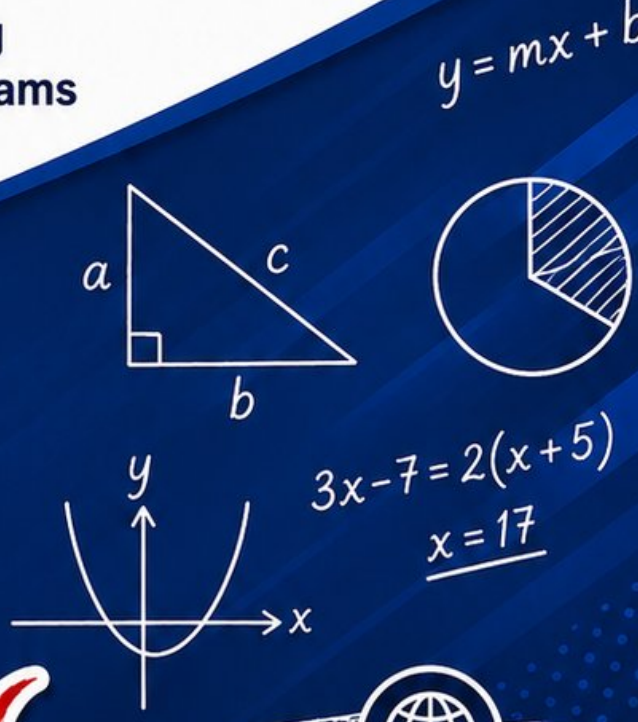
10 Ohio OST

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

USE THESE TWO ADDITIONAL ONLINE PRACTICE TESTS

FOR EXTRA REVIEW AFTER THE PRINTED TESTS IN THIS BOOK.

10 Ohio OST Grade 8 Math Practice Tests

Ohio Grade 8 OST Practice for well-rounded review of linear reasoning, rate of change, expressions, geometry, data analysis, and chance

Ten complete 40-question Grade 8 OST practice rounds with linear relationships, scientific notation, real numbers, equations, functions, geometry, data analysis, probability, answer keys, and clear explanations for every item.

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Welcome, Ohio Grade 8 Problem Solver!

Ten focused rounds for sharper Ohio OST math thinking

This book gives you ten full Grade 8 OST 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 **Solving Real Problems with Systems** (8.EE.8c): Solve real-world and mathematical problems leading to two linear equations in two variables. You will also meet **Finding Distance with the Pythagorean Theorem** (8.G.8): Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

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.

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 **Comparing Two Functions** (8.F.2): Compare properties of two functions each represented in a different way (algebraically, graphically, numerically, or verbally). A second useful connection is **Two-Way Tables for Categorical Data** (8.SP.4): Understand that patterns of association can be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table.

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?

Ten Ohio OST 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 Ohio 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 **Sketching and Describing Function Graphs** (8.F.5): Describe qualitatively the functional relationship between two quantities by analyzing a graph. Sketch a graph that exhibits qualitative features described verbally. It also prepares you for **Angle Relationships** (8.G.7): Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

Table of Contents

1) A square pyramid has a volume of 343 cm^3 and a height of 7 cm. What is the length of each base edge?

☐ A. 7 cm
☐ B. $7\sqrt{3}$ cm
☐ C. 14 cm
☐ D. 21 cm

2) A cylindrical paint can has radius 2.5 feet and height 3 feet. The paint covers only the curved side (lateral surface), not the top or bottom. Which expression gives the area that needs paint?

☐ A. $2\pi(2.5)^2 + 2\pi(2.5)(3)$
☐ B. $2\pi(2.5)(3)$
☐ C. $\pi(2.5)^2 + \pi(2.5)(3)$
☐ D. $(2.5)(3)$

3) A sphere and a cylinder both have radius 2 cm. The cylinder has height 8 cm. Which solid has greater volume? (Use $\pi \approx 3.14$.)

☐ A. Sphere (≈ 33.49 cm^3)
☐ B. Cylinder (≈ 100.48 cm^3)
☐ C. Both have equal volume
☐ D. Cannot determine from given data

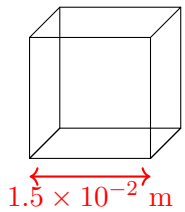
4) Two linear models are tested on the same dataset. Model 1 predicts a value of 50, and the actual is 48 (residual $= -2$). Model 2 predicts a value of 90, and the actual is 85 (residual $= -5$). Which model has the larger error?

