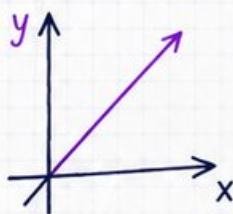


3

Ohio
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7
MATH

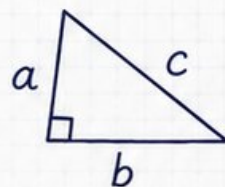
PRACTICE TESTS

- ✓ Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs



$$y = mx + b$$

$$\frac{2}{3}x - \frac{4}{5} = \frac{1}{2}$$



$$3(x - 2) = 2x + 5$$

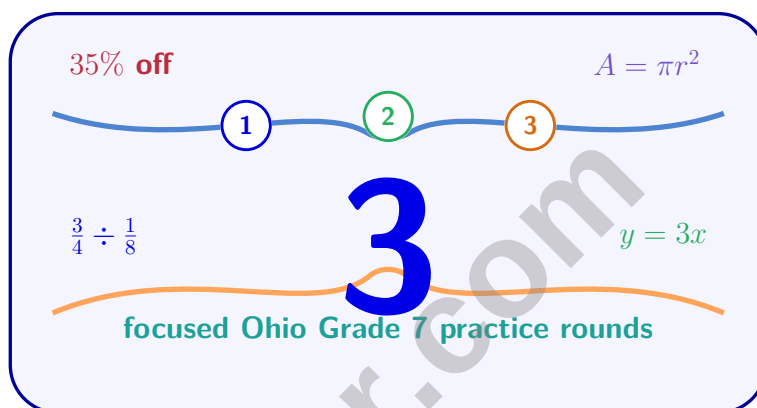
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& ExplanationsImprove Test
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Standards-Focused OST Practice with Explanations



Three 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!

Three focused rounds for sharper OST math thinking

This book gives you three 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 three-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?

Three OST tests, 120 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.
Test 3	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

Table of Contents

★ Practice Test 1	_____	15
★ Practice Test 2	_____	29
★ Practice Test 3	_____	44
Practice Test Answer Keys	_____	57
Practice Test Answers and Explanations	_____	60

- 1) A babysitter charges hourly. The table shows total earnings for different hours worked.

Hours	Earnings (\$)
2	18
4	36
7	63

What is the hourly rate (constant of proportionality)?

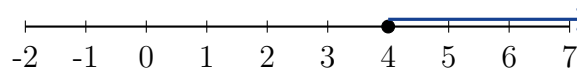
- ☐ A. \$12 per hour ☐ C. \$8 per hour
☐ B. \$10 per hour ☐ D. \$9 per hour
- 2) A runner estimated she would cover 5.5 miles but actually covered 6 miles. What is the percent error?

- ☐ A. 5% ☐ C. 9.1%
☐ B. 91.7% ☐ D. 8.3%

- 3) Expand: $\frac{1}{5}(10r + 5)$

- ☐ A. $2r + 1$ ☐ C. $2r + 5$
☐ B. $10r + 1$ ☐ D. $r + 1$

- 4) Solve $x + 6 \geq 10$ and match it to the correct number line.



- ☐ A. $x \geq 4$ ☐ C. $x \leq 4$
☐ B. $x > 4$ ☐ D. $x < 4$



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- 5) A car loan of \$15000 is taken at a simple interest rate of 7% per year. How much total interest will be paid over 6 years?

☐ A. \$4500 ☐ C. \$7000
☐ B. \$10500 ☐ D. \$6300

6)

Sport	Students	Percent
Basketball	36	45%
Soccer	20	25%
Other	24	30%

The table shows sports preferences. If 45% of 80 students play basketball, how many is that?

☐ A. 30 ☐ C. 40
☐ B. 45 ☐ D. 36

- 7) A bank account has a balance of -45 dollars (overdrawn). After a deposit and withdrawal, the balance becomes -20 dollars. What was the net change in the account (deposit minus withdrawal)? Write your answer as an integer with the appropriate sign.

- 8) A rectangular prism has base dimensions $9\text{ cm} \times 7\text{ cm}$ and height 2 cm . A student forgets to include one of the two side faces with dimensions $9 \times 2\text{ cm}$. If the correct surface area is SA_{correct} , what percentage of the correct surface area is their incorrect answer?

