront plus \$10 per month. Plan B costs \$20 per month with no upfront fee. After how many months do the total costs equal?

- ☐ A. 3 months
☐ B. 4 months

- ☐ C. 5 months
☐ D. 6 months



- 6) A rectangle has length ℓ and fixed width 5. Which equation expresses area A as a function of length?

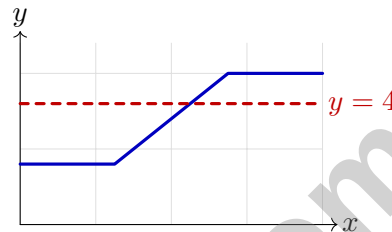
☐ A. $A = 5\ell$

☐ C. $A = 10\ell + 5$

☐ B. $A = \ell(10 - \ell)$

☐ D. $A = \ell^2$

- 7) A piecewise function has: constant segment at $y = 2$, then increasing segment, then constant segment at $y = 5$. How many times does it cross a horizontal line $y = 4$?



- ☐ A. Zero times (never)
- ☐ B. Exactly once (during the increasing segment)
- ☐ C. Exactly twice (at two different points)
- ☐ D. Cannot determine without seeing the graph
- 8) An equilateral triangle has sides of 6 cm. It is reflected across one of its altitudes. What is true about the resulting triangle?

