

3

Ohio OST

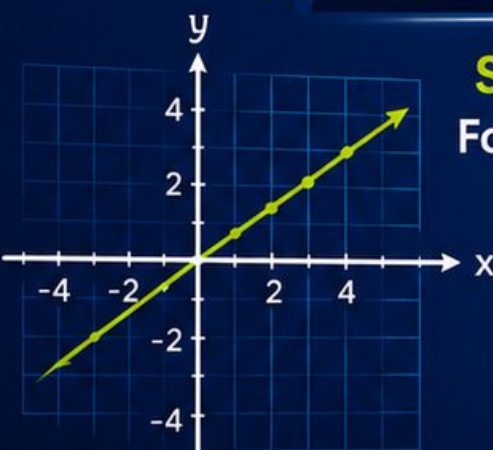
GRADE 8

MATH

PRACTICE TESTS

$$a^2 + b^2 = c^2$$
$$\sqrt{x}$$

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



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



3

**PRINTED
TESTS**



2

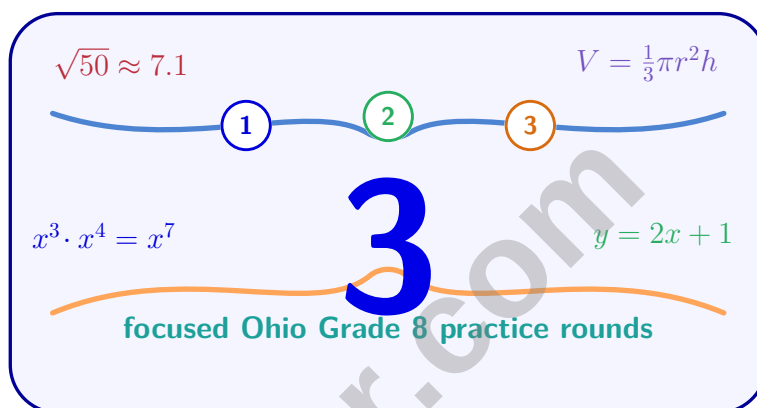
**ONLINE
TESTS**



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

3 Ohio OST Grade 8 Math Practice Tests

Grade 8 Ohio Math Review for Skills, Stamina, and Strategy



Three 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!

Three focused rounds for sharper OST math thinking

This book gives you three 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 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.

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?

Three OST 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.



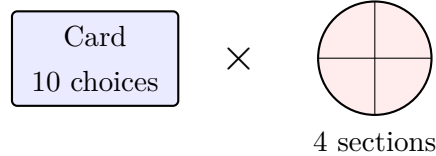
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- 1) A game requires picking a card from a deck of 10 cards and then spinning a spinner with 4 sections. How many possible results are there?



- ☐ A. $10 + 4 = 14$ ☐ C. $10 - 4 = 6$
☐ B. $10 \times 4 = 40$ ☐ D. 4^{10}
- 2) Write 4.7×10^{-4} in decimal (standard) form.

- 3) A cube with edge 2 m is attached to a rectangular prism with dimensions $4 \times 2 \times 2$ m (where the cube shares a 2×2 face). If we ignore the shared face, what is the total surface area of the composite solid?

- ☐ A. 40 m^2 ☐ C. 64 m^2
☐ B. 56 m^2 ☐ D. 72 m^2
- 4) A line passes through (1, 3) and has slope -1 . What is the y -intercept?
- ☐ A. 2 ☐ C. -1
☐ B. 3 ☐ D. 4



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5) Solve for x : $6x - 3(x + 2) = 3$

☐ A. $x = 3$

☐ C. $x = 1$

☐ B. $x = 2$

☐ D. $x = 9$

6) Which inequality is equivalent to $-\frac{x}{4} < 2$?

