

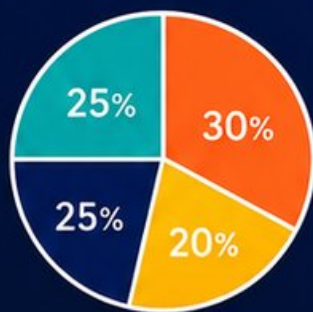
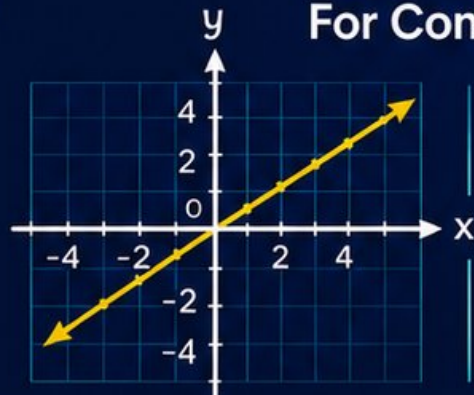
Ohio
OST

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

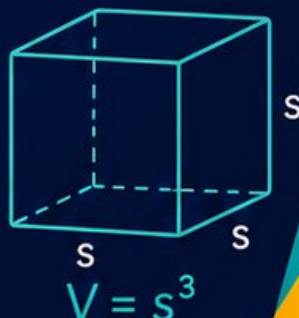


$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$



4 PRINTED
TESTS



2 ONLINE
TESTS

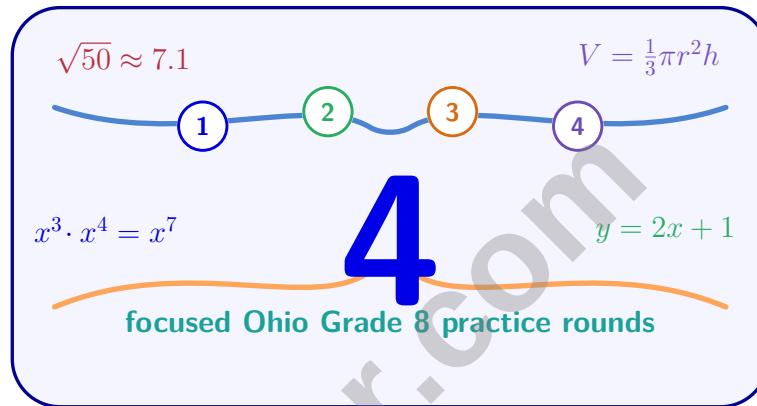


Use these **two additional online practice tests**
for extra review after the printed tests in this book.



4 Ohio OST Grade 8 Math Practice Tests

Compact OST Prep for Functions, Transformations, Geometry, and Data



Four 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!

Four focused rounds for sharper OST math thinking

This book gives you four 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 four-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?

Four OST tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	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

★ Practice Test 1	_____	15
★ Practice Test 2	_____	30
★ Practice Test 3	_____	46
★ Practice Test 4	_____	62
Practice Test Answer Keys	_____	77
Practice Test Answers and Explanations	_____	80

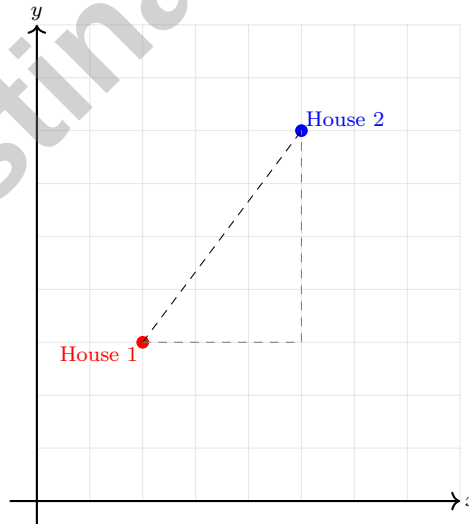
1) Which statement is true about the exterior angles of any convex polygon?

