

9 Virginia SOL

GRADE 7

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

Program



9 PRINTED
TESTS



2 ONLINE
TESTS



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



BUILT FOR ACAP
Standards-Aligned



**STRENGTHEN
SKILLS**



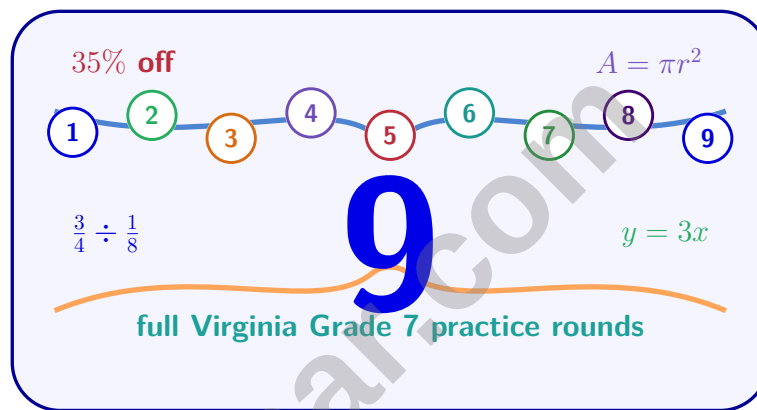
**SHARPEN
THINKING**



BE TEST-READY
Improve Performance

9 Virginia SOL Grade 7 Math Practice Tests

*Standards-Aligned Virginia Practice for Proportional Reasoning, Expressions, Geometry,
Statistics, and Probability*



Nine complete 40-question Grade 7 SOL 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, Virginia Grade 7 Problem Solver!

Nine focused rounds for sharper SOL math thinking

This book gives you nine full Grade 7 SOL 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 Virginia 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 nine-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.

Virginia 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?

Nine SOL tests, 360 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Tests 4–6	Expressions, equations, inequalities, scale drawings, geometry, and multi-step problem solving.
Tests 7–9	Statistics, probability, mixed review, stamina, and choosing efficient strategies.
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.

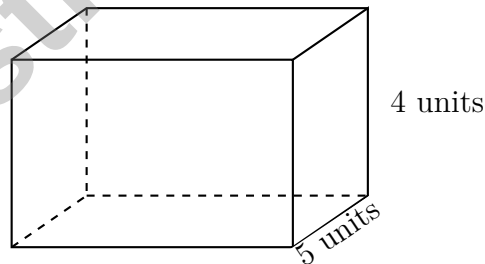


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- 1) A mason lays $\frac{3}{4}$ of a patio using $\frac{1}{2}$ ton of bricks. How many tons are needed for the entire patio?
- ☐ A. $\frac{1}{2}$ ton ☐ C. $\frac{1}{3}$ ton
☐ B. $\frac{3}{8}$ ton ☐ D. $\frac{2}{3}$ ton
- 2) A quality control inspector checked 500 items and found 15 defective. Based on this experimental data, if 8000 items are produced, how many are expected to be defective?
- ☐ A. 15 ☐ C. 240
☐ B. 120 ☐ D. 485
- 3) Given raw data: 51, 54, 58, 61, 64, 68, 71, 75. In a stem-and-leaf plot, what is the correct representation?
- ☐ A. Stem 5: 1, 4, 8; Stem 6: 1, 4, 8; Stem 7: 1, 5 ☐ C. Stem 5: 1, 4, 8; Stem 6: 1, 4; Stem 7: 1, 5, 8
☐ B. Stem 5: 1, 4, 5, 8; Stem 6: 1, 4; Stem 7: 1, 5 ☐ D. Stem 5: 51, 54, 58; Stem 6: 61, 64; Stem 7: 71, 75



- 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



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- 5) A bag contains red and blue marbles. A simulation draws a marble, records the color (red), and replaces it. This is repeated 400 times, and red is drawn 284 times. Based on this simulation, what is the estimated probability of drawing a red marble? (Express as a decimal.)

- 6) A circle has a diameter of $\frac{30}{7}$ meters. What is its radius?

☐ A. $\frac{15}{7}$ meters

☐ C. $\frac{60}{7}$ meters

☐ B. $\frac{30}{7}$ meters

☐ D. 7 meters

- 7) A student draws a card from a standard deck. The probability of drawing a heart is $\frac{1}{4}$. What is this as a percent?