☐ A. Model 1, because its residual is closer to zero
☐ B. Model 2, because its residual has a larger absolute value ($|-5| > |-2|$)
☐ C. They have equal error because both residuals are negative
☐ D. Model 1 has larger error in dollars

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

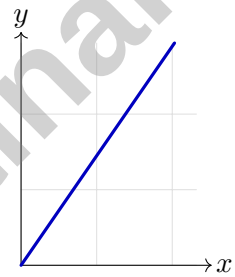
☐ A. 32 meters
☐ B. 48 meters
☐ C. 64 meters
☐ D. 96 meters

6) A cubic container has side length 1.5×10^{-2} meters. What is its volume in cubic meters?



☐ A. 4.5×10^{-6} m^3
☐ B. 3.375×10^{-5} m^3
☐ C. 3.375×10^{-6} m^3
☐ D. 6.75×10^{-6} m^3

7) Which point must be on the graph of $y = 2x$?



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

8) Solve by substitution: $\begin{cases} x = 4 - y \\ x + 3y = 8 \end{cases}$

☐ A. $(0, 4)$
☐ B. $(1, 3)$
☐ C. $(2, 2)$
☐ D. $(3, 1)$

9) Convert $0.\overline{34}$ to a fraction in simplest form.

10) Factor $x^2 - 13x + 42$.

☐ A. $(x - 6)(x - 7)$
☐ B. $(x - 14)(x + 1)$
☐ C. $(x - 21)(x - 2)$
☐ D. $(x - 3)(x - 14)$

11) A recipe uses 2 cups of flour for every 3 eggs. If e is the number of eggs, which expression gives the amount of flour needed?

☐ A. $f = \frac{2e}{3}$
☐ B. $f = \frac{3e}{2}$
☐ C. $f = 3e + 2$
☐ D. $f = 2e - 3$

12) Shipping: $C(w) = 5 + 0.5w$. Competitor at $(0, 7)$, $(5, 9.5)$. Higher base cost?

☐ A. First
☐ B. Second
☐ C. Both same.
☐ D. Cannot be determined.

1) A restaurant offers 3 appetizers, 4 main courses, and 2 desserts. How many different meal combinations are possible if you choose one from each category?

☐ A. 24
☐ B. 12
☐ C. 18
☐ D. 9

2) A line of best fit has equation $y = 3x + 2$. At what x-value is $y = 14$?

☐ A. $x = 3$
☐ B. $x = 4$
☐ C. $x = 5$
☐ D. $x = 6$

3) 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
☐ B. 0.25
☐ C. 2
☐ D. 4

4) A rental company charges based on hours rented. The cost function is shown in the table. What is $C(5)$?

Hours	1	2	4	5
Cost	\$15	\$25	\$45	\$55

☐ A. \$45
☐ B. \$50
☐ C. \$55
☐ D. \$60

5) Why can the repeating decimal $0.\overline{142857}$ be written as a fraction?

☐ A. Because it has a finite number of digits
☐ B. Because its digits form a perfect square
☐ C. Because it is between 0 and 1
☐ D. Because the decimal pattern repeats

6) Convert $0.\overline{7}$ to a fraction.

☐ A. $\frac{1}{9}$
☐ B. $\frac{7}{10}$
☐ C. $\frac{7}{99}$
☐ D. $\frac{7}{9}$

7) Which best approximates $\sqrt[3]{50}$?

☐ A. 3.5
☐ B. 2.9
☐ C. 4.2
☐ D. 3.7

8) Between which two consecutive integers does $\sqrt{24}$ fall?

n	n^2	Compare to 24
3	9	Too small
4	16	Too small
5	25	Too large

☐ A. Between 3 and 4
☐ B. Between 6 and 7
☐ C. Between 5 and 6
☐ D. Between 4 and 5

9) Which is the smallest number?

☐ A. 1.5×10^{-2}
☐ B. 1.5×10^{0}
☐ C. 1.5×10^{-4}
☐ D. 1.5×10^{2}

10) A student states that the surface area of a cylinder with $r = 2$ and $h = 5$ is $SA = \pi r^2 + 2\pi rh = 4\pi + 20\pi = 24\pi$. What is the error?