- ☐ A. Each exterior angle measures less than 90° . ☐ C. Exterior angles are always equal in any polygon.
- ☐ B. The sum of all exterior angles is always 360° . ☐ D. The sum depends on the number of sides.

2) A store has two types of mangoes. Premium mangoes cost \$2 each, standard mangoes cost \$1 each. A customer buys 15 mangoes for \$20. Solving the system $p + s = 15$ and $2p + s = 20$ gives $p = 5, s = 10$. Is this solution valid in the real world?

- ☐ A. No, because only the first equation is satisfied. ☐ C. Yes, because it represents a realistic purchase.
- ☐ B. No, because p is not a whole number. ☐ D. No, because the total cost should be higher.

3) On a coordinate grid, two houses are located at $(2, 3)$ and $(5, 7)$. A straight path connects them. What is the length of the path?



- ☐ A. 5 units ☐ C. $\sqrt{29}$ units
- ☐ B. 7 units ☐ D. 12 units



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4) A trend line has equation $y = 2.5x - 5$. What would be the predicted value of y when $x = 10$?

☐ A. 30

☐ C. 20

☐ B. 25

☐ D. 15

5) Two similar polygons have areas in the ratio $\frac{9}{16}$. What is the scale factor from the smaller to the larger polygon?

☐ A. $\frac{9}{16}$

☐ C. $\frac{4}{3}$

☐ B. $\frac{3}{4}$

☐ D. 2.25

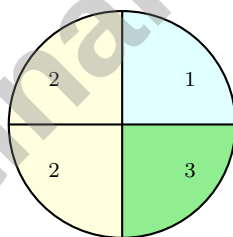
6) The product of two irrational numbers is:

☐ A. Always rational

☐ C. Could be either rational or irrational

☐ B. Always irrational

☐ D. Always negative



7)

The spinner has sections labeled 1, 2, 2, 3. What is the probability of landing on section 2?

☐ A. $\frac{1}{4}$

☐ C. $\frac{1}{2}$

☐ B. $\frac{1}{3}$

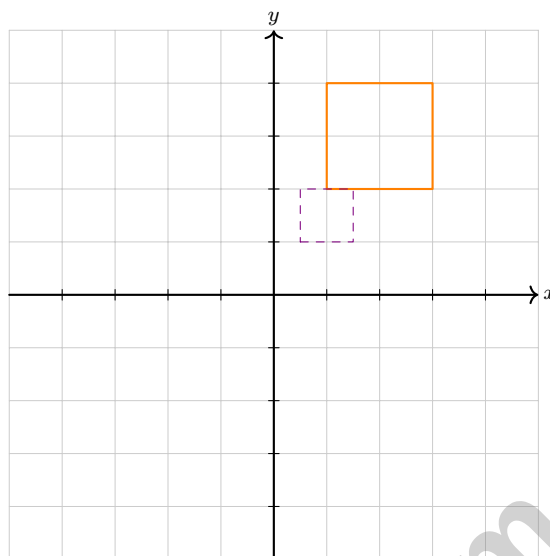
☐ D. $\frac{3}{4}$



- 8) How many ways can a teacher select and arrange 3 students from a class of 8 to sit in the front row?
- ☐ A. $\binom{8}{3} = 56$ ☐ C. $8^3 = 512$
☐ B. $8 \times 7 \times 6 = 336$ ☐ D. $8! = 40,320$
- 9) Convert $0.\bar{7}$ to a fraction. Which step is incorrect?
- ☐ A. Let $x = 0.\bar{7}$. ☐ C. $10x - x = 7.\bar{7} - 0.\bar{7} = 7$ is wrong; should be 0.7.
☐ B. $10x = 7.\bar{7}$. ☐ D. $9x = 7$, so $x = \frac{7}{9}$.
- 10) Which two perfect squares help locate $\sqrt{72}$?
- ☐ A. 36 and 49 ☐ C. 81 and 100
☐ B. 49 and 64 ☐ D. 64 and 81
- 11) Which is the best estimate of $3\sqrt{5}$?
- ☐ A. 4.5 ☐ C. 6.7
☐ B. 6.0 ☐ D. 9.8
- 12) A bank loan of \$10,000 at 5% simple interest is repaid in 5 equal annual installments. The total simple interest over the full term is \$2,500. How much principal and interest remains owed after making the first \$2,500 payment?
- ☐ A. \$8,000 ☐ C. \$10,000
☐ B. \$8,500 ☐ D. \$9,500