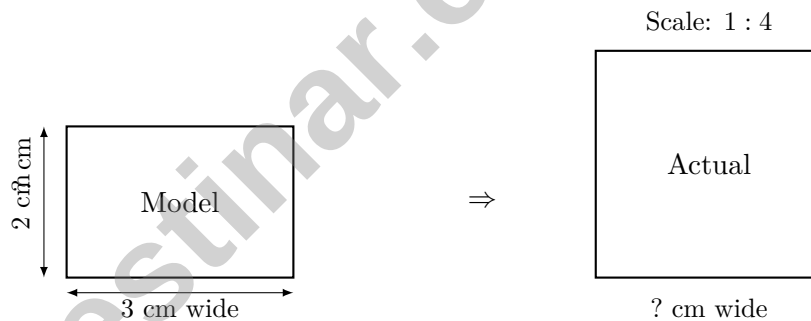
☐ A. 25% ☐ C. 75%
☐ B. 50% ☐ D. 91%



- 9) A recipe uses $\frac{3}{4}$ cup flour for $\frac{1}{2}$ dozen cookies. How much flour is needed for 3 dozen cookies?

- 10) A fruit stand sells apples for \$1.50 each with no discount. What is the constant of proportionality between number of apples and total cost?

11)



If the scale factor is 1 : 4, what are the actual dimensions?

- ☐ A. 12 cm × 10 cm ☐ C. 7 cm × 6 cm
- ☐ B. 0.75 cm × 0.5 cm ☐ D. 12 cm × 8 cm



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1) A stem-and-leaf plot shows:

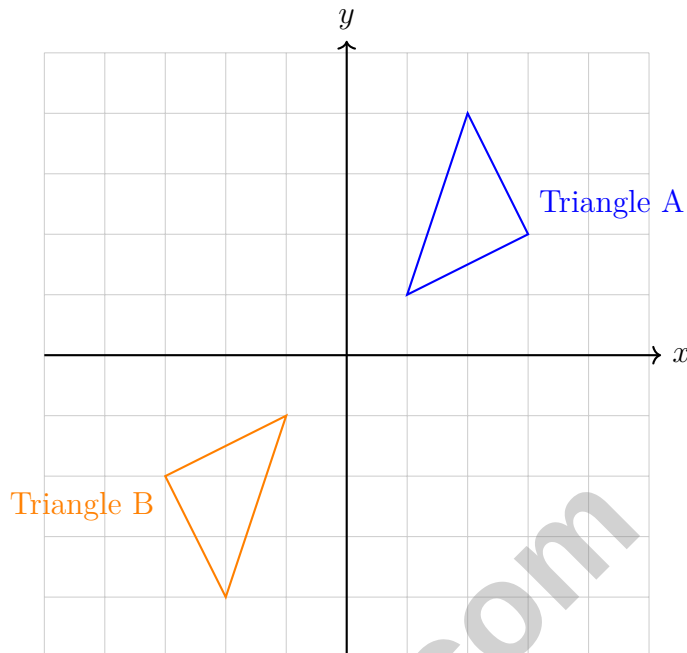
Stem	Leaves
22	0, 3, 7
23	1, 4, 6, 9
24	2, 5, 8

What is the sum of the minimum and maximum values?

- ☐ A. 470 ☐ C. 468
☐ B. 471 ☐ D. 473
- 2) A map shows two cities that are $\frac{3}{4}$ inch apart. The scale is $\frac{1}{2}$ inch : 10 miles. What is the actual distance between the cities?
- ☐ A. 10 miles ☐ C. 20 miles
☐ B. 15 miles ☐ D. 30 miles
- 3) A floor plan shows a rectangular office that is 2.5 inches by 3.5 inches at a scale of 1 in : 10 ft. Which pair of measurements are the actual office dimensions?
- ☐ A. 25 ft by 35 ft ☐ C. 12.5 ft by 17.5 ft
☐ B. 2.5 ft by 3.5 ft ☐ D. 20 ft by 28 ft
- 4) If a complementary pair has one angle that is four times the other, what is the measure of the smaller angle?
- ☐ A. 15° ☐ C. 22.5°
☐ B. 18° ☐ D. 30°



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5)

Triangle A is transformed to create Triangle B. What transformation was applied?

- ☐ A. Rotation of 180° ☐ C. Translation by $(-2, -3)$
☐ B. Reflection over the y -axis ☐ D. Reflection over the line $y = x$

6) Two similar figures have a linear scale factor of $2 : 3$. If the larger figure has a perimeter of 36 inches, what is the perimeter of the smaller figure?