☐ A. 4%

☐ C. 25%

☐ B. 14%

☐ D. 40%

- 8) If $\frac{7}{x} = \frac{35}{100}$, what is x ?



9)

Three Estimates Comparison Table

Test	Estimate	Actual	Percent Error
Trial 1	36	40	?
Trial 2	76	80	?
Trial 3	99	100	?

Which trial has the smallest percent error?

- ☐ A. Trial 1
 ☐ C. All equal
- ☐ B. Trial 2
 ☐ D. Trial 3
- 10) On a map where 1 inch = 30 miles, two cities are 2.25 inches apart. What is the actual distance?
- ☐ A. 32.25 miles
 ☐ C. 90 miles
- ☐ B. 4.25 miles
 ☐ D. 67.5 miles
- 11) A book is marked down by 30% from its original price of \$25. What is the discount amount?
- ☐ A. \$22.50
 ☐ C. \$15
- ☐ B. \$17.50
 ☐ D. \$7.50
- 12) A machine prints 120 pages every 2 minutes. What is the constant of proportionality k if p is pages and t is time in minutes?
- ☐ A. $k = 2$
☐ C. $k = \frac{1}{60}$
- ☐ B. $k = 120$
☐ D. $k = 60$



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1) Which expression is equivalent to $-3(2x + 5)$?

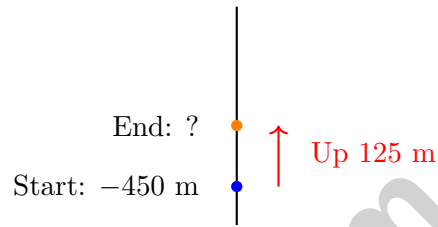
☐ A. $-6x - 15$

☐ C. $6x - 15$

☐ B. $-6x + 15$

☐ D. $-6x + 5$

2) A submarine is at a depth of -450 meters. It ascends (moves up) 125 meters. What is its new depth?



3) A runner covers $2\frac{1}{2}$ miles in $\frac{2}{5}$ hour. What is the runner's speed?

☐ A. 6.5 mph

☐ C. $\frac{5}{4}$ mph

☐ B. $\frac{5}{2}$ mph

☐ D. $\frac{25}{4}$ mph

4) A recipe calls for $\frac{1}{2}$ cup of flour for every $\frac{1}{4}$ cup of sugar. Which ratio represents the proportional relationship?

☐ A. 1 : 2

☐ C. 4 : 1

☐ B. 1 : 4

☐ D. 2 : 1



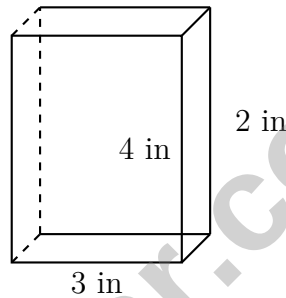
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- 5) A bike rental costs \$2.50 per hour. If h is the number of hours and c is the total cost, what is the constant of proportionality in the equation $c = kh$?

☐ A. 1.0
☐ B. 0.40
☐ C. \$5.00
☐ D. 2.5

- 6) Simplify: $-\frac{1}{2}a + \frac{3}{2}a - a$

☐ A. a
☐ B. 0
☐ C. $\frac{1}{2}a$
☐ D. $2a$



7)

The rectangular prism shown has dimensions 3 in $\times$ 2 in $\times$ 4 in. What is its surface area?

☐ A. 32 in²
☐ B. 52 in²
☐ C. 64 in²
☐ D. 96 in²

- 8) A spinner is spun twice, and the compound event is “the first spin is different from the second spin.” If the spinner has 3 equal sections, how many successful outcomes are there?

☐ A. 3
☐ B. 6
☐ C. 9
☐ D. 12



- 1) A streaming service costs \$12.99 per month plus a one-time setup fee of \$19.99. Which expression shows the total cost C for n months?

☐ A. $C = 19.99 + 12.99n$ ☐ C. $C = 19.99(n + 12.99)$
☐ B. $C = 19.99n + 12.99$ ☐ D. $C = 12.99n + 12.99$

- 2) Solve for x : $4(x - 3) = 12$

☐ A. $x = 0$ ☐ C. $x = 6$
☐ B. $x = 3$ ☐ D. $x = 9$

- 3) A student has \$50 and spends \$12 on a book. Write an inequality to find how much can be spent on a pen.

☐ A. $12 + p \leq 50$ ☐ C. $p \geq 62$
☐ B. $p + 50 \geq 12$ ☐ D. $p \leq 50$

- 4) A map has a scale of 3 cm : 10 km. A road that is 75 km long would measure how many centimeters on the map?