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1)

The orange rectangle is dilated centered at the origin to produce the purple rectangle. What is the scale factor?

- ☐ A. $\frac{1}{4}$
☐ B. $\frac{1}{2}$

- ☐ C. 2
☐ D. 4

2) A line passes through the points (2, 5) and (6, 13). What is the slope of the line?

- ☐ A. $\frac{1}{2}$
☐ B. 4

- ☐ C. $\frac{3}{2}$
☐ D. 2

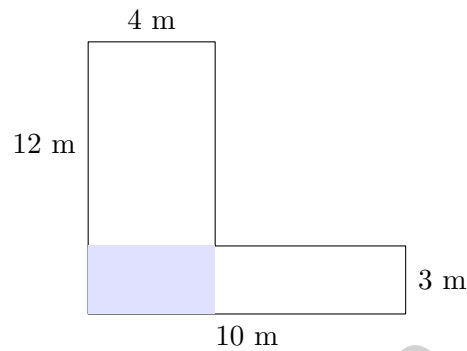
3) A gym offers two membership plans. Plan A costs \$50 upfront plus \$10 per month. Plan B costs \$20 per month with no upfront fee. After how many months do the total costs equal?

- ☐ A. 3 months
☐ B. 4 months

- ☐ C. 5 months
☐ D. 6 months



- 4) A composite figure is an L-shape made of two rectangles: vertical 4 m by 12 m and horizontal 10 m by 3 m, overlapping in a 4 m by 3 m region. What is the total area in m^2 ?



- 5) The table below shows values of function f . What is $f(2)$?

x	0	1	2	3
$f(x)$	5	7	9	11

☐ A. 7

☐ C. 11

☐ B. 9

☐ D. 5

- 6) A polygon has an interior angle sum of 1260° . How many sides does it have?

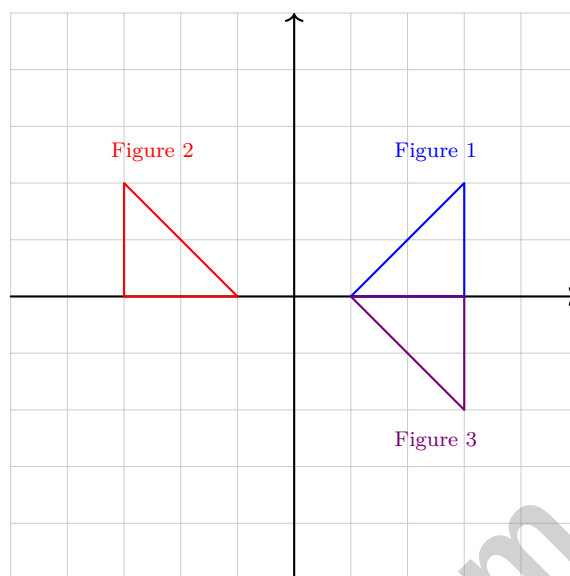
☐ A. 9

☐ C. 7

☐ B. 8

☐ D. 10


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1)

If Figure 1 is the original, identify the transformation from Figure 1 to Figure 2 and from Figure 1 to Figure 3.

- ☐ A. Both are rotations ☐ C. Both are translations
☐ B. 1→2 is reflection across y -axis; 1→3 is reflection across x -axis ☐ D. 1→2 is translation; 1→3 is rotation

2) Which equation is NONLINEAR?

