

MAINE

Through Year Assessment

GRADE 8 MATH

PRACTICE TESTS

5

PRINTED
TESTS

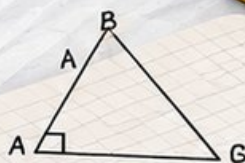


2 ONLINE
TESTS

**Standards Aligned
Problem Solving For
Comprehensive Assessment Programs**



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



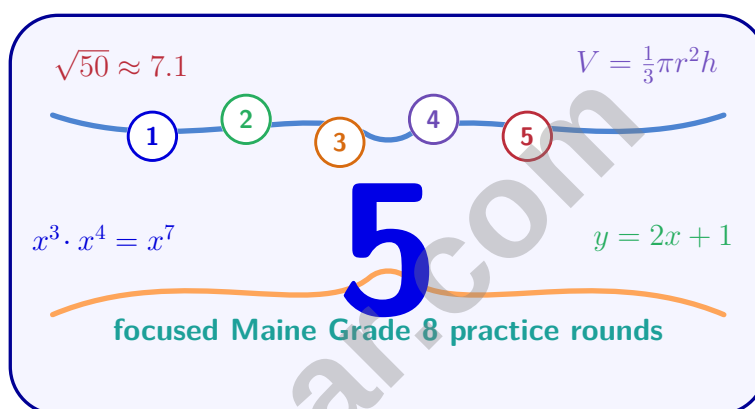
$$a^2 + b^2 = c^2$$



$$y = mx + b$$

5 Maine Through Year Assessment Grade 8 Math Practice Tests

Targeted Through Year Assessment Practice for Grade 8 Problem Solving



Five 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!

Five focused rounds for sharper Through Year Assessment math thinking

This book gives you five 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 five-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?

Five Through Year Assessment tests, 200 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–5	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

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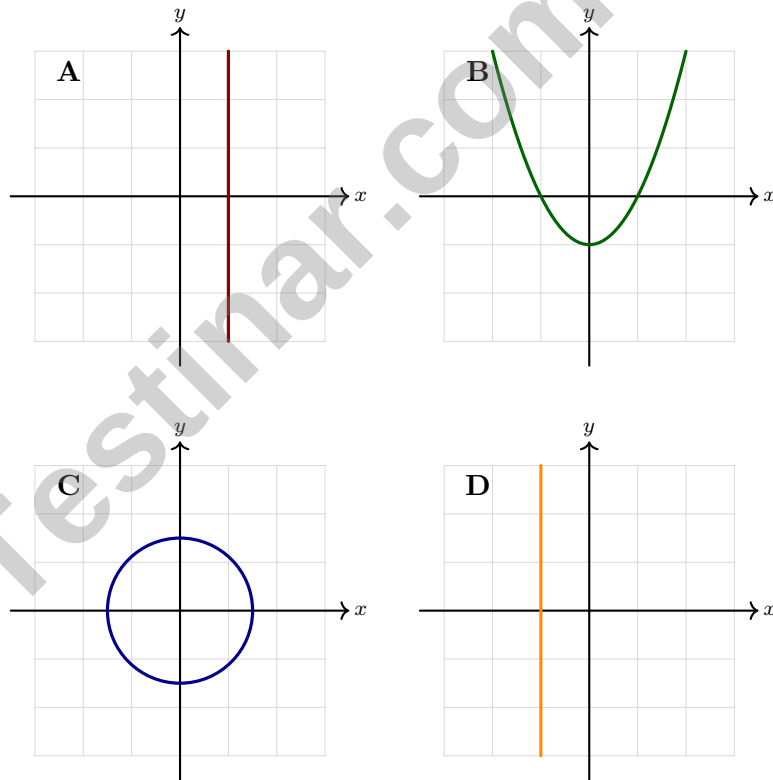
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- 1) A video streaming service charges a flat fee plus a per-minute rate. The relationship is shown:

Minutes watched	10	20	30
Cost (\$)	2.50	4.50	6.50

What is the slope?

- ☐ A. \$0.20 per minute
- ☐ B. \$2.50 per minute
- ☐ C. \$0.10 per minute
- ☐ D. \$0.05 per minute
- 2) Which graph represents a function?

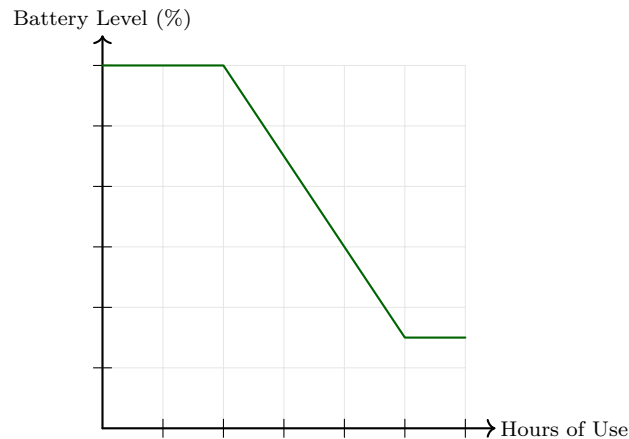


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- 3) If a segment has length 15 units and is dilated by scale factor $\frac{2}{3}$, what is the length of the dilated segment?
- ☐ A. 10 units ☐ C. 22.5 units
☐ B. 15 units ☐ D. 20 units
- 4) A trapezoid has a top base of 5 cm, a bottom base of 9 cm, and two equal legs. If the perimeter is 30 cm, what is the length of each leg?
- ☐ A. 6 cm ☐ C. 8 cm
☐ B. 7 cm ☐ D. 9 cm
- 5) The function $f(x)$ represents postage cost based on weight in ounces: $f(x) =$
- $$\begin{cases} 0.55 & \text{if } 0 < x \leq 1 \\ 0.75 & \text{if } 1 < x \leq 2 \\ 0.95 & \text{if } 2 < x \leq 3 \end{cases}$$
- What is $f(1.5)$?
- ☐ A. \$0.55 ☐ C. \$0.95
☐ B. \$0.75 ☐ D. \$1.50
- 6) Which of the following CORRECTLY pairs an equation with its type?
- ☐ A. $y = x + 2$ is nonlinear ☐ C. $y = \frac{1}{2}x$ is linear
☐ B. $y = x^2 + 2$ is linear ☐ D. $y = \sqrt{x - 1}$ is linear
- 7) An electrician charges \$50 for a service call and \$35 per hour. A customer's bill comes to \$225. How many hours did the electrician work?
- ☐ A. 4 hours ☐ C. 6 hours
☐ B. 5 hours ☐ D. 7 hours

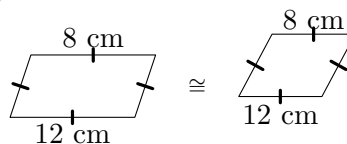


8)



A smartphone battery charges to 100%, remains fully charged during 2 hours of non-use, then drains steadily over 3 hours of active use. Which statement is true?

- ☐ A. The phone uses battery only during the first 2 hours
☐ B. The battery drains faster during non-use
☐ C. The battery level is constant from 0 to 2 hours
☐ D. The phone battery reaches 0% at 6 hours
- 9) Two congruent trapezoids are shown. One trapezoid has parallel sides of 8 cm and 12 cm. What are the parallel sides of the congruent trapezoid?

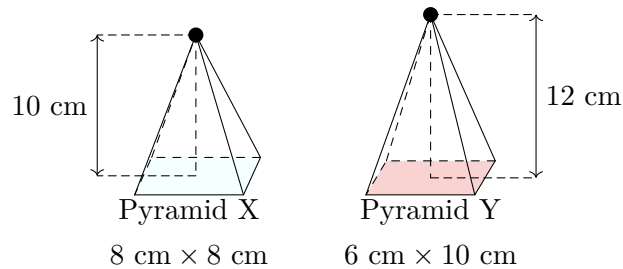


- ☐ A. 4 cm and 6 cm
☐ B. 8 cm and 12 cm
☐ C. 16 cm and 24 cm
☐ D. Cannot be determined



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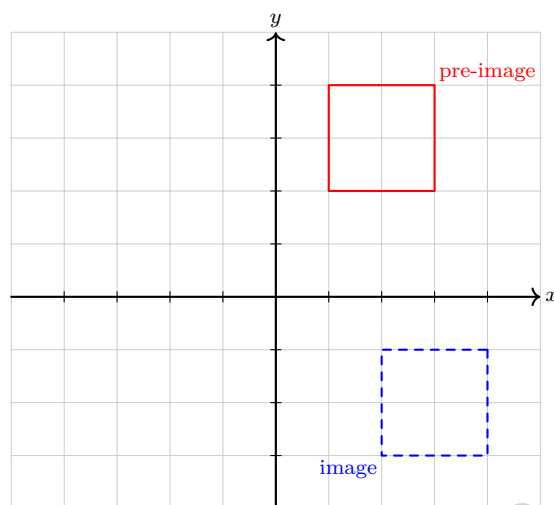
- 1) Pyramid X has a square base with side 8 cm and height 10 cm. Pyramid Y has a rectangular base of 6 cm by 10 cm and height 12 cm. Which pyramid has the larger volume?



- ☐ A. Pyramid X
- ☐ B. Pyramid Y
- ☐ C. They have equal volumes.
- ☐ D. Cannot be determined.
- 2) Which set of ordered pairs does NOT represent a function?
- ☐ A. $\{(0, 5), (1, 6), (2, 7), (3, 8)\}$
- ☐ B. $\{(1, 1), (2, 4), (3, 9), (4, 16)\}$
- ☐ C. $\{(1, 3), (2, 3), (3, 3), (4, 3)\}$
- ☐ D. $\{(2, 4), (2, 5), (3, 6), (4, 7)\}$
- 3) $f(x) = \frac{1}{2}x + 3$ and $g(x) = \frac{1}{2}x - 2$. Which is correct?
- ☐ A. f has greater slope.
- ☐ B. g has greater slope.
- ☐ C. Equal slopes, different intercepts.
- ☐ D. Functions identical.



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4)

The red rectangle (pre-image) is transformed to the blue rectangle (image). Which sequence of transformations applies?

- ☐ A. Reflect across x -axis, then translate right 1 and up 1
 ☐ C. Reflect across the line $y = x$
- ☐ B. Translate right 1 and up 1, then reflect across x -axis
 ☐ D. Rotate 180° , translate right 3
- 5) A swimming pool is being drained. The water level drops $\frac{1}{2}$ foot every $\frac{1}{4}$ hour. What is the slope?

- ☐ A. -2 feet per hour
 ☐ C. $-\frac{1}{8}$ feet per hour
- ☐ B. 2 feet per hour
 ☐ D. $\frac{1}{8}$ feet per hour



- 1) A triangle has interior angles in the ratio 2 : 3 : 4. What is the measure of the smallest angle?

☐ A. 20° ☐ C. 40° ☐ B. 30° ☐ D. 50°

- 2) A rectangular prism has dimensions 7 m $\times$ 5 m $\times$ 3 m. Calculate its surface area.

- 3) A gift of \$2,000 is offered in two ways: receive \$200 cash now or invest it at 8% simple interest for 1 year. Which choice results in more money after 1 year?

☐ A. Cannot determine without more information☐ C. Both result in the same amount☐ B. Invest at 8% for 1 year; total will be \$2,160☐ D. Receive \$200 cash now; total will be \$2,200

- 4) Simplify $c^0 \cdot c^5$ where $c \neq 0$.

☐ A. c^0 ☐ C. c ☐ B. 1☐ D. c^5

- 5) A square field has an area of 256 square meters. What is its perimeter?

☐ A. 32 meters☐ C. 64 meters☐ B. 48 meters☐ D. 96 meters

6) Convert 0.0042 to scientific notation.

☐ A. 4.2×10^{-4}

☐ C. 0.42×10^{-2}

☐ B. 4.2×10^3

☐ D. 4.2×10^{-3}

7) $\frac{1.8 \times 10^{-2}}{9 \times 10^{-8}} = ?$

☐ A. 0.2×10^5

☐ C. 2×10^6

☐ B. 10×10^4

☐ D. 2×10^5

8) The table shows a function. What is the range?

x	-2	-1	0	1	2
y	4	1	0	1	4

☐ A. $\{-2, -1, 0, 1, 2\}$

☐ C. $\{1, 4\}$

☐ B. $\{0, 1, 4\}$

☐ D. $\{-2, 4\}$

9) Table 1: $(0, 1), (2, 5), (4, 9)$. Table 2: $(0, -2), (1, -1), (2, 0)$. Which table represents a function with steeper rate of change?

x	0	2	4
Table 1	1	5	9

x	0	1	2
Table 2	-2	-1	0

☐ A. Table 1

☐ C. Both have same rate.

☐ B. Table 2

☐ D. Cannot be determined.

