

6 VIRGINIA SOL

GRADE

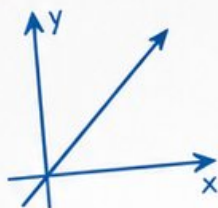
7

MATH

PRACTICE TESTS

Standards Aligned
Problem Solving For
Comprehensive
Assessment Programs

$$y = mx + b$$



$$2(x - 3) = 4x + 6$$



6 PRINTED
TESTS



2 ONLINE
TESTS



USE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTS
FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



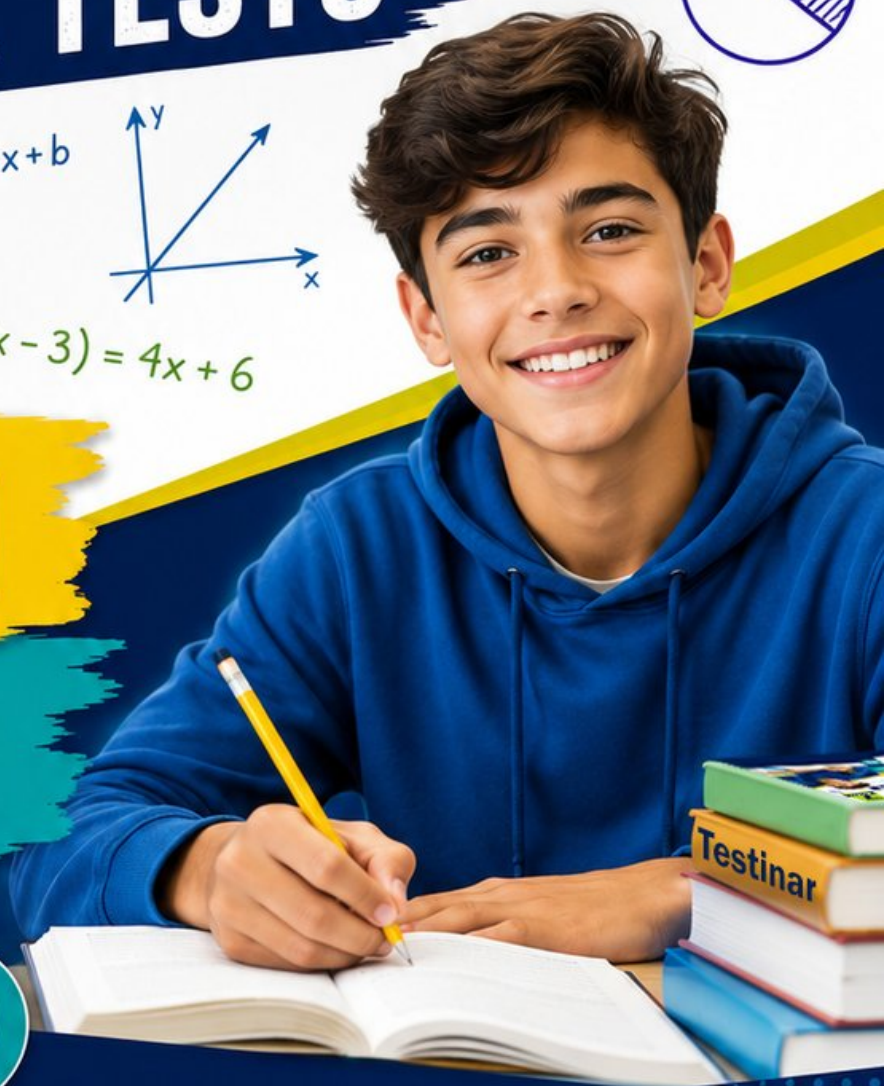
Strengthen
Math Skills



Detailed Answers
& Explanations



Improve Test
Performance



6 Virginia SOL Grade 7 Math Practice Tests

SOL-Aligned Grade 7 Practice with Keys and Explanations



Six 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!

Six focused rounds for sharper SOL math thinking

This book gives you six 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 six-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?

Six SOL tests, 240 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.
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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For more practice
& answers

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1) A coffee shop buys coffee beans for \$8 per pound and marks them up by \$4 per pound. What is the percent markup?