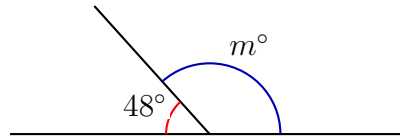
☐ A. 22.5 cm ☐ C. 30 cm
☐ B. 25 cm ☐ D. 250 cm

- 5) A rectangular room area is 2.5 m by 3 m. A scale drawing uses 1 cm : 0.5 m. What is the area of the scale drawing in square centimeters?

☐ A. 30 cm^2 ☐ C. 75 cm^2
☐ B. 60 cm^2 ☐ D. 120 cm^2



6)



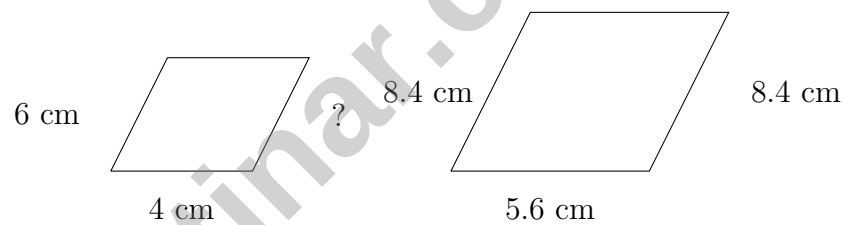
Two rays extend from a point on a line. The angle on the left is 48° and on the right is m . These form a linear pair. Find m .

☐ A. 48° ☐ C. 132° ☐ B. 90° ☐ D. 228°

7) A point is moved from $(-3, 1)$ to $(4, 6)$ by a single transformation. Which of the following best describes this transformation?

☐ A. Translation by $(7, 5)$ ☐ C. Rotation of 90° ☐ B. Reflection over the origin☐ D. Reflection over the x -axis

8)



The trapezoids are similar. Find the missing side (marked with ?) in the left trapezoid.

☐ A. 4.2 cm☐ C. 5.6 cm☐ B. 5 cm☐ D. 6 cm

9) A coin has circumference 6.28 cm. Using $\pi \approx 3.14$, what is its radius?

