

OHIO OST

GRADE 8 MATH

PRACTICE TESTS

5

PRINTED
TESTS



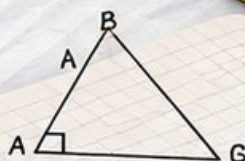
2

 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.



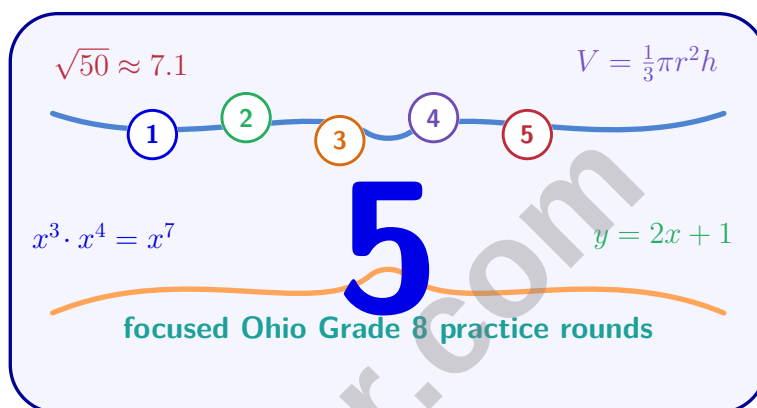
$$a^2 + b^2 = c^2$$



$$y = mx + b$$

5 Ohio OST Grade 8 Math Practice Tests

Targeted OST Prep for Geometry, Data, and Linear Thinking



Five complete 40-question Grade 8 OST 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, Ohio Grade 8 Problem Solver!

Five focused rounds for sharper OST math thinking

This book gives you five full Grade 8 OST 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 Ohio 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.

Ohio 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 OST 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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1) Which number is equivalent to 6.5×10^{-3} ?

☐ A. 6,500

☐ C. 0.065

☐ B. 65,000

☐ D. 0.0065

2) Hexagon ABCDEF is congruent to hexagon GHIJKL. The perimeter of ABCDEF is 48 cm. What is the perimeter of GHIJKL?

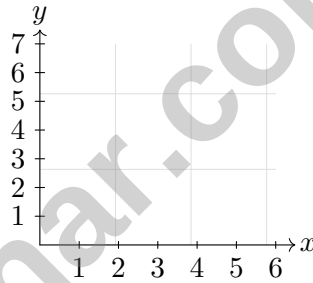
☐ A. 24 cm

☐ C. 96 cm

☐ B. 48 cm

☐ D. Cannot be determined

3) Graph the proportional relationship $y = \frac{3}{2}x$ by finding three points and identifying the slope. What is the slope?



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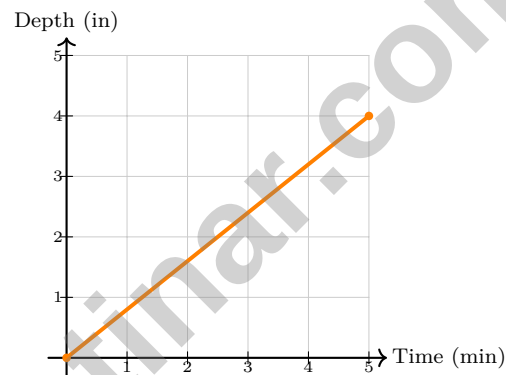
4) A scientist collects data on plant height over weeks. The table shows:

Week	0	1	2	3
Height (cm)	5	8	12	17

Is the growth linear or nonlinear?

- ☐ A. Linear; first difference is constant at 5 ☐ C. Linear; the plant always grows at 5
☐ B. Nonlinear; differences are 3, 4, 5 (not constant) ☐ D. Nonlinear; cannot predict height after week 3

5) A graph shows depth of water versus time as a pool is filled.



What is the filling rate (slope)?