- ☐ A. The resulting triangle has sides of 3 cm

- ☐ C. The resulting triangle is no longer equilateral

- ☐ B. The resulting triangle is congruent to the original

- ☐ D. The angles increase to 90°



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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 C is correct.** **(8.SP.A.1)** Negative correlation between temperature and cost means as temperature increases, cost decreases, which is logical for heating costs.
- 2) **Choice B is correct.** **(8.G.A.3)** $SA = 2(\frac{3}{2} \times 1 + \frac{3}{2} \times \frac{1}{2} + 1 \times \frac{1}{2}) = 2(\frac{3}{2} + \frac{3}{4} + \frac{1}{2}) = 2(\frac{11}{4}) = \frac{11}{2}$ ft².
- 3) **Choice B is correct.** **(8.G.B.7)** Cylinder: $V_{\text{cyl}} = \pi r^2 h$; Cone: $V_{\text{cone}} = \frac{1}{3} \pi r^2 h = \frac{1}{3} V_{\text{cyl}}$.
- 4) **Choice B is correct.** **(8.SP.A.3)** The line crosses the y -axis at approximately $y = 2$, representing the base shipping cost.
- 5) **Choice C is correct.** **(8.EE.B.5)** Substitute $t = 3.5$: $d = 12(3.5) = 42$ miles. The proportional relationship scales with time.
- 6) **Choice A is correct.** **(8.EE.C.8a)** The two lines intersect at the point marked on the graph. At this point, both $x = 1$ and $y = 2$. Verify: $y = 1 + 1 = 2$ ✓ and $1 + 2 = 3$ ✓.
- 7) **Choice A is correct.** **(8.EE.C.7)** FOIL: $(x + 7)(x - 1) = x^2 - x + 7x - 7 = x^2 + 6x - 7$.
- 8) **The correct answer is 7.** **(8.EE.A.1)** Using the product rule, $a + 5 = 12$, so $a = 7$. Verification: $3^7 \cdot 3^5 = 3^{12}$.
- 9) **Choice B is correct.** **(8.F.A.2)** Plan A base cost: \$15. Plan B at $m = 0$: \$20. Since $20 > 15$, Plan B is higher.
- 10) **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: $\frac{25}{5} - 2 = 5 - 2 = 3$ ✓.
- 11) **Choice A is correct.** **(8.F.A.3)** Slope = $\frac{11-5}{4-2} = \frac{6}{2} = 3$.
- 12) **Choice A is correct.** **(8.F.B.5)** The graph is flat at 5 liters from hour 3 to hour 5, a duration of 2 hours.
- 13) **Choice B is correct.** **(8.G.A.2)** Congruent figures have equal corresponding sides. The side corresponding to PQ in pentagon $UVWXY$ is UV , and it must equal 8 cm.
- 14) **Choice B is correct.** **(8.G.A.5)** The angles sum to 180° : $(n + 15) + (n + 20) + (2n + 25) = 180$. Thus $4n + 60 = 180$, so $4n = 120$ and $n = 30$.
- 15) **Choice B is correct.** **(8.G.B.6, 8.G.B.7)** From $(\sqrt{12})^2 + (\sqrt{13})^2 = c^2$, we get $12 + 13 = 25$, so $c = \sqrt{25} = 5$.
- 16) **Choice A is correct.** **(8.G.B.8)** $d = \sqrt{(9-1)^2 + (8-2)^2} = \sqrt{8^2 + 6^2} = \sqrt{64 + 36} = \sqrt{100} = 10$ units.
- 17) **Choice C is correct.** **(8.G.B.7)** Trapezoid area = $\frac{1}{2}(6 + 10) \times 5 = 40$ cm². Rectangle area = $10 \times 3 = 30$ cm². Total = $40 + 30 = 70$ cm².
- 18) **Choice C is correct.** **(8.G.A.5)** Each exterior angle of a regular hexagon: $\frac{360}{6} = 60^\circ$.
- 19) **Choice B is correct.** **(8.G.B.8)** Deviations: $|3 - 5.5| = 2.5$ (twice), $|5 - 5.5| = 0.5$ (three times), $|7 - 5.5| = 1.5$ (twice), $|9 - 5.5| = 3.5$. Sum = $5 + 1.5 + 3 + 3.5 = 13$. MAD = $13/8 = 1.625 \approx 1.63$.
- 20) **Choice C is correct.** **(8.EE.A.2)** $10 \times 10 = 100$, so $x = 10$ (taking the positive root).
- 21) **The correct answer is A,C.** **(8.G.B.7)** A is correct: $P(\text{heads}) = \frac{1}{2}$. C is correct: $P(\text{heads and 4}) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$. B is wrong: $P(4) = \frac{1}{6}$. D is wrong: total outcomes = 12. E is wrong: $P(\text{not heads}) = \frac{1}{2}$.
- 22) **The correct answer is -4 .** **(8.EE.C.7a)** Solving gives $x \geq -4$, so the boundary value is -4 .
- 23) **Choice C is correct.** **(8.EE.A.4)** Correct rule: multiply coefficients and add exponents. The student got $2 \times 4 = 8$ correct, but mistakenly multiplied $3 \times 4 = 12$ instead of adding $3 + 4 = 7$.
- 24) **Choice D is correct.** **(8.F.A.1)** Each country has exactly one capital city. The other relations can assign more than one output to a single input.
- 25) **Choice A is correct.** **(8.F.B.4)** Initial water is 120 gallons (intercept). Drains 3 gallons per minute (negative slope). Equation: $W = -3t + 120$.
- 26) **Choice B is correct.** **(8.G.A.3)** Translation right 4, down 2: $(x, y) \rightarrow (x + 4, y - 2)$. So $M(5, 1) \rightarrow M'(9, -1)$.
- 27) **Choice B is correct.** **(8.G.B.7)** When corresponding angles are not congruent, the lines are not parallel. Corresponding angles are congruent only when lines are parallel.
- 28) **Choice B is correct.** **(8.G.B.7)** $B = (\frac{1}{2})^2 = \frac{1}{4}$ cm². $V = \frac{1}{3} \times \frac{1}{4} \times \frac{3}{2} = \frac{3}{24} = \frac{1}{8}$ cm³.
- 29) **Choice D is correct.** **(8.EE.B.5)** Negative slope means as x increases, y decreases. Water draining means the amount in the tank decreases over time. All other options describe increasing quantities.



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You Know More Than You Think

Hi, Skilled Learner!

◇ After working through Grade 8 practice, you now have more tools than you may realize: models, formulas, graphs, equations, and reasoning habits. ◇

★ **Remember this:** The next step is learning when to use each tool. That comes from practice, review, and the courage to try a method even when you are unsure. This version gave you 10 opportunities to rehearse test-day habits. ★

Tools You Can Use

- **Models:** Make relationships visible.
- **Equations:** Represent unknowns clearly.
- **Graphs:** Show change and location.
- **Formulas:** Organize measurement problems.

Grade 8 test-day tip: Before solving, name the tool you plan to use. That small choice makes your work more intentional.

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

Jay Daie

Your Skill-Building Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **10** full-length Math practice tests and **2** online tests to help Grade 8 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.



THIS BOOK INCLUDES:

10

Full-Length
Printed Tests

2

Online
Practice Tests



Detailed Answers
& Explanations



MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

WHAT YOU'LL GAIN



Build Confidence

Practice regularly to feel prepared and test-ready.



Master Key Skills

Develop strong math skills and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Strategies

Learn proven strategies to approach every question with confidence.



Boost Performance

Apply your knowledge and achieve your best score!

TOPICS COVERED

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Inequalities
- ✓ Functions
- ✓ Geometry
- ✓ Ratios & Proportions
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement
- ✓ Pythagorean Theorem
- ✓ Surface Area & Volume
- ✓ And More!



2 ONLINE TESTS

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



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!



PRACTICE
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY