

3

Maine

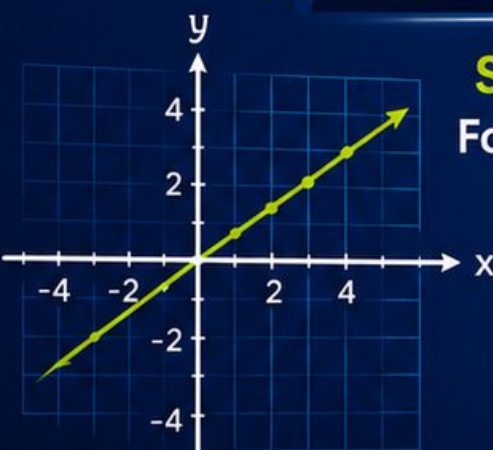
Through Year Assessment

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3 PRINTED TESTS



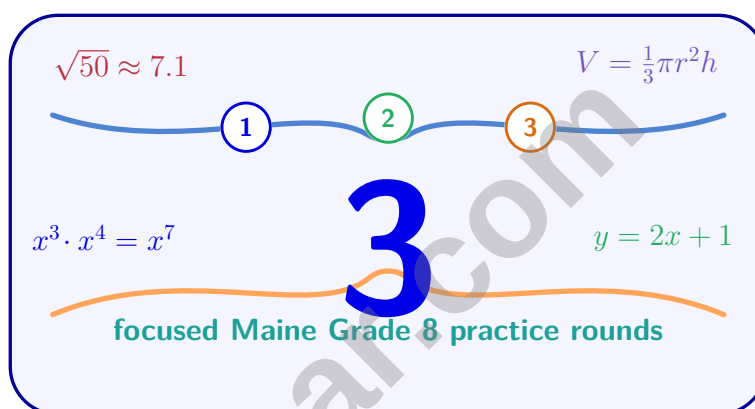
2 ONLINE TESTS



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

3 Maine Through Year Assessment Grade 8 Math Practice Tests

Grade 8 Through Year Assessment Practice for Stronger Reasoning and Accuracy



Three 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!

Three focused rounds for sharper Through Year Assessment math thinking

This book gives you three 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 three-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?

Three Through Year Assessment tests, 120 questions, and a focused review path

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

Table of Contents



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1) $(4.0 \times 10^5) + (6.0 \times 10^4) = ?$

☐ A. 10×10^4

☐ B. 10×10^5

☐ C. 1.0×10^6

☐ D. 4.6×10^5

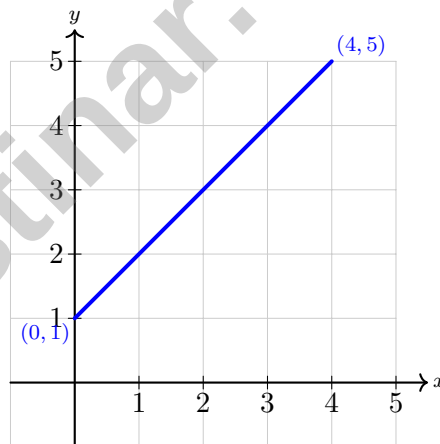
2) A cylinder has radius 4 cm and height 9 cm. What is the difference between total surface area and lateral surface area?

☐ A. $32\pi \text{ cm}^2$

☐ B. $16\pi \text{ cm}^2$

☐ C. $72\pi \text{ cm}^2$

☐ D. $40\pi \text{ cm}^2$

3) Under which transformation would the image of a point (x, y) always lie on the opposite side of the origin from the original point?☐ A. Reflection across the x -axis☐ B. Reflection across the y -axis☐ C. 180° rotation about the origin☐ D. Translation 5 units right

4)

What is the slope of the line shown in the graph?

☐ A. 1

☐ B. 2

☐ C. $\frac{1}{2}$

☐ D. 4



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- 5) At a movie theater, adult tickets cost \$12 and child tickets cost \$8. If a family paid \$60 total for 6 tickets (mix of adult and child), which equation correctly represents the situation, where a is the number of adult tickets?

☐ A. $12a + 8(6 - a) = 60$

☐ C. $a + 8 = 60$

☐ B. $12a + 8a = 60$

☐ D. $12(6) + 8a = 60$

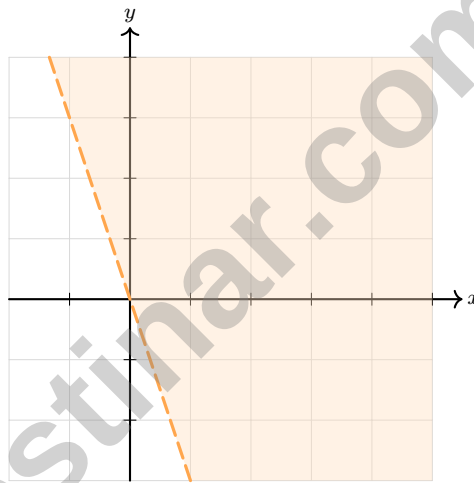
- 6) Solve: $3(x + 2) < 9$

☐ A. $x < 1$

☐ C. $x < 3$

☐ B. $x > 1$

☐ D. $x > 3$



7)

What inequality matches this graph?

☐ A. $y > -3x$

☐ C. $y \geq -3x$

☐ B. $y < -3x$

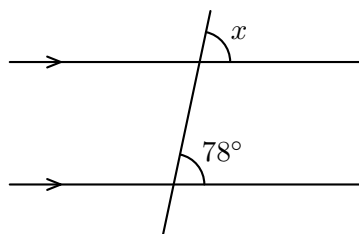
☐ D. $y \leq -3x$



- 8) Two cylinders have the same volume. Cylinder A has radius 4 m and height 10 m. Cylinder B has radius 5 m. What is the height of Cylinder B?
- ☐ A. 6.4 m ☐ C. 10 m
☐ B. 8 m ☐ D. 12.5 m
- 9) Using the model $y = 2x - 3$, suppose the actual data point is (5, 7), but the model predicts $y = 7$ at $x = 5$. What is the residual (error)?
- ☐ A. 0 ☐ C. -2
☐ B. 2 ☐ D. 7
- 10) A payday loan charges \$15 for every \$100 borrowed for 2 weeks. What is the APR equivalent?
- ☐ A. 15% ☐ C. 390%
☐ B. 30% ☐ D. 780%
- 11) What is the value of 8^0 ?
- ☐ A. 0 ☐ C. 8
☐ B. Undefined ☐ D. 1
- 12) What is $\sqrt{324}$?
- ☐ A. 16 ☐ C. 18
☐ B. 17 ☐ D. 19
- 13) A computer downloads files at 15 MB per second. How many MB are downloaded in 2.5 seconds?
- ☐ A. 30 MB ☐ C. 37.5 MB
☐ B. 35 MB ☐ D. 40 MB



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1)

Two parallel lines are cut by a transversal. One angle measures 78° . What is x , the measure of the corresponding angle on the upper parallel line?

☐ A. 51° ☐ C. 102° ☐ B. 78° ☐ D. 128° 2) Which fraction is equivalent to $0.\overline{999}$?☐ A. $\frac{999}{1000}$ ☐ C. $\frac{1}{999}$ ☐ B. $\frac{9}{10}$ ☐ D. $\frac{999}{999} = 1$ 3) Between which two consecutive integers does $\sqrt[3]{100}$ lie?☐ A. 2 and 3☐ C. 3 and 4☐ B. 5 and 6☐ D. 4 and 54) Which expression is larger: $\sqrt{5} + \sqrt{6}$ or 4.8?☐ A. $\sqrt{5} + \sqrt{6}$ is larger☐ C. They are equal☐ B. Cannot be determined☐ D. 4.8 is larger

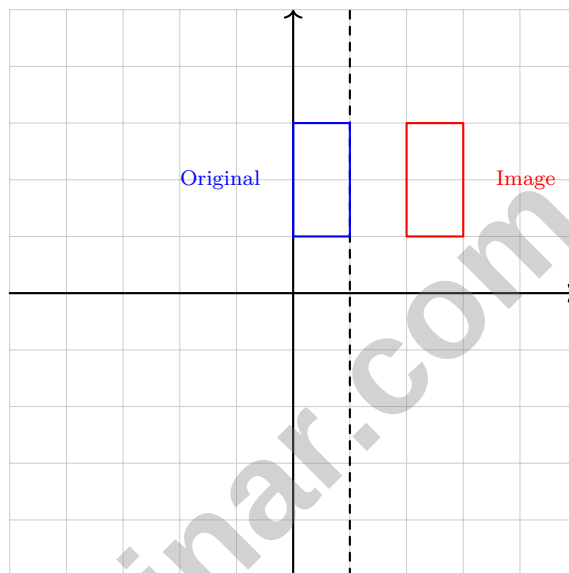
5) Which list is in order from smallest to largest?

☐ A. 3.2×10^{-5} , 3.2×10^1 , 3.2×10^{-3} ☐ C. 3.2×10^{-3} , 3.2×10^{-5} , 3.2×10^1 ☐ B. 3.2×10^1 , 3.2×10^{-3} , 3.2×10^{-5} ☐ D. 3.2×10^{-5} , 3.2×10^{-3} , 3.2×10^1 

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- 6) Two cylinders have the same height of 10 cm. Cylinder A has radius 3 cm, Cylinder B has radius 6 cm. Which statement is true?

- ☐ A. Both have the same SA
☐ B. A has greater SA
☐ C. B has exactly twice the SA of A
☐ D. B has greater SA but not exactly twice



7)

The figure shows a reflection across the dashed line $x = 1$. If a point on the original was at $(0, 2)$, where is it in the image?

- ☐ A. $(1, 2)$
☐ B. $(2, 2)$
☐ C. $(0, 2)$
☐ D. $(3, 2)$

- 8) Which line passes through the origin and has slope 3?

- ☐ A. $y = 3x - 3$
☐ B. $y = -3x$
☐ C. $y = 3x + 3$
☐ D. $y = 3x$



1) If $f(x) = \frac{2x+5}{3}$, what is $f(4)$?

☐ A. 3

☐ B. 4

☐ C. $\frac{26}{3}$

☐ D. $\frac{13}{3}$

2) Three similar figures X , Y , and Z have corresponding sides in the ratios $X : Y = 3 : 4$ and $Y : Z = 4 : 7$. If X has a side of 6 cm, what is the length of the corresponding side in Z ?

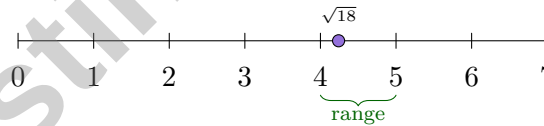
☐ A. 14 cm

☐ B. 10.5 cm

☐ C. 8 cm

☐ D. 18 cm

3) The elevation rises 500 feet over a horizontal distance of 2000 feet. What is the slope?



4)

Between which two whole numbers does $\sqrt{18}$ lie?

☐ A. 3 and 4

☐ B. 6 and 7

☐ C. 5 and 6

☐ D. 4 and 5



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& answers

- 5) A student can take one math class and one science class. There are 3 math classes and 2 science classes available. How many combinations of classes are possible?

☐ A. $3 + 2 = 5$

☐ B. $3 \times 2 = 6$

☐ C. $2^3 = 8$

☐ D. $3 \times 2 \times 2 = 12$

- 6) Which equals $0.\overline{54}$?

☐ A. $\frac{54}{100}$

☐ B. $\frac{27}{50}$

☐ C. $\frac{54}{90}$

☐ D. $\frac{54}{99} = \frac{6}{11}$

n	4	9	16	25
$\sqrt{n}$	2	3	4	5

7)

Using the table, between which integers does $\sqrt{11}$ lie?

☐ A. 2 and 3

☐ B. 5 and 6

☐ C. 4 and 5

☐ D. 3 and 4

- 8) Two pyramids have the same base area of 100 ft^2 . Pyramid X has height 9 ft; Pyramid Y has height 15 ft. What is the difference between their volumes in cubic feet?