- ☐ A. $\frac{4}{5}$ inches per minute ☐ C. 4 inches per minute
☐ B. $\frac{5}{4}$ inches per minute ☐ D. 5 inches per minute



6) A river flows at 3 mph. A boat travels 4 hours downstream and 6 hours upstream for the same distance. What is the boat's speed in still water?

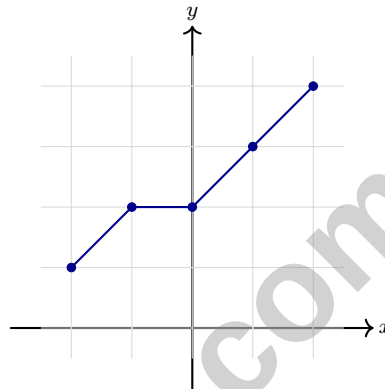
☐ A. 10 mph

☐ C. 15 mph

☐ B. 12 mph

☐ D. 18 mph

7) From the graph of $f(x)$, what is $f(-1)$?



☐ A. -1

☐ C. 1

☐ B. 2

☐ D. 3

8) Line A passes through $(0, 0)$ and $(3, 6)$. Line B passes through $(0, 1)$ and $(2, 7)$. Which line increases faster?

☐ A. Line A

☐ C. Both increase equally.

☐ B. Line B

☐ D. Cannot determine.

9) A taxi charges \$3 to get in the car plus \$0.50 per mile driven. If d represents the distance in miles and C represents the cost in dollars, which equation models this situation?

☐ A. $C = 0.50d + 3$

☐ C. $C = 3.50d$

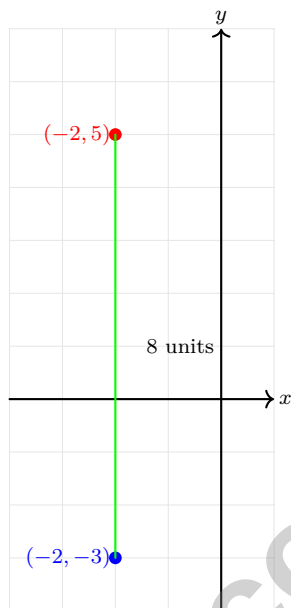
☐ B. $C = 3d + 0.50$

☐ D. $C = 0.50d - 3$



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- 1) What is the vertical distance between $(-2, 5)$ and $(-2, -3)$?



- ☐ A. 3 ☐ C. 2
☐ B. 8 ☐ D. 5
- 2) Solve for x : $x^3 = 343$

- 3) Of the following, which set contains a repeated input with different outputs?

- ☐ A. $\{(2, 3), (2, 5), (3, 4)\}$ ☐ C. $\{(4, 1), (5, 2), (6, 3)\}$
☐ B. $\{(1, 5), (2, 5), (3, 5)\}$ ☐ D. $\{(7, 2), (8, 2), (9, 2)\}$



4) Hexagon ABCDEF is congruent to hexagon GHIJKL. In hexagon ABCDEF, the interior angles are: $120^\circ, 120^\circ, 120^\circ, 120^\circ, 120^\circ, 120^\circ$. Which of the following must be true about hexagon GHIJKL?

- ☐ A. All its angles are 90°
☐ D. Some of its angles are greater than 120°
☐ B. All its angles are 120°
☐ C. Its angles sum to 360°

5) Which equation represents a NONLINEAR function?

- ☐ A. $y = 2x + 3$
☐ C. $y = x^2 + 1$
☐ B. $y = -x + 5$
☐ D. $y = \frac{1}{2}x - 7$

6) A store's revenue is $\$200 + \15 per item sold. What is the slope of revenue versus items sold?

- ☐ A. $\$200$
☐ C. $\$215$
☐ B. $\$30$
☐ D. $\$15$

7) A 300 mL mixture contains 40% juice and 60% water. How much pure juice must be added to make the mixture 60% juice?

- ☐ A. 75 mL
 ☐ C. 150 mL
☐ B. 100 mL
 ☐ D. 200 mL

8) The table shows values of function p :

x	-2	0	2	4
$p(x)$	3	7	11	15

If the pattern continues, what is $p(6)$?

