

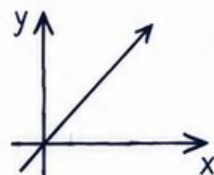
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Ohio
OSTGRADE
7
MATH

PRACTICE TESTS

Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs

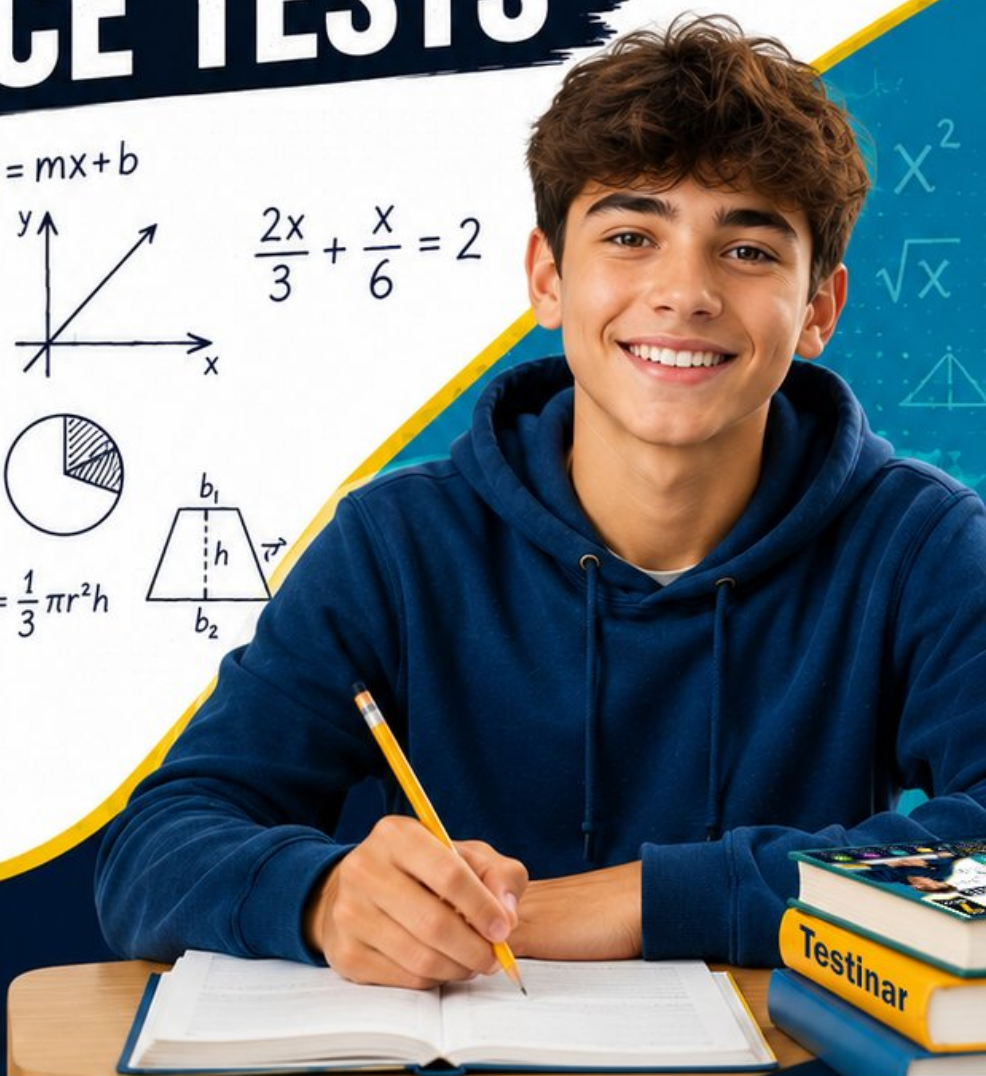
$$y = mx + b$$



$$\frac{2x}{3} + \frac{x}{6} = 2$$



$$V = \frac{1}{3} \pi r^2 h$$

4 PRINTED
TESTS2 ONLINE
TESTSUSE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTSFOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.Build
ConfidenceStrengthen
Math SkillsDetailed Answers
& ExplanationsImprove Test
Performance

4 Ohio OST Grade 7 Math Practice Tests

OST Grade 7 Practice with Keys, Review, and Solutions



Four complete 40-question Grade 7 OST practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Ohio Grade 7 Problem Solver!