10) 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. $\sqrt{41}$

☐ C. 18

☐ B. $2\sqrt{41}$

☐ D. 9



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& answers

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.EE.B.5) Using (10, 2.50) and (20, 4.50): $\text{slope} = \frac{4.50 - 2.50}{20 - 10} = \frac{2.00}{10} = \0.20 per minute.
- 2) **Choice B is correct.** (8.F.A.1) The vertical line test states that a graph is a function if no vertical line intersects it more than once. Options A and D are vertical lines, so they fail. Option C is a circle and fails at multiple points. Option B, a parabola, is a function.
- 3) **Choice A is correct.** (8.G.A.3) Under dilation by scale factor k , length is multiplied by k . So $15 \times \frac{2}{3} = 10$.
- 4) **Choice C is correct.** (8.EE.C.8c) Perimeter = $5 + 9 + 2\ell = 30$, where ℓ is the length of each leg. So $14 + 2\ell = 30$, giving $\ell = 8$ cm.
- 5) **Choice B is correct.** (8.F.A.1) Since $1 < 1.5 \leq 2$, use the second rule: $f(1.5) = 0.75$. Cost is \$0.75.
- 6) **Choice C is correct.** (8.F.A.3) $y = \frac{1}{2}x$ is in the form $y = mx + b$ with $m = \frac{1}{2}$ and $b = 0$. The others are incorrectly classified.
- 7) **Choice B is correct.** (8.F.B.4) Equation: $C = 35h + 50$. Set $C = 225$: $225 = 35h + 50 \Rightarrow 175 = 35h \Rightarrow h = 5$ hours.
- 8) **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%.
- 9) **Choice B is correct.** (8.G.A.2) Congruent figures have equal corresponding sides. The congruent trapezoid has the same parallel sides: 8 cm and 12 cm.
- 10) **Choice A is correct.** (8.G.A.5) Alternate interior angles formed by parallel lines and a transversal are congruent.
- 11) **Choice B is correct.** (8.G.B.6, 8.G.B.7) From $6^2 + b^2 = 10^2$, we get $36 + b^2 = 100$, so $b = 8$ (scaled 3-4-5 triple).
- 12) **Choice A is correct.** (8.G.B.8) Map distance is $\sqrt{100} = 10$ units. Actual distance is $10 \times 5 = 50$ miles.
- 13) **Choice A is correct.** (8.G.B.7) Co-interior angles sum to 180° . So $p = 180 - 123 = 57^\circ$.
- 14) **Choice A is correct.** (8.G.B.7) Rectangle area is $9 \times 4 = 36 \text{ m}^2$. Triangle area is $\frac{1}{2} \times 9 \times 3 = 13.5 \text{ m}^2$. The total area is $36 + 13.5 = 49.5 \text{ m}^2$.
- 15) **Choice B is correct.** (8.G.A.5) A hexagon's interior angles add to 720° . The known angles add to $68 + 118 + 102 + 150 + 106 = 544^\circ$, so the sixth angle is $720 - 544 = 176^\circ$.
- 16) **Choice A is correct.** (8.SP.A.1) The rate of change is not constant, showing a curved or leveling pattern rather than a straight line. This indicates a nonlinear association.
- 17) **Choice B is correct.** (8.SP.A.4) This is a column-conditional frequency. Among phone owners (253 total), ages 13–17 number 175. Relative frequency: $\frac{175}{253} \approx 0.69$.
- 18) **Choice D is correct.** (8.G.B.8) Data A: Deviations are $\{2, 1, 0, 1, 2\}$, $\text{MAD} = (2 + 1 + 0 + 1 + 2)/5 = 1.2$. Data B: Deviations are $\{5, 2, 0, 2, 5\}$, $\text{MAD} = (5 + 2 + 0 + 2 + 5)/5 = 2.8$. Data B has larger MAD, indicating greater spread from the mean.
- 19) **Choice B is correct.** (8.G.B.7) Outcomes with H: H1, H2. That's 2 of 4 outcomes. $P = \frac{2}{4} = \frac{1}{2}$.
- 20) **Choice C is correct.** (8.G.B.7) Prism: $V_p = B \times h = 25 \times 15 = 375 \text{ cm}^3$. Pyramid: $V_{py} = \frac{1}{3} \times 25 \times 15 = 125 \text{ cm}^3$. Ratio: $\frac{375}{125} = 3$.
- 21) **Choice B is correct.** (8.EE.C.7b) Multiply independent choices: 4 chairperson candidates $\times$ 5 secretary candidates $\times$ 3 treasurer candidates = 60 different teams.
- 22) **The correct answer is A,B.** (8.EE.A.4) Division rule: divide coefficients ($6.4 \div 1.6 = 4$, choice A) and subtract exponents ($-3 - (-5) = 2$, choice B). This gives 4×10^2 . Choice C is wrong, choice D incorrectly adds exponents, and choice E has the wrong exponent sign.
- 23) **The correct answer is 4.** (8.EE.B.5) The constant is $k = 12 \div 3 = 4$.
- 24) **Choice A is correct.** (8.SP.A.2) Real-world data rarely fits a perfect line. A trend line balances passing close to all points, even if it doesn't pass through every one.
- 25) **The correct answer is no solution.** (8.EE.C.8a) The two equations represent lines with the same slope $\frac{1}{2}$ but different y -intercepts (1 and 4), making them parallel. Parallel lines never intersect, so the system has no solution.



Hi, Persistent Problem Solver!

◇ Some Grade 8 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 5 full Grade 8 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 8 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

Practice Today. Succeed Tomorrow!

Give your child the confidence and skills they need with **5 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?



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.

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! |

5
PRINTED
TESTS



2 ONLINE
TESTS



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