- ☐ A. 18 inches ☐ C. 24 inches
☐ B. 20 inches ☐ D. 54 inches

7) A video game costs \$35. After a 20% price increase, what is the new cost?



1) A map has a scale of 2 cm : 3 km. If two towns are 10 cm apart on the map, how far apart are they in reality?

☐ A. 12 km

☐ C. 18 km

☐ B. 15 km

☐ D. 20 km

2) A die is rolled. It has six faces: three labeled 2, two labeled 5, and one labeled 8. What is $P(\text{even})$?

☐ A. $\frac{1}{6}$

☐ C. $\frac{1}{3}$

☐ B. $\frac{2}{3}$

☐ D. $\frac{1}{2}$

3) A car dealership charges a \$500 documentation fee on all vehicles sold. If a car sells for \$22,000, and a salesman earns 3% commission on the base price (before fees), what is the salesman's commission?

☐ A. \$750

☐ C. \$715

☐ B. \$675

☐ D. \$660

4) Aisha earns \$1 800 per month. Her net income (take-home pay) is \$1 530 after taxes and deductions. What percentage of her gross income is her net income?

☐ A. 80%

☐ C. 85%

☐ B. 82%

☐ D. 90%

5) A \$1,300 investment at 6.5% annual compound interest grows to what balance after 2 years?

☐ A. \$1,369.03

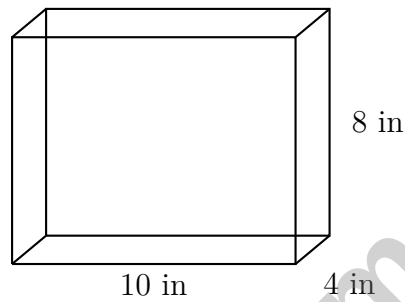
☐ C. \$1,474.53

☐ B. \$1,419.03

☐ D. \$1,572.62



- 6) A restaurant's menu prices increased by 8%. If a meal was \$25, what is the new price?

☐ A. \$33☐ C. \$32☐ B. \$2☐ D. \$27

7)

The rectangular prism shown has dimensions $10\text{ in} \times 8\text{ in} \times 4\text{ in}$. Calculate the surface area.

☐ A. 320 in^2 ☐ C. 240 in^2 ☐ B. 304 in^2 ☐ D. 160 in^2

- 8) A car travels at a constant speed passing through the origin and the point $(2, 140)$ on a distance-time graph (where x = hours and y = miles). What is the unit rate in miles per hour?