- ☐ A. 17
 ☐ C. 20
☐ B. 19
 ☐ D. 22



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& answers

1) Solve: $\frac{2x}{3} \geq -4$

☐ A. $x \geq -6$

☐ C. $x \geq -12$

☐ B. $x \leq -6$

☐ D. $x \leq -12$

- 2) The mass of the Sun is approximately
- 2×10^{30}
- kg. How many times more massive is the Sun than Earth, which has mass
- 6×10^{24}
- kg?

- 3) A recent graduate has a monthly gross income of \$3,000. She budgets: rent \$900, food \$400, transportation \$300, and savings \$200. How much is left for discretionary spending?

☐ A. \$200

☐ C. \$1,800

☐ B. \$2,500

☐ D. \$1,200

- 4) Simplify
- $7^{-4} \cdot 7^6$
- .

☐ A. 7^{-2}

☐ C. 7^3

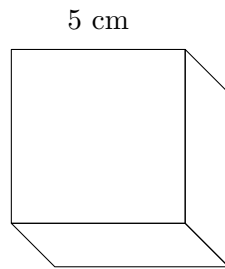
☐ B. 7^{-10}

☐ D. 7^2



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& answers

5) If a cube has a side length of 5 cm, what is its volume?



- ☐ A. 15 cm^3
☐ C. 75 cm^3
☐ B. 25 cm^3
☐ D. 125 cm^3

6) Which expression is NOT in proper scientific notation?

Proper range for coefficient:

$[1, 10)$ ✓



- ☐ A. 9.5×10^{-3}
☐ C. 1×10^6
☐ B. 10.2×10^4
☐ D. 5.67×10^0

7) Why is $y = \sqrt{x}$ considered a function for non-negative x ?

- ☐ A. Because $\sqrt{x}$ is always positive.
 ☐ C. Because the square root is the inverse of squaring.
☐ B. Because each input $x \geq 0$ produces exactly one output y .
 ☐ D. Because x and y are both non-negative.