- ☐ A. $y = -7x$ ☐ C. $y = x^4 - 3$
☐ B. $y = 4 - x$ ☐ D. $y = \frac{1}{3}x + 2$

3) A plane is descending. Its altitude decreases 2000 feet for every 5 minutes. What is the slope of altitude versus time?

- ☐ A. 400 feet per minute ☐ C. $\frac{5}{2000}$ feet per minute
☐ B. 2000 feet per minute ☐ D. -400 feet per minute



- 4) In 6 years, a father will be three times as old as his son. Right now, the father is 30 years older than his son. How old is the son now?

☐ A. 9☐ C. 15☐ B. 12☐ D. 18

- 5) Function $f(x) = 2x + 3$ and another through $(0, 1)$ and $(2, 7)$. Difference in slopes?

- 6) A phone plan charges based on minutes used. The table shows the cost $C(m)$ for m minutes.

Minutes (m)	100	200	300	400
Cost ($C(m)$)	\$20	\$30	\$40	\$50

What is $C(200)$?

☐ A. \$20☐ C. \$30☐ B. \$40☐ D. \$50

- 7) A triangle with vertices at $(1, 0)$, $(3, 0)$, and $(2, 2)$ is reflected across the x -axis. What is the y -coordinate of the image of the vertex originally at $(2, 2)$?