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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) $k = 18/2 = 9$ dollars per hour. Verify: $36/4 = 9$ and $63/7 = 9$.
- 2) **Choice D is correct.** (7.RP.3) Percent error = $\frac{|5.5-6|}{6} \times 100\% = \frac{0.5}{6} \times 100\% \approx 8.3\%$.
- 3) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute $\frac{1}{5}$: $\frac{1}{5}(10r) + \frac{1}{5}(5) = 2r + 1$.
- 4) **Choice A is correct.** (7.EE.4b) Solving: $x + 6 \geq 10$ gives $x \geq 4$. The closed circle at 4 with a right arrow matches this solution.
- 5) **Choice D is correct.** (7.RP.3) $I = 15000 \times 0.07 \times 6 = \6300 .
- 6) **Choice D is correct.** (7.RP.3) 45% of 80 is $0.45 \times 80 = 36$ students.
- 7) **The correct answer is 25.** (7.NS.1-7.NS.3) Net change = final balance - initial balance = $-20 - (-45) = -20 + 45 = 25$ dollars. The account increased by 25 dollars (a net deposit of 25).
- 8) **Choice D is correct.** (7.G.4-7.G.6) Correct $SA = 2(63 + 18 + 14) = 190 \text{ cm}^2$. Missing one $9 \times 2 = 18 \text{ cm}^2$ face: incorrect $SA = 190 - 18 = 172 \text{ cm}^2$. Ratio: $\frac{172}{190} \approx 0.905 = 90.5\% \approx 91\%$.
- 9) **The correct answer is $\frac{9}{2}$.** (7.RP.1-7.RP.3) 3 dozen is 6 times $\frac{1}{2}$ dozen, so flour is $\frac{3}{4} \times 6 = \frac{18}{4} = \frac{9}{2} = 4\frac{1}{2}$ cups.
- 10) **The correct answer is 1.5.** (7.RP.1-7.RP.3) The unit price is \$1.50 per apple, so the constant of proportionality is 1.5.
- 11) **Choice D is correct.** (7.RP.1-7.RP.3) Multiply each model dimension by scale factor 4: $3 \times 4 = 12 \text{ cm}$; $2 \times 4 = 8 \text{ cm}$.
- 12) **Choice D is correct.** (7.RP.3) Markup amount = $0.50 \times 60 = \$30$. Selling price = $60 + 30 = \$90$.
- 13) **Choice A is correct.** (7.NS.1b) Model: $5 + (-3)$. Three positive and three negative chips cancel, leaving 2 positive chips (representing +2).
- 14) **Choice B is correct.** (7.EE.1-7.EE.2) Substitute: $7 - 3(-2) = 7 + 6 = 13$.
- 15) **Choice D is correct.** (7.EE.1) Step 1 correctly identifies the original expression. Step 2 correctly groups and adds: $(4 + 2) = 6$ and $(3 - 1) = 2$. Step 3 correctly shows the simplified form: $6x + 2y$.
- 16) **Choice A is correct.** (7.EE.1-7.EE.2) GCF of 10 and 15 is 5. Both have a . The GCF is $5a$.
- 17) **Choice B is correct.** (7.SP.5-7.SP.8) Each standard die shows 1–6, so (1, 7) is impossible. To get a sum of 7, identify all pairs (a, b) where $a + b = 7$ and $1 \leq a, b \leq 6$. These are the six outcomes listed. The probability is thus $\frac{6}{36} = \frac{1}{6}$.
- 18) **Choice C is correct.** (7.RP.3) Final price = $\$80 - (15\% \times \$80) = \$80 - \$12 = \$68$.
- 19) **The correct answer is A, C.** (7.SP.1-7.SP.4) Bread: $0.35 \times 400 = 140$ items, so A is correct. Pastries and cakes together make 200 items, not 50, so B is false. Other: $0.15 \times 400 = 60$ items, so C is correct. Pastries (28%) plus other (15%) equals 43%, not 45%.
- 20) **Choice A is correct.** (7.EE.1-7.EE.2) Combine like terms: $(2c - 3c) + (-6 + 10) = -c + 4$.
- 21) **Choice B is correct.** (7.EE.4a) Initial fee is \$8; each package adds \$3. Equation: $3p + 8 = 26$.
- 22) **Choice C is correct.** (7.EE.4b) Verify by testing a value in the solution set (here $x = 3$) and a value not in it (here $x = 1$). Since $4(3) - 3 = 9 > 5$ is true, the solution $x > 2$ is verified.
- 23) **Choice B is correct.** (7.G.1-7.G.5) A square pyramid cut parallel to its base produces a square cross-section. This square is similar to the base but smaller in size, with the side length proportional to the distance from the apex.
- 24) **Choice C is correct.** (7.G.4-7.G.6) $A = \pi r^2 = 3.14 \times 5^2 = 3.14 \times 25 = 78.5 \text{ ft}^2$.
- 25) **Choice B is correct.** (7.G.4-7.G.6) $V = \pi r^2 h \approx 3.14 \times 1.5^2 \times 2 = 3.14 \times 2.25 \times 2 = 14.13 \text{ m}^3$.
- 26) **Choice D is correct.** (7.SP.1-7.SP.4) Sampling only during evening hours is convenient for the surveyor but misses members who visit at other times, introducing convenience bias.
- 27) **Choice D is correct.** (7.RP.1-7.RP.3) The unit rate is $12 \div 5 = 2.4$. So the equation is $y = 2.4x$.
- 28) **Choice C is correct.** (7.RP.3) The shaded portion represents 60 out of 100 units. Set up the proportion: $\frac{60}{100} = \frac{p}{100}$, so $p = 60\%$.
- 29) **The correct answer is $\frac{2}{5}$.** (7.RP.1-7.RP.3) The ratio flour to milk is 2 : 5, so the constant is $\frac{2}{5}$.
- 30) **Choice D is correct.** (7.NS.1-7.NS.3) $\frac{1}{4} - \frac{3}{4} = -\frac{2}{4} = -\frac{1}{2}$.



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How to Use Mistakes

- **Name It:** Was it reading, setup, arithmetic, or checking?
- **Fix It:** Correct the work while the question is fresh.
- **Repeat It:** Try one similar problem soon.
- **Remember It:** Write the lesson in your own words.

Grade 7 test-day tip: Treat every corrected error as a point you are preparing to earn next time.

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

Jay Daie

Your Brave-Learning Coach

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