☐ A. Used πr instead of πr^2 for one base
☐ B. Forgot to count two circular bases
☐ C. The calculation is correct
☐ D. Multiplied rh by 2 instead of 3

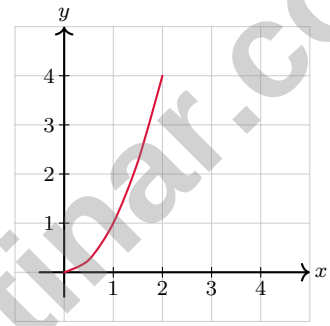
1) Which number is written in correct scientific notation?

☐ A. 0.6×10^3
☐ B. 60×10^{-3}
☐ C. 60×10^2
☐ D. 6.0×10^3

2) An equilateral triangle has sides of 6 cm. It is reflected across one of its altitudes. What is true about the resulting triangle?

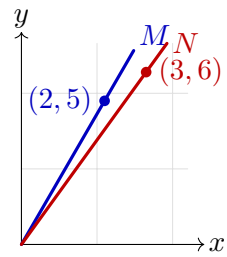
☐ A. The resulting triangle has sides of 3 cm
☐ B. The resulting triangle is congruent to the original
☐ C. The resulting triangle is no longer equilateral
☐ D. The angles increase to 90°

3) The graph below curves upward. Is it linear?



☐ A. Yes, because x and y are both positive
☐ B. No, the curve is not a straight line
☐ C. Yes, the function is always increasing
☐ D. No, only because it starts at the origin

4) Two lines are shown on the same graph. Line M passes through $(0, 0)$ and $(2, 5)$. Line N passes through $(0, 0)$ and $(3, 6)$. Which statement is true?



☐ A. Line M is steeper
☐ B. Line N is steeper
☐ C. Both lines have the same steepness
☐ D. Cannot be determined from the information

5) Which system best models: "The sum of two numbers is 20. Their difference is 4"?

☐ A. $x + y = 20;\ x - y = 4$
☐ B. $x + y = 20;\ x + y = 4$
☐ C. $x \cdot y = 20;\ x/y = 4$
☐ D. $x = 20;\ y = 4$

6) Using the equation $y = 3x - 5$, complete the table:

x	0	2	5
y	?	?	?

What is the sum of the three y values?

☐ A. 6
☐ B. 15
☐ C. 20
☐ D. 25

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.

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

1) **Choice B is correct.** 8.G.7 $343 = \frac{1}{3} \times s^2 \times 7$, so $s^2 = 147$. Therefore $s = \sqrt{147} = 7\sqrt{3}$ cm.

2) **Choice B is correct.** 8.G.9 Lateral (curved side) surface area $= 2\pi rh = 2\pi(2.5)(3)$. Options A includes the bases; C mixes formulas; D ignores π entirely.

3) **Choice B is correct.** 8.G.7 Sphere: $V = \frac{4}{3} \times 3.14 \times 8 = 33.49$ cm^3. Cylinder: $V = 3.14 \times 4 \times 8 = 100.48$ cm^3. Cylinder is larger.

4) **Choice B is correct.** 8.SP.3 The magnitude (absolute value) of the residual tells us the size of the error. Model 2's error of 5 units is larger than Model 1's error of 2 units, regardless of whether the prediction was too high or too low.

5) **Choice C is correct.** 8.EE.2 Area $= 256$, so $s = \sqrt{256} = 16$ m. Perimeter $= 4s = 4 \times 16 = 64$ m.

6) **Choice C is correct.** 8.EE.4 Volume $= (\text{side})^3 = (1.5 \times 10^{-2})^3 = (1.5)^3 \times (10^{-2})^3 = 3.375 \times 10^{-6}$ m^3.

7) **Choice A is correct.** 8.EE.5 For $y = 2x$: at $x = 1$, $y = 2(1) = 2$. Only choice A gives the correct point.

8) **Choice C is correct.** 8.EE.8 Substitute $x = 4 - y$ into $x + 3y = 8$: $(4 - y) + 3y = 8$, so $4 + 2y = 8$, giving $y = 2$. Then $x = 4 - 2 = 2$. Solution: $(2, 2)$.

9) **The correct answer is $\frac{34}{99}$.** 8.NS.1 Set $x = 0.\overline{34}$, so $100x = 34.\overline{34}$. Subtracting: $100x - x = 34$, giving $99x = 34$ and $x = \frac{34}{99}$.