☐ A. $x < -8$

☐ C. $x > -8$

☐ B. $x < 8$

☐ D. $x > 8$

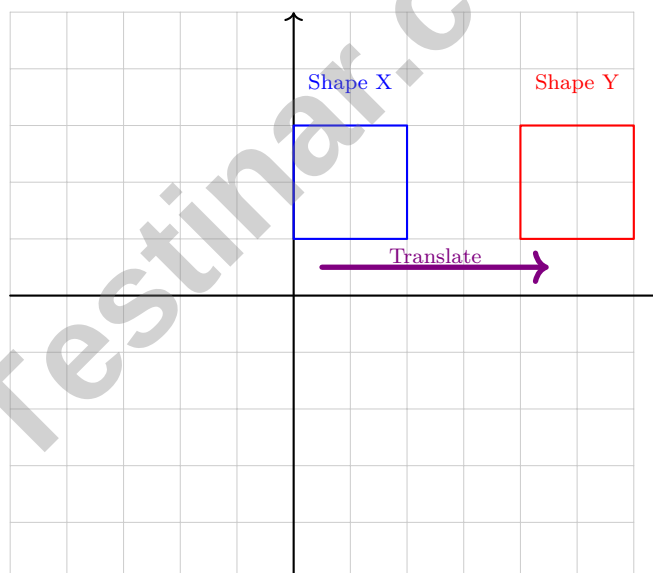
7) Which point is on the boundary line of $3x - y = 9$ but NOT in the solution region of $3x - y < 9$?

☐ A. $(3, 0)$

☐ C. $(1, 6)$

☐ B. $(0, 9)$

☐ D. $(2, 1)$



8)

Based on the arrow shown, what is the translation vector from Shape X to Shape Y?

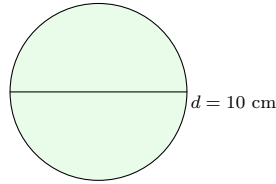
☐ A. $(2, 0)$

☐ C. $(4, 2)$

☐ B. $(4, 0)$

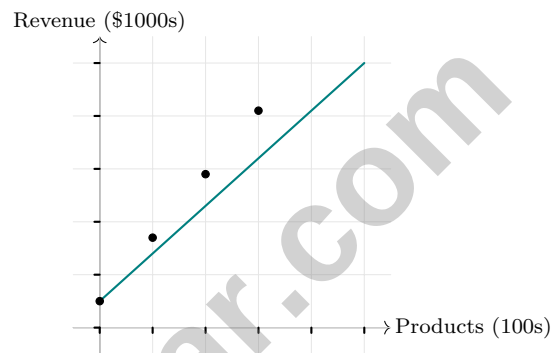
☐ D. $(2, 2)$





9)

A sphere has a diameter of 10 cm. What is its approximate volume? (Use $\pi \approx 3.14$.)

☐ A. 314 cm^3
☐ C. 1046.67 cm^3
☐ B. 523.33 cm^3
☐ D. 1570.8 cm^3


10)

A company's revenue model is $R = 12x + 500$, where R is revenue and x is the number of products sold. If revenue is \$8,900, how many products were sold?

☐ A. 525

☐ C. 675

☐ B. 700

☐ D. 725

11) Which loan has the lowest total repayment cost for \$3,000 principal?

☐ A. 6% for 2 years

☐ C. 4% for 4 years

☐ B. 5% for 3 years

☐ D. 3% for 5 years


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- 1) In a survey of 250 voters, 120 voted yes on a proposition and 130 voted no. If 75 of the yes-voters are women, what is the relative frequency of men among yes-voters as a percent?

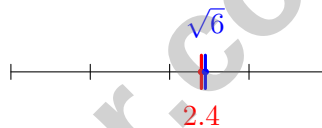
- ☐ A. 37.5% ☐ C. 62.5%
☐ B. 30% ☐ D. 48%

- 2) Which equals $0.\overline{285714}$ (6-digit repeat)?

- ☐ A. $\frac{1}{3}$ ☐ C. $\frac{285714}{99999}$
☐ B. $\frac{285714}{100000}$ ☐ D. $\frac{285714}{999999} = \frac{2}{7}$

Perfect Squares: $2^2 = 4$, $3^2 = 9$

Compare to $\sqrt{6}$ and 2.4



3)

Is $\sqrt{6}$ greater than 2.4 or less than 2.4?

- ☐ A. Cannot compare ☐ C. Equal to
☐ B. Less than ☐ D. Greater than

- 4) Which is the best estimate of $\sqrt{50}$?

- ☐ A. 5.0 ☐ C. 7.1
☐ B. 6.5 ☐ D. 8.9



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- 5) If $g(x) = x^2 + 2$ and $g(x) = 11$, find the possible values of x .

- 6) The number of stars in the observable universe is estimated at 10^{24} . Which is closest to this value?

☐ A. 1 trillion

☐ C. 1 quadrillion

☐ B. 1 sextillion

☐ D. 1 septillion

- 7) Rectangle A has dimensions $5 \text{ m} \times 3 \text{ m}$. Rectangle B is similar with scale factor 4. What is the area of Rectangle B ?