Ohio OST 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 Ohio OST practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** (8.EE.3) A negative exponent shifts the decimal to the left. Move the decimal 3 places left: $6.5 \times 10^{-3} = 0.0065$.
- 2) **Choice B is correct.** (8.G.2) Congruent figures have equal perimeters. Since ABCDEF is congruent to GHIJKL, and the perimeter of ABCDEF is 48 cm, the perimeter of GHIJKL is also 48 cm.
- 3) **The correct answer is $\frac{3}{2}$.** (8.EE.5) Three points: (0, 0), (2, 3), (4, 6). Slope = $\frac{3}{2} = 1.5$.
- 4) **Choice B is correct.** (8.F.3) First differences: $8 - 5 = 3$, $12 - 8 = 4$, $17 - 12 = 5$. Non-constant differences indicate nonlinear growth.
- 5) **Choice A is correct.** (8.EE.8) From (0, 0) to (5, 4): slope = $\frac{4 - 0}{5 - 0} = \frac{4}{5}$ inches per minute.
- 6) **Choice C is correct.** (8.EE.8c) Let b = boat's speed in still water. Downstream: $d = (b + 3) \times 4$. Upstream: $d = (b - 3) \times 6$. Setting them equal: $4(b + 3) = 6(b - 3)$, so $4b + 12 = 6b - 18$, giving $30 = 2b$, thus $b = 15$ mph.
- 7) **Choice B is correct.** (8.F.2) Locate $x = -1$ and read the corresponding y -value from the graph: $y = 2$. So $f(-1) = 2$.
- 8) **Choice B is correct.** (8.F.2) Slope of A: $(6 - 0)/(3 - 0) = 2$. Slope of B: $(7 - 1)/(2 - 0) = 3$. Since $3 > 2$, Line B increases faster.
- 9) **Choice A is correct.** (8.F.4) Initial fee is \$3 (intercept), rate per mile is \$0.50 (slope). Equation: $C = 0.50d + 3$.
- 10) **Choice B is correct.** (8.F.5) Exponential decay starts steep and flattens, like fuel tank levels as the engine runs less frequently. A is linear, C is linear, D grows.
- 11) **Choice A is correct.** (8.G.3) Reflecting across the x -axis maps (0, 1) $\rightarrow$ (0, -1) and (2, 2) $\rightarrow$ (2, -2). Translating left 4 gives (-4, -1) and (-2, -2), matching the image rectangle.
- 12) **Choice C is correct.** (8.G.5) Let the angles be $2x$, $3x$, and $4x$. Sum: $2x + 3x + 4x = 180$, so $9x = 180$ and $x = 20^\circ$. Smallest angle: $2x = 40^\circ$.
- 13) **Choice B is correct.** (8.G.6, 8.G.7) Correct: $5^2 + 12^2 = 25 + 144 = 169$, so $c = 13$. The error was adding legs directly instead of applying the Pythagorean Theorem.
- 14) **Choice B is correct.** (8.G.7) Vertical angles are congruent. Adjacent angles are supplementary: $180 - 72 = 108^\circ$. The four angles are $72^\circ, 108^\circ, 72^\circ, 108^\circ$.
- 15) **Choice B is correct.** (8.G.7) Base area: $B = \frac{1}{2} \times 6 \times 8 = 24 \text{ in}^2$. Volume: $V = \frac{1}{3} \times 24 \times 10 = 80 \text{ in}^3$.
- 16) **Choice B is correct.** (8.G.7) Rectangle area = $6 \times 5 = 30 \text{ m}^2$. Triangle area = $\frac{1}{2} \times 6 \times 2 = 6 \text{ m}^2$. Total = $30 + 6 = 36 \text{ m}^2$.
- 17) **Choice A is correct.** (8.G.5) For a nonagon ($n = 9$): $(9 - 2) \times 180 = 7 \times 180 = 1260^\circ$. The student is correct.
- 18) **The correct answer is (3, -1).** (8.EE.8) Add the equations: $(2x + y) + (x - y) = 5 + 4$, so $3x = 9$, giving $x = 3$. Substitute: $3 - y = 4$, so $y = -1$.
- 19) **Choice A is correct.** (8.SP.1) The rate of change is not constant, showing a curved or leveling pattern rather than a straight line. This indicates a nonlinear association.
- 20) **Choice C is correct.** (8.SP.4) Relative frequency of streaming among broadband users: $\frac{126}{168} = 0.75$.
- 21) **Choice C is correct.** (8.G.8) Absolute deviations: $|10 - 13| = 3$, $|12 - 13| = 1$, $|14 - 13| = 1$, $|16 - 13| = 3$. Sum = 8. MAD = $8/4 = 2$.
- 22) **The correct answer is B, E.** (8.EE.4) The product is $(4 \times 5) \times 10^{3+4} = 20 \times 10^7 = 2 \times 10^8$, so choices B and E are equivalent to the original expression. Choice A uses an exponent that is too large, and choices C and D have the wrong value.
- 23) **Choice A is correct.** (8.G.7) $P(\text{at least one 1}) = 1 - P(\text{no 1}) = 1 - (\frac{3}{4})^2 = 1 - \frac{9}{16} = \frac{7}{16}$.
- 24) **Choice A is correct.** (8.G.8) Correct method: $d = \sqrt{(3 - 0)^2 + (0 - 4)^2} = \sqrt{9 + 16} = \sqrt{25} = 5$ units. The student used addition instead of the Pythagorean Theorem.
- 25) **Choice D is correct.** (8.NS.2) A negative trend shows that warmer months have lower heating costs, a natural relationship that does not imply causation.
- 26) **Choice A is correct.** (8.G.4) If the new length is 12 and the scale factor is 1.5, then original = $\frac{12}{1.5} = 8$ cm. Distractor D adds the scale factor instead of dividing.



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! |

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