10) **Choice A is correct.** 8.EE.8c Find two numbers that multiply to 42 and add to -13: -6 and -7. Verify: $(-6)(-7) = 42$ and $-6 - 7 = -13$.

11) **Choice A is correct.** 8.F.1 The ratio is 2 cups flour : 3 eggs. For e eggs, flour needed is $\frac{2}{3} \times e = \frac{2e}{3}$.

12) **Choice B is correct.** 8.F.2 First base cost: \$5. Second base cost: \$7. Since $7 > 5$, second is higher.

13) **Choice A is correct.** 8.F.4 Slope: $m = \frac{5-1}{3-1} = \frac{4}{2} = 2$. Using point $(1, 1)$: $1 = 2(1) + b \Rightarrow b = -1$. Equation: $y = 2x - 1$.

14) **Choice D is correct.** 8.F.5 The score improves (60 to 90) in the first 5 questions, then plateaus at 90 for the rest. This indicates hitting the maximum possible score. C is false (no increase after Q5), A is unclear/false, B is false (two different rates).

15) **Choice A is correct.** 8.G.2 Since triangle STU is congruent to triangle PQR and ST corresponds to PQ, we have $ST = PQ = 5$ cm.

16) **The correct answer is 7 .** 8.EE.1 Using the product rule, $a + 5 = 12$, so $a = 7$. Verification: $3^7 \cdot 3^5 = 3^{12}$.

17) **Choice A is correct.** 8.G.6, 8.G.7 From $(\sqrt{2})^2 + (\sqrt{2})^2 = c^2$, we get $2 + 2 = 4$, so $c = 2$.

18) **Choice A is correct.** 8.G.7 When angles at different intersection points both measure 62°, they are corresponding angles, which are congruent when lines are parallel.

19) **Choice B is correct.** 8.G.7 Rectangle area is $11 \times 7 = 77$ cm^2. The removed quarter-circle area is $\frac{1}{4} \times 3.14 \times 7^2 = 38.465$ cm^2. Remaining area is $77 - 38.465 = 38.535$ cm^2.

20) **Choice C is correct.** 8.SP.1 Negative correlation between temperature and cost means as temperature increases, cost decreases, which is logical for heating costs.

21) **The correct answer is B,E.** 8.G.7 There are 10 marbles total. B is true because $P(\text{blue}) = \frac{3}{10}$. E is true because $P(\text{red or blue}) = \frac{5+3}{10} = \frac{8}{10} = \frac{4}{5}$. A is false because $P(\text{red}) = \frac{1}{2}$. C is false because $P(\text{green}) = \frac{1}{5}$. D is false because $P(\text{yellow}) = 0$.

22) **Choice B is correct.** 8.F.3 When second differences are constant, the function is quadratic (nonlinear). Linear functions have constant first differences, not second.

23) **Choice B is correct.** 8.G.3 Translation right 4, down 2: $(x, y) \to (x + 4, y - 2)$. So $M(5, 1) \to M'(9, -1)$.

24) **Choice A is correct.** 8.G.5 Co-interior angles (same-side interior angles) are supplementary: $124 + y = 180$, so $y = 56°$.

25) **Choice A is correct.** 8.G.8 $d = \sqrt{(2 - (-6))^2 + (-7 - 1)^2} = \sqrt{8^2 + (-8)^2} = \sqrt{64 + 64} = \sqrt{128} = 8\sqrt{2}$ units.

26) **Choice C is correct.** 8.G.5 Set $(n - 2) \times 180 = 900$. Then $n - 2 = 5$, so $n = 7$ (a heptagon).

27) **The correct answer is 0 .** 8.EE.8c Substitute $(0, 0)$: $0 + 3(0) = 0$.

Hi, Detail Champion!

◇ In Grade 8, small details can change an entire answer: a negative sign, a decimal place, a unit, an exponent, or an inequality symbol. ◇

⋆ **Remember this:** You practiced noticing those details. That is a serious test skill, and it gets better with every careful review. This version gave you 10 opportunities to rehearse test-day habits. ⋆

Detail Checks

- **Signs:** Circle negatives before simplifying.
- **Symbols:** Read inequality signs carefully.
- **Decimals:** Line up place values.
- **Units:** Match the unit the question asks for.

Grade 8 test-day tip: Use the final minute on each section for a detail scan, not a full redo.

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

Jay Daie

Your Detail-Check 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