- 8) 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

☐ D. B has greater SA but not exactly twice

☐ B. A has greater SA

☐ C. B has exactly twice the SA of A



1) If two dice are rolled, what is the probability of getting at least one 4?

- ☐ A. $\frac{1}{6}$
☐ B. $\frac{11}{36}$

- ☐ C. $\frac{6}{36}$
☐ D. $\frac{25}{36}$

2) A residual plot shows the residuals for a trend line fit to a data set. What would a residual plot with no clear pattern indicate?

- ☐ A. There are no residuals
☐ B. The trend line is a good fit

- ☐ C. The data is nonlinear
☐ D. The trend line is a poor fit

3) A triangle has a perimeter of 15 inches. If the triangle is dilated by a scale factor of $\frac{1}{2}$, what is the perimeter of the dilated triangle?

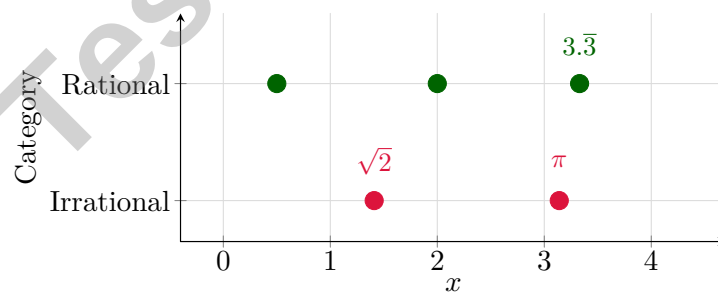
- ☐ A. 30 inches
☐ B. 7.5 inches

- ☐ C. 15 inches
☐ D. 10 inches

4) A savings account has $S(n) = 50 + 10n$ dollars after n weeks. After how many weeks will the account have \$150?

- ☐ A. 5 weeks
☐ B. 10 weeks

- ☐ C. 15 weeks
☐ D. 20 weeks



5)

Which number should be plotted as irrational (height 0)?

- ☐ A. 0.5
☐ B. 2

- ☐ C. $3.\bar{3}$
☐ D. $\sqrt{5}$



6) Complete the conversion: $0.\overline{5}$ equals...

- ☐ A. $\frac{1}{2}$
☐ B. $\frac{1}{5}$

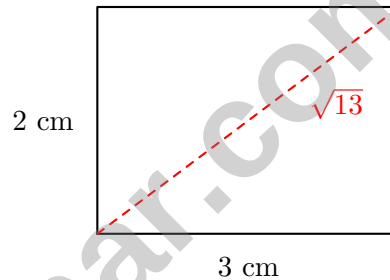
- ☐ C. $\frac{5}{10}$
☐ D. $\frac{5}{9}$

7) Which two perfect squares have $\sqrt{40}$ between them?

- ☐ A. 25 and 36
☐ B. 64 and 81

- ☐ C. 49 and 64
☐ D. 36 and 49

8) A rectangle has dimensions 2 cm by 3 cm. The diagonal is $\sqrt{13}$ cm. What is the best estimate of the diagonal?



- ☐ A. 3.0 cm
☐ B. 6.5 cm

- ☐ C. 4.2 cm
☐ D. 3.6 cm

9) The wavelength of visible light is about 5×10^{-7} m, while the wavelength of a radio wave is about 3×10^3 m. How many times larger is the radio wavelength?