☐ A. 2☐ C. 0☐ B. -2☐ D. 4

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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 B is correct.** (8.G.5) The sum of exterior angles of any convex polygon is always 360° , regardless of shape or number of sides.
- 2) **Choice C is correct.** (8.EE.8c) The solution $p = 5, s = 10$ satisfies both equations: $5 + 10 = 15$ (true) and $2(5) + 10 = 20$ (true). Moreover, both p and s are non-negative integers, making it valid in a real-world context.
- 3) **Choice A is correct.** (8.G.8) $d = \sqrt{(5-2)^2 + (7-3)^2} = \sqrt{3^2 + 4^2} = \sqrt{9+16} = \sqrt{25} = 5$ units.
- 4) **Choice C is correct.** (8.NS.2) $y = 2.5(10) - 5 = 25 - 5 = 20$.
- 5) **Choice C is correct.** (8.G.4) The area ratio smaller:larger is $\frac{9}{16}$. The linear ratio is $\sqrt{\frac{9}{16}} = \frac{3}{4}$, so the scale factor from the smaller polygon to the larger polygon is the reciprocal, $\frac{4}{3}$.
- 6) **Choice C is correct.** (8.NS.1) For example, $\sqrt{2} \times \sqrt{8} = \sqrt{16} = 4$ (rational), but $\sqrt{2} \times \sqrt{3} = \sqrt{6}$ (irrational). So the product can be either.
- 7) **Choice C is correct.** (8.G.7) Section 2 appears twice out of four equal sections. $P(2) = \frac{2}{4} = \frac{1}{2}$.
- 8) **Choice B is correct.** (8.EE.7b) Seat 1: 8 choices. Seat 2: 7 remaining. Seat 3: 6 remaining. Using permutation notation: $\frac{8!}{5!} = 8 \times 7 \times 6 = 336$.
- 9) **Choice C is correct.** (8.NS.1) When we subtract $10x - x = 7.\overline{7} - 0.\overline{7}$, we get 7 (not 0.7). The repeating parts cancel perfectly, leaving the integer 7.
- 10) **Choice D is correct.** (8.NS.2) $8^2 = 64$ and $9^2 = 81$. Since $64 < 72 < 81$, $\sqrt{72}$ lies between $\sqrt{64} = 8$ and $\sqrt{81} = 9$. Those perfect squares help us place $\sqrt{72}$ between 8 and 9.
- 11) **Choice C is correct.** (8.NS.2) $\sqrt{5} \approx 2.24$, so $3\sqrt{5} \approx 3 \times 2.24 = 6.72$.
- 12) **Choice C is correct.** (8.G.7) Total amount to repay: \$10,000 (principal) + \$2,500 (interest) = \$12,500. Five equal annual payments: $\$12,500 / 5 = \$2,500$ per payment. After first payment of \$2,500, remaining owed is $\$12,500 - \$2,500 = \$10,000$.
- 13) **Choice D is correct.** (8.EE.3) Divide: $\frac{3 \times 10^8}{3.4 \times 10^2} = \frac{3}{3.4} \times 10^6 \approx 0.88 \times 10^6 = 8.8 \times 10^5 \approx 880,000$.
- 14) **Choice C is correct.** (8.G.9) Lateral surface area = $6 \times \frac{1}{2}(\text{base edge})(\text{slant height}) = 6 \times \frac{1}{2}(4)(8) = 6 \times 16 = 96 \text{ cm}^2$. (Base edge = $24/6 = 4 \text{ cm}$.)
- 15) **Choice C is correct.** (8.EE.6) Perpendicular slopes are negative reciprocals. The negative reciprocal of $\frac{3}{4}$ is $-\frac{4}{3}$.
- 16) **The correct answer is 2.** (8.EE.8) Slope = $\frac{10-2}{4-0} = \frac{8}{4} = 2$.
- 17) **Choice A is correct.** (8.EE.7b) Total cost is adult tickets plus child tickets. If a adults, then $(6-a)$ children. Equation: $12a + 8(6-a) = 60$.
- 18) **The correct answer is A, C.** (8.F.2) From the table, $g(1) = 5$ and $g(3) = 13$, so A and C are true. The other listed values are incorrect, and the function increases by 4, not 5, for each unit increase in x .
- 19) **Choice C is correct.** (8.EE.8b) Multiply by -1 (FLIP): $x \geq -5$.
- 20) **Choice B is correct.** (8.EE.8c) Check boundary: $-2(-1) + 1 = 2 + 1 = 3$. The point IS on $-2x + y = 3$. But for strict inequality $<$, the boundary is excluded, so $(-1, 1)$ is NOT in the solution.
- 21) **Choice A is correct.** (8.G.1) Clockwise and counterclockwise are opposite directions. 270° clockwise = $360^\circ - 270^\circ = 90^\circ$ counterclockwise.
- 22) **Choice B is correct.** (8.G.7) $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 81 \times 14 = \frac{1}{3} \times 3560.76 = 1186.92 \text{ cm}^3$.
- 23) **Choice B is correct.** (8.SP.3) The data shown covers speeds 1–5 mph. Predicting at 60 mph is extreme extrapolation, where the linear model's assumptions break down.
- 24) **Choice D is correct.** (8.EE.1) After $3^2 = 9$ hours, doubling 9 times means multiply by 2^9 . Total: $10^2 \cdot 2^9$.
- 25) **The correct answer is 2.** (8.F.3) The term x^2 has exponent 2.
- 26) **Choice D is correct.** (8.EE.2) $5 \times 5 \times 5 = 125$, so $\sqrt[3]{125} = 5$.
- 27) **Choice C is correct.** (8.EE.4) $1.5 \times 10^4 \times 10 = 1.5 \times 10^{4+1} = 1.5 \times 10^5 = 150,000$.



Hi, Math Hero!

◇ This carefully paced book gave you four steady Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. You showed up for Grade 8 practice again and again. That is what real growth looks like: steady effort, honest review, and a willingness to try. ◇

★ **Remember this:** A math hero is not someone who never misses a question. A math hero learns from the miss and comes back stronger. ★

Hero Habits

- **Courage:** You try problems that are not automatic.
- **Honesty:** You review what needs work.
- **Patience:** You let skills grow over time.
- **Pride:** You recognize the effort you gave.

Grade 8 test-day tip: Save one solved problem you are proud of. Looking back at progress helps motivation stay strong.

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

Jay Daie

Your Math Hero Guide

PRACTICE TODAY, ACHIEVE TOMORROW!

Give your child the confidence and skills they need with **4 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!

4



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
- ✓ 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!



4 PRINTED TESTS



2 ONLINE TESTS



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