Four focused rounds for sharper OST math thinking

This book gives you four full Grade 7 OST math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, 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 7 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.

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	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Tests 3–4	Expressions, equations, inequalities, scale drawings, geometry, data, probability, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.



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& answers

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- 1) A discount store marks all items at $\frac{3}{4}$ of the original price. If o is the original price and d is the discounted price, which equation is correct?

☐ A. $d = o + \frac{3}{4}$

☐ C. $o = \frac{3}{4}d$

☐ B. $d = o - \frac{3}{4}$

☐ D. $d = \frac{3}{4}o$

- 2) A temperature changes from -8 degrees to 8 degrees. What is the total change in temperature?

- 3) Which circle below has a circumference of approximately 37.7 cm? Use $\pi \approx 3.14$.

☐ A. Radius 6 cm

☐ C. Radius 6 cm, but using $C = \pi r$
(incorrect formula)

☐ B. Diameter 6 cm

☐ D. Diameter 12 cm

- 4) Two student groups' homework completion times (in minutes):

Group	Mean	Median	Range
Group 1	30	32	10
Group 2	28	25	30

Which inference is most justified?

☐ A. Group 1 works faster on average

☐ C. Group 1 is more efficient because median exceeds mean

☐ B. Group 2 students have more variable completion times

☐ D. Both groups have identical distributions


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5) A histogram compares the distribution of test scores for two parallel 7th-grade math classes (Class A and Class B). Both show symmetric, bell-shaped distributions with the same mean (78) but different spreads: Class A's scores range 60–96; Class B's scores range 70–86. What does the difference in range tell you?

- ☐ A. Class A students are less prepared ☐ C. Class B has better teaching
☐ B. Class B has more consistent performance (smaller spread) ☐ D. The ranges prove the mean is not representative

6) A deck contains 52 cards: 13 hearts, 13 diamonds, 13 clubs, and 13 spades. A card is drawn at random. What is the probability of drawing a heart or a diamond?

- ☐ A. $\frac{1}{4}$ ☐ C. $\frac{3}{13}$
☐ B. $\frac{1}{2}$ ☐ D. $\frac{1}{3}$

7) A diver descends 7.5 meters per minute. What is the total change in depth after 4 minutes?

8) A restaurant has 3 appetizers, 5 main courses, and 2 desserts. If a diner chooses one of each, how many complete meals are possible?

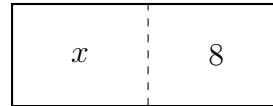
- ☐ A. 10 ☐ C. 20
☐ B. 15 ☐ D. 30



- 9) Two histograms show daily sleep hours for working professionals vs. students. Working Professionals: concentrated at 5–7 hours. Students: concentrated at 7–9 hours. Both show similar spread. Which is the best interpretation?
- ☐ A. Students typically sleep approximately 2 hours more than professionals
- ☐ B. Students are healthier than professionals
- ☐ C. Sleep requirements are identical for both groups
- ☐ D. Professionals never sleep as much as students
- 10) A bag contains 4 red, 3 blue, and 2 green marbles. If one marble is drawn at random, what is the probability it is NOT blue?
- ☐ A. $\frac{3}{9}$
- ☐ B. $\frac{6}{9}$
- ☐ C. $\frac{4}{9}$
- ☐ D. $\frac{2}{9}$
- 11) When converting data into a stem-and-leaf plot, a student mistakenly interprets stem 11 with leaf 2 as 1.12 instead of 112. This is an example of which type of error?
- ☐ A. Reading error
- ☐ B. Computational error
- ☐ C. Conceptual error
- ☐ D. Rounding error
- 12) A game uses a spinner divided into 8 equal sections. The spinner was spun 800 times. One section appeared 85 times. Comparing the experimental and theoretical probabilities, which statement is true?
- ☐ A. Both equal $\frac{1}{8}$.
- ☐ B. Experimental is $\frac{85}{800}$; theoretical is $\frac{1}{8}$.
- ☐ C. Experimental is higher than theoretical.
- ☐ D. Theoretical is higher than experimental.



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Multiply each part by 2:

$$2(x + 8) = 2x + 16$$

1)

Which equation is equivalent to $2(x + 8) = 30$?

☐ A. $2x + 8 = 30$

☐ C. $x + 16 = 30$

☐ B. $2x + 16 = 30$

☐ D. $2x = 38$

2) A concert ticket costs \$85. With a 15% service fee, the total is $85(1 + 0.15)$. What is the total cost?

☐ A. \$97.75

☐ C. \$100

☐ B. \$70

☐ D. \$12.75

3) A hiker starts at an elevation of 500 feet and descends 750 feet. What is the hiker's final elevation? (Represent descent as a negative change.)

4) Which statement is true?

☐ A. $(-6) \times 3 > 0$

☐ C. $5 \times (-2) = (-2) \times 5$

☐ B. $(-4) \times (-4) < 0$

☐ D. $(-1) \times 7 < (-1) \times 6$



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5) Which scenario is NOT proportional?

- ☐ A. A vendor sells notebooks at \$2 each (cost vs. quantity)
 ☐ C. A phone plan costs \$0.10 per minute (cost vs. minutes)
- ☐ B. A car travels 60 miles per hour (distance vs. time)
 ☐ D. A student grows 0.5 inches per year starting from birth (height vs. age)

6) A rectangle is inscribed in a circle. One side is 8 cm and an adjacent side is 6 cm. Is there a unique rectangle that satisfies these conditions?

- ☐ A. Yes, exactly one
 ☐ C. No, but there are exactly two
- ☐ B. No, infinitely many
 ☐ D. No rectangle fits these conditions

7) What is $(-9) + 9$?



- ☐ A. 18 (adds absolute values)
 ☐ C. 0 (correct; additive inverse property)
- ☐ B. 9 (ignores the negative sign)
 ☐ D. -18 (keeps negative and doubles)

8) A rectangular prism has length 4 cm, width 3 cm, and height 5 cm. What is its surface area?

- ☐ A. 47 cm^2
☐ C. 94 cm^2
- ☐ B. 60 cm^2
☐ D. 120 cm^2



1) Which value is equivalent to 3.7×10^{-6} ?

☐ A. 0.0000037

☐ C. 3,700,000

☐ B. 0.00000037

☐ D. 37,000,000

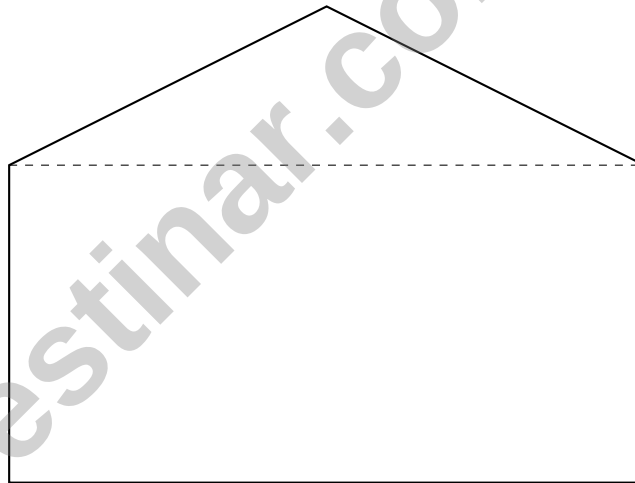
2) A histogram displays the number of plants in gardens across two neighborhoods. North Side: concentrated at 15–25 plants. South Side: concentrated at 25–35 plants. Both neighborhoods show similar spread. What inference can be made?

☐ A. South Side gardens have approximately 10 more plants on average

☐ C. Both neighborhoods have identical gardens

☐ B. North Side is better for gardening

☐ D. Gardening is equally popular in both areas



3)

A pentagon-shaped region can be decomposed into a trapezoid (parallel sides 12 units and 12 units, height 6 units) and a triangle (base 6 units, height 3 units). What is the total area?

☐ A. 50 sq units

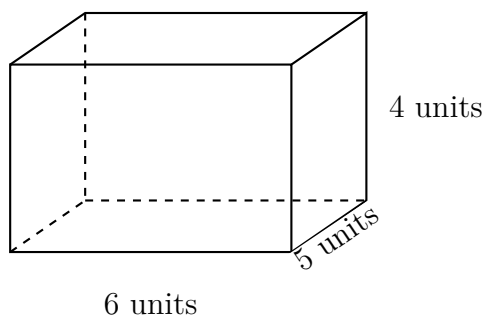
☐ C. 72 sq units

☐ B. 63 sq units

☐ D. 81 sq units



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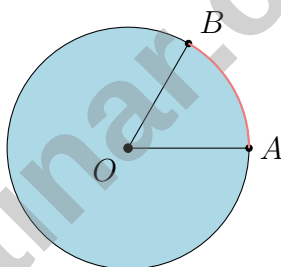


4)

The rectangular prism shown has dimensions as labeled. What is its volume in cubic units?

☐ A. 15 cubic units☐ C. 120 cubic units☐ B. 60 cubic units☐ D. 240 cubic units

5) In the circle below, which region is a sector?

☐ A. The arc AB ☐ C. The chord AB ☐ B. The region bounded by OA , arc AB , and OB ☐ D. The center O

6) A triangle has sides of length 5 m and 9 m. Which length CANNOT be the third side?