☐ A. 1 cm☐ C. 3 cm☐ B. 2 cm☐ D. 4 cm

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Virginia SOL 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 Virginia SOL 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) If $\frac{3}{4}$ patio uses $\frac{1}{2}$ ton, then 1 full patio uses $\frac{1/2}{3/4} = \frac{1}{2} \times \frac{4}{3} = \frac{2}{3}$ ton.
- 2) **Choice C is correct.** (7.SP.6) Experimental probability of defect = $\frac{15}{500} = 0.03$. Expected defects in 8000: $0.03 \times 8000 = 240$.
- 3) **Choice A is correct.** (7.SP.1-7.SP.4) Data 51, 54, 58, 61, 64, 68, 71, 75 maps: Stem 5: 1, 4, 8; Stem 6: 1, 4, 8; Stem 7: 1, 5. Answer A is correct.
- 4) **Choice C is correct.** (7.G.4-7.G.6) $V = 6 \times 4 \times 5 = 120$ cubic units.
- 5) **The correct answer is 0.71.** (7.SP.5-7.SP.8) Relative frequency: $\frac{284}{400} = 0.71$.
- 6) **Choice A is correct.** (7.G.4-7.G.6) $r = \frac{d}{2} = \frac{30}{7} \div 2 = \frac{30}{14} = \frac{15}{7}$ meters.
- 7) **Choice C is correct.** (7.SP.5-7.SP.8) $\frac{1}{4} = 0.25 = 25\%$.
- 8) **The correct answer is 20.** (7.RP.1-7.RP.3) Cross multiply: $7 \times 100 = 35 \times x$. So $700 = 35x$, giving $x = 20$.
- 9) **Choice D is correct.** (7.RP.3) Trial 1: $\frac{4}{40} \times 100\% = 10\%$. Trial 2: $\frac{4}{80} \times 100\% = 5\%$. Trial 3: $\frac{1}{100} \times 100\% = 1\%$. Trial 3 is smallest.
- 10) **Choice D is correct.** (7.RP.1-7.RP.3) Multiply map distance by scale factor: $2.25 \times 30 = 67.5$ miles.
- 11) **Choice D is correct.** (7.RP.3) Discount amount = $0.30 \times 25 = \$7.50$.
- 12) **Choice D is correct.** (7.RP.1-7.RP.3) The rate is $\frac{120 \text{ pages}}{2 \text{ minutes}} = 60$ pages per minute, so $k = 60$.
- 13) **Choice D is correct.** (7.RP.3) Discount: $\frac{35}{100} \times 60 = 21$. Sale price: $60 - 21 = \$39$.
- 14) **Choice D is correct.** (7.RP.3) Simple interest = $\$5,000 \times 0.03 \times 2 = \300 .
- 15) **Choice B is correct.** (7.NS.1-7.NS.3) Remaining = $\frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$ tank.
- 16) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute the negative: $7a + 9 - 3a + 4 = (7a - 3a) + (9 + 4) = 4a + 13$.
- 17) **Choice C is correct.** (7.G.1-7.G.5) The scale factor is the ratio of actual to drawing: $5 \text{ cm} \div 1 \text{ cm} = 5$. Each unit on the drawing represents 5 times that length in reality.
- 18) **Choice B is correct.** (7.G.1-7.G.5) The height scale factor is $\frac{3}{4.2} \approx 0.714$. Width of smaller = $7 \times 0.714 = 5 \text{ cm}$. Or directly: $\frac{?}{7} = \frac{3}{4.2}$, so $? = \frac{7 \times 3}{4.2} = 5 \text{ cm}$.
- 19) **Choice D is correct.** (7.RP.1-7.RP.3) Graph 1 passes through origin (0, 0) with slope $k = 1$. Graph 2 has y -intercept 3, so not proportional.
- 20) **The correct answer is A, C.** (7.G.4-7.G.6) Option A is correct (60 m^2). Option C is correct (18 m^2). The true total is $60 + 18 = 78 \text{ m}^2$, so D and
- 21) **Choice B is correct.** (7.NS.1-7.NS.3) $8,900,000,000 = 8.9 \times 10^9$. Count 9 places from right of first digit to decimal point.
- 22) **Choice B is correct.** (7.EE.1-7.EE.2) $x - 0.02x = (1 - 0.02)x = 0.98x$. A 2% discount leaves 98% of the original.
- 23) **Choice A is correct.** (7.EE.1-7.EE.2) Divide coefficients: $14 \div 7 = 2$. Apply quotient rule: $s^7 \div s^3 = s^{7-3} = s^4$. Result: $2s^4$.
- 24) **Choice A is correct.** (7.EE.4a) Cost per room after discount: $20 - 6 = 14$ per room. Total for 3 rooms: $3(20 - 6) = 3(14) = 42$.
- 25) **Choice A is correct.** (7.G.1-7.G.5) A plane parallel to the hexagonal bases of a prism produces a cross-section that is a regular hexagon congruent to the original bases, with the same side length and angles.
- 26) **Choice B is correct.** (7.SP.1-7.SP.4) Batch Alpha: IQR = $94 - 88 = 6$. Batch Beta: IQR = $93 - 90 = 3$. Batch Beta's smaller IQR (tighter middle 50%) and higher Q1 (90 vs. 88) indicate more consistently high-purity output.
- 27) **Choice C is correct.** (7.SP.1-7.SP.4) $4.5 \text{ cm} \times 10 \text{ books/cm} = 45$ books.
- 28) **Choice B is correct.** (7.NS.1-7.NS.3) $\sqrt{121} = 11$ feet since $11 \times 11 = 121$.
- 29) **Choice B is correct.** (7.NS.2) $-2\frac{1}{3} = -\frac{7}{3}$. So $-\frac{7}{3} \times (-3) = \frac{7 \times 3}{3} = 7$. Negative times negative is positive.
- 30) **Choice C is correct.** (7.RP.3) Savings: $\$2500 - \$1950 = \$550$ remaining after expenses.



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Hi, Confident Learner!

◇ This high-stamina book gave you nine substantial 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 **9** full-length Math practice tests and **2** online tests to help Grade 7 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:

9 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answer 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



Stronger Math Skills

Build a solid foundation through targeted practice and review.



Better Problem Solving

Develop logical thinking and effective solution strategies.



Deeper Understanding

Reinforce key concepts with clear explanations and meaningful practice.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Achieve Success

Build confidence and perform your best on test day.

TOPICS COVERED

- ✓ Ratios & Proportions
- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Geometry
- ✓ Percents & Decimals
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ Algebraic Thinking
- ✓ 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!



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