- ☐ A. 1.67×10^9 times
☐ B. 1.5×10^4 times

- ☐ C. 6×10^{-4} times
☐ D. 6×10^9 times



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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.EE.7b) Card pick (10 choices) times spinner section (4 choices): $10 \times 4 = 40$ possible results.
- 2) **The correct answer is 0.00047.** (8.EE.3) Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- 3) **Choice B is correct.** (8.G.9) Cube SA = 24 m^2 , rectangular prism SA = 40 m^2 . Subtract the two shared faces: $24 + 40 - 2(4) = 56 \text{ m}^2$.
- 4) **Choice D is correct.** (8.EE.6) Using $y = mx + b$: $3 = -1(1) + b$, so $3 = -1 + b$, thus $b = 4$.
- 5) **Choice A is correct.** (8.EE.7b) Distribute: $6x - 3x - 6 = 3$. Combine: $3x - 6 = 3$. Add 6: $3x = 9$. Divide by 3: $x = 3$.
- 6) **Choice C is correct.** (8.EE.8b) Multiply by -4 (FLIP): $x > -8$.
- 7) **Choice A is correct.** (8.EE.8c) Boundary points satisfy $3x - y = 9$. For $(3, 0)$, $3(3) - 0 = 9$, so it is on the boundary. Because the inequality is strict, boundary points are not in the solution region.
- 8) **Choice B is correct.** (8.G.1) The shape moves 4 units to the right and 0 units vertically. Shape X spans $x = 0$ -2; Shape Y spans $x = 4$ -6, confirming a 4-unit horizontal shift.
- 9) **Choice B is correct.** (8.G.7) Radius $r = 5 \text{ cm}$. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 125 = 523.33 \text{ cm}^3$.
- 10) **Choice B is correct.** (8.SP.3) Set $R = 8900$: $8900 = 12x + 500 \Rightarrow 12x = 8400 \Rightarrow x = 700$.
- 11) **Choice A is correct.** (8.G.7) A: \$360 interest. B: \$450 interest. C: \$480 interest. D: \$450 interest. Option A has the lowest total cost.
- 12) **Choice D is correct.** (8.EE.1) (D) is $x^6 + 1$, not x^6 , because addition is not an exponent law.
- 13) **Choice D is correct.** (8.EE.2) $3 \times 3 \times 3 = 27$, so $\sqrt[3]{27} = 3$.
- 14) **Choice C is correct.** (8.EE.4) Same exponents: $(6.5 - 3.2) \times 10^5 = 3.3 \times 10^5$.
- 15) **Choice D is correct.** (8.EE.5) Slope = $\frac{\Delta y}{\Delta x} = \frac{6-0}{3-0} = \frac{6}{3} = 2$. The line passes through $(0, 0)$ and $(3, 6)$.
- 16) **The correct answer is $\frac{1}{3}$.** (8.NS.1) Let $x = 0.\bar{3}$. Then $10x = 3.\bar{3}$, so $9x = 3$ and $x = \frac{1}{3}$.
- 17) **Choice A is correct.** (8.EE.8) Set the expressions equal: $\frac{1}{2}x + 3 = -x + 6$. Multiply by 2: $x + 6 = -2x + 12$, so $3x = 6$, giving $x = 2$. Then $y = \frac{1}{2}(2) + 3 = 4$. Solution: $(2, 4)$.
- 18) **The correct answer is 9.4.** (8.NS.2) The side length is $\sqrt{88}$. Since $9^2 = 81$ and $10^2 = 100$, and 88 is closer to 81, we estimate $\sqrt{88} \approx 9.38 \approx 9.4$.
- 19) **Choice A is correct.** (8.EE.8c) Area = $(2x + 1)(x + 3) = 2x^2 + 6x + x + 3 = 2x^2 + 7x + 3 \text{ m}^2$.
- 20) **Choice B is correct.** (8.F.1) The parabola opens upward and any vertical line intersects it at most once (or once in the visible region shown). This confirms it is a function.
- 21) **Choice A is correct.** (8.F.2) Week 1: $20 + 5(1) = 25$. Week 2: $20 + 5(2) = 30$. Week 3: $20 + 5(3) = 35$. Constant difference of 5 per week indicates linear with slope 5.
- 22) **The correct answer is A,C.** (8.NS.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.
- 23) **Choice A is correct.** (8.F.4) Cost per item is \$8 (slope), flat shipping is \$12 (intercept). Total: $C = 8n + 12$.
- 24) **Choice B is correct.** (8.F.5) Cost equals price times quantity, which is a linear function with constant slope. A is oscillating, C and D are exponential.
- 25) **Choice C is correct.** (8.G.2) Congruent rectangles have the same dimensions. M'N'O'P' must have dimensions 15 cm and 8 cm (possibly rotated). A rectangle with dimensions 16 cm and 8 cm is NOT congruent.
- 26) **Choice A is correct.** (8.G.6, 8.G.7) Using $(\sqrt{8})^2 + (\sqrt{8})^2 = c^2$ gives $8 + 8 = 16$, so $c = \sqrt{16} = 4$.
- 27) **Choice B is correct.** (8.G.7) Vertical angles are congruent. So $y = 54^\circ$.
- 28) **Choice A is correct.** (8.G.7) $V = \frac{1}{3} \times (2 \times 2) \times 3 = \frac{1}{3} \times 4 \times 3 = 4 \text{ m}^3 = 4000 \text{ L}$.
- 29) **Choice B is correct.** (8.G.7) Perimeter = $8 + 5 + 5 + \pi \times 4 = 18 + 12.56 = 30.56 \text{ m}$. The top edge is not counted because the semicircle is attached there.



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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**.