☐ A. 6 m☐ C. 13 m☐ B. 10 m☐ D. 15 m

Ohio OST Grade 7 Practice Test Answer Keys**How to use this section with a Grade 7 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.** (7.RP.1-7.RP.3) The discount price is $\frac{3}{4}$ times the original price: $d = \frac{3}{4}o$.
- 2) **The correct answer is 16.** (7.NS.1-7.NS.3) The change is final minus initial: $8 - (-8) = 8 + 8 = 16$ degrees.
- 3) **Choice A is correct.** (7.G.4-7.G.6) $C = 2\pi r = 2 \times 3.14 \times 6 = 37.68 \approx 37.7$ cm (A); B: $C = \pi d = 3.14 \times 6 = 18.84$ cm (wrong); C: confuses formula; D: $C = \pi d = 3.14 \times 12 = 37.68$ cm (close, but uses diameter not radius).
- 4) **Choice B is correct.** (7.SP.1-7.SP.4) Variability is measured by range. Group 2's range (30 min) is triple Group 1's range (10 min), indicating much more variable completion times in Group 2. The mean-median relationships also suggest outliers in both groups, but the range directly shows variability in homework times.
- 5) **Choice B is correct.** (7.SP.1-7.SP.4) Range measures spread. Class A's range of 36 points (96–60) vs. Class B's range of 16 points (86–70) shows Class B's scores are tighter around the mean, indicating less variability and more consistency.
- 6) **Choice B is correct.** (7.SP.5-7.SP.8) Hearts + diamonds = $13 + 13 = 26$. $P(\text{heart or diamond}) = \frac{26}{52} = \frac{1}{2}$.
- 7) **The correct answer is -30.** (7.NS.2) Change per minute is -7.5 meters. After 4 minutes: $(-7.5) \times 4 = -30$ meters.
- 8) **Choice D is correct.** (7.SP.5-7.SP.8) By the counting principle: $3 \times 5 \times 2 = 30$ complete meals.
- 9) **Choice A is correct.** (7.SP.3) Histogram centers: Professionals (5–7, center 6) vs. Students (7–9, center 8). The difference in centers is approximately 2 hours. This reflects typical difference without claiming absolutes.
- 10) **Choice B is correct.** (7.SP.5-7.SP.8) Total marbles: 9. Blue marbles: 3. Not blue: $9 - 3 = 6$. Probability: $\frac{6}{9} = \frac{2}{3}$.
- 11) **Choice C is correct.** (7.SP.1-7.SP.4) The student misunderstands how stems and leaves combine, not reading or computational. This is a conceptual misunderstanding.
- 12) **Choice B is correct.** (7.SP.6) Experimental: $\frac{85}{800} \approx 0.106$. Theoretical: $\frac{1}{8} = 0.125$. The experimental probability came from the observed data.
- 13) **Choice C is correct.** (7.G.4-7.G.6) Decompose into two shapes: Rectangle area = $8 \times 5 = 40$ ft²; square area = $3 \times 3 = 9$ ft². Add the areas: $40 + 9 = 49$ ft².
- 14) **Choice C is correct.** (7.G.4-7.G.6) $h = \frac{V}{l \times w} = \frac{500}{10 \times 5} = \frac{500}{50} = 10$ inches.
- 15) **Choice C is correct.** (7.G.4-7.G.6) The longest chord is the diameter, which equals $2r = 2 \times 10 = 20$ cm.
- 16) **Choice C is correct.** (7.G.1-7.G.5) If two angles of one triangle equal two angles of another, the third angles must also be equal (angle sum is always 180°). This AA (Angle–Angle) criterion guarantees similarity: the triangles have the same shape but not necessarily the same size. Similarity does not imply congruence without matching side lengths.
- 17) **Choice A is correct.** (7.SP.5-7.SP.8) Lower probabilities represent less likely events. Ordering: $0.2 < 0.5 < 0.9 < 1$.
- 18) **Choice A is correct.** (7.SP.1-7.SP.4) $\frac{50}{125} = \frac{x}{5000}$. Reduce: $\frac{2}{5} = \frac{x}{5000} \Rightarrow x = 2000$.
- 19) **Choice A is correct.** (7.NS.1-7.NS.3) When subtracting from a negative number, move further left on the number line: $-5 - 3 = -8$.
- 20) **The correct answer is A,D.** (7.RP.1-7.RP.3) A and D are unit rates because each gives a price per single unit of weight. Option B is a distance, and option C is a total count.
- 21) **Choice D is correct.** (7.RP.1-7.RP.3) Convert 25 feet to inches: $25 \times 12 = 300$ inches. Scale = $5 : 300 = 1 : 60$.
- 22) **Choice D is correct.** (7.RP.3) Percent discount = $\frac{50}{200} \times 100 = 25\%$.
- 23) **Choice C is correct.** (7.SP.1-7.SP.4) 23% of 3200 = $0.23 \times 3200 = 736$ students.
- 24) **Choice D is correct.** (7.RP.1-7.RP.3) Unit rate: $\frac{\frac{2}{3}}{\frac{4}{9}} = \frac{2}{3} \times \frac{9}{4} = \frac{18}{12} = \frac{3}{2} = 1.5$ boxes/hr.
- 25) **Choice C is correct.** (7.RP.1-7.RP.3) Proportional: no constant term. Option C has -7 (constant), so not proportional.
- 26) **Choice D is correct.** (7.RP.1-7.RP.3) Unit rate = $\$36 \div 3 = \12 per month.
- 27) **The correct answer is 5.** (7.EE.1-7.EE.2) The greatest common factor of the coefficients 15, 25, and 10 is 5.
- 28) **Choice C is correct.** (7.RP.3) Cross-multiplying $\frac{90}{18} = \frac{p}{100}$ gives $p = 500$. The correct setup is $\frac{18}{90} = \frac{p}{100}$, yielding $p = 20\%$.
- 29) **The correct answer is 8.** (7.G.1-7.G.5) By Triangle Inequality, $|18 - 11| < c < 18 + 11$, so $7 < c < 29$. The smallest whole number greater than 7 is 8 cm.



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Hi, Confident Learner!

◇ This carefully paced book gave you four steady Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 7 math can feel big because it brings together rational numbers, expressions, equations, geometry, probability, and data. ◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 7 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **4** full-length Math practice tests and **2** online tests to help Grade **7** students build confidence, strengthen skills, and excel on standardized assessments.

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- ✓ Measurement & Conversions
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