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.EE.A.4) Rewrite: $4.0 \times 10^5 + 0.6 \times 10^5 = (4.0 + 0.6) \times 10^5 = 4.6 \times 10^5$.
- 2) **Choice A is correct.** (8.G.A.3) Total SA = $2\pi r^2 + 2\pi rh = 2\pi(16) + 2\pi(4)(9) = 32\pi + 72\pi = 104\pi \text{ cm}^2$. Lateral SA = $2\pi(4)(9) = 72\pi \text{ cm}^2$. Difference = $104\pi - 72\pi = 32\pi \text{ cm}^2$ (the two circular bases).
- 3) **Choice C is correct.** (8.G.A.1) A 180° rotation maps $(x, y) \rightarrow (-x, -y)$, placing the image on the opposite side of the origin. Single reflections across axes do not have this property.
- 4) **Choice A is correct.** (8.EE.B.6) Using points $(0, 1)$ and $(4, 5)$: slope = $\frac{5-1}{4-0} = \frac{4}{4} = 1$.
- 5) **Choice A is correct.** (8.EE.C.7) Total cost is adult tickets plus child tickets. If a adults, then $(6-a)$ children. Equation: $12a + 8(6-a) = 60$.
- 6) **Choice A is correct.** (8.EE.C.7a) Distribute: $3x + 6 < 9$. Subtract 6: $3x < 3$. Divide by 3: $x < 1$.
- 7) **Choice A is correct.** (8.EE.C.8c) The DASHED line and shading ABOVE indicate a strict inequality with y greater: $y > -3x$.
- 8) **Choice A is correct.** (8.G.B.7) Cylinder A: $V_A = \pi \times 16 \times 10 = 160\pi$. For equal volumes: $160\pi = \pi \times 25 \times h_B \Rightarrow h_B = \frac{160}{25} = 6.4 \text{ m}$.
- 9) **Choice A is correct.** (8.SP.A.3) Residual = actual - predicted = $7 - 7 = 0$. The model predicts perfectly for this point.
- 10) **Choice C is correct.** (8.G.B.7) Rate per 2 weeks: $\$15 / \$100 = 15\%$ per 2 weeks. There are $52 \text{ weeks} / 2 = 26$ two-week periods in a year. APR: $0.15 \times 26 = 3.9 = 390\%$.
- 11) **Choice D is correct.** (8.EE.A.1) Any nonzero number raised to the power 0 equals 1: $8^0 = 1$.
- 12) **Choice C is correct.** (8.EE.A.2) $18 \times 18 = 324$, so $\sqrt{324} = 18$.
- 13) **Choice C is correct.** (8.EE.B.5) Proportional: $y = 15x$. For $x = 2.5$: $y = 15(2.5) = 37.5 \text{ MB}$.
- 14) **Choice A is correct.** (8.EE.C.8a) Two lines with different slopes always intersect at exactly one point. The lines $y = mx + 3$ and $y = -2x + 6$ have different slopes unless $m = -2$. If $m = -2$, the lines have the same slope but different y -intercepts, so they do not intersect.
- 15) **The correct answer is 3.56×10^5 .** (8.EE.A.3) Move the decimal 5 places left to get 3.56; since the original number is greater than 1, the exponent is positive 5.
- 16) **Choice A is correct.** (8.EE.C.7) $(x-3)^2 = (x-3)(x-3) = x^2 - 3x - 3x + 9 = x^2 - 6x + 9$.
- 17) **The correct answer is $\frac{53}{90}$.** (8.NS.A.1) Set $x = 0.\overline{58} = 0.5888\dots$. Then $10x = 5.\overline{8}$ and $100x = 58.\overline{8}$. Subtracting: $90x = 53$, so $x = \frac{53}{90}$.
- 18) **Choice B is correct.** (8.F.A.2) $S(0) = 500$. Table shows 600 at $m = 0$. Since $600 > 500$, table function starts higher.
- 19) **Choice D is correct.** (8.F.A.3) Only $y = -3x + 4$ fits the linear form $y = mx + b$. Options A (exponential), B (reciprocal), and C (absolute value) are all nonlinear.
- 20) **Choice B is correct.** (8.F.B.5) From 0 to 2s: flat (height constant at 4m). From 2 to 3s: the height drops to 1m. From 3 to 4s: flat at 1m. From 4 to 5s: the height rises to 3m. From 5 to 6s: flat at 3m.
- 21) **The correct answer is A,C.** (8.NS.A.1) Statement A is true because rational numbers are closed under addition. Statement C is true because any terminating decimal, such as $0.75 = \frac{3}{4}$, is rational. Statement B is false because two irrational numbers can multiply to a rational number, for example $\sqrt{2} \times \sqrt{8} = 4$. Statement D is false because integers are rational. Statement E is false because perfect squares have rational square roots, not irrational ones.
- 22) **Choice B is correct.** (8.G.A.2) Congruent figures have equal corresponding sides. Kite 2 has the same side lengths as Kite 1: 4 cm, 4 cm, 6 cm, 6 cm.
- 23) **Choice B is correct.** (8.G.A.5) Corresponding angles are congruent: $9t - 15 = 4t + 10 \Rightarrow 5t = 25 \Rightarrow t = 5$.
- 24) **Choice B is correct.** (8.G.B.6, 8.G.B.7) Verify: $121 + 3600 = 3721 = 61^2$. This is the 11-60-61 Pythagorean triple.
- 25) **Choice A is correct.** (8.G.B.8) $d = \sqrt{(7-0)^2 + (24-0)^2} = \sqrt{49 + 576} = \sqrt{625} = 25$.
- 26) **Choice B is correct.** (8.G.B.7) For a semicircle on top of a rectangle, the top edge of the rectangle is NOT part of the perimeter outline; it's replaced by the semicircular arc. The student added both, overcounting.



Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for 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.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

COVERS ALL ESSENTIAL TOPICS

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



2 Extra Online Practice Tests Included!

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

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PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better **Results**.