☐ A. 75%

☐ C. 25%

☐ B. 100%

☐ D. 50%

2) A basketball player made 18 out of 24 free throws. Use a proportion to find the percent made, then identify which step comes next.

☐ A. Multiply 18×24 and divide by 100

☐ D. Set up $\frac{18}{24} = \frac{p}{100}$ and solve using

☐ B. Set up $\frac{24}{18} = \frac{100}{p}$ and cross-multiply

$p = \frac{18 \times 100}{24}$

☐ C. Calculate $18 + 24 = 42$ and divide by 2

3) Solve for x : $2(x - 8) = 10$

☐ A. $x = 8$

☐ C. $x = 13$

☐ B. $x = 10$

☐ D. $x = 18$

4) How many distinct triangles can be drawn with side lengths 5 cm, 7 cm, and 12 cm?

☐ A. 0

☐ C. 2

☐ B. 1

☐ D. Infinitely many

5) A sports equipment company surveys 500 customers about their new racket design. The company wants to ensure the sample represents both amateur and professional players. Which sampling method best achieves this?

☐ A. Random selection of all customers

☐ C. Selecting every 10th customer from an online list

☐ B. Stratified sampling with separate groups for amateurs and professionals

☐ D. Asking volunteers at a professional tennis tournament

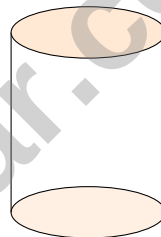


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- 6) A simulated compound event is created by spinning a spinner twice. The spinner has 3 equal sections (Red, Blue, Green). How many different outcomes are in the sample space?

☐ A. 3☐ C. 9☐ B. 6☐ D. 12

- 7) A point is translated from $(-2, 3)$ to $(4, -1)$. Write the translation vector (a, b) in the form (a, b) .

 $h = 7 \text{ in}$  $r = 3 \text{ in}$

8)

Which formula gives the volume of the cylinder shown?

☐ A. $\pi \times 3 \times 7$ ☐ C. $2\pi \times 3 \times 7$ ☐ B. $\pi \times 3^2 \times 7$ ☐ D. $2\pi \times 3^2 \times 7$

- 9) 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

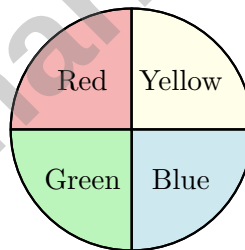
10) Two coffee shops' daily revenue (in hundreds of dollars):

Shop	Mean	MAD
Morning Brew	12	0.8
Late Night Joe	12	2.1

What is the most reliable conclusion?

- ☐ A. Morning Brew is consistently around \$1200 daily
☐ B. Late Night Joe makes more money
☐ C. Both shops are identical
☐ D. Late Night Joe is more reliable
- 11) A box plot for test scores shows: minimum = 55, $Q1 = 70$, median = 80, $Q3 = 88$, maximum = 98. About what percentage of students scored between 70 and 88?

- ☐ A. 25%
☐ B. 50%
☐ C. 75%
☐ D. 100%



12)

A spinner is divided into 4 equal sections: Red, Yellow, Blue, and Green. What is the probability of spinning Red or Green?

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



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1) A water pipe has radius 3.5 cm. Using $\pi \approx \frac{22}{7}$, what is the circumference?

☐ A. 22 cm

☐ C. 88 cm

☐ B. 44 cm

☐ D. 11 cm

2) A box plot shows test scores with minimum 45, $Q1 = 65$, median = 75, $Q3 = 85$, maximum = 95. What is the interquartile range (IQR)?

3) The value of a car decreased from \$24 000 to \$18 000. What is the percent decrease?

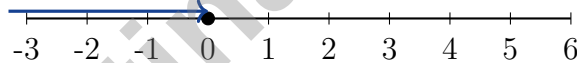
☐ A. 33%

☐ C. 16.7%

☐ B. 20%

☐ D. 25%

4) What inequality does this number line show?



☐ A. $x > 0$

☐ C. $x \geq 0$

☐ B. $x < 0$

☐ D. $x \leq 0$

5) A simulation estimates the probability of an event to be 0.40 based on 250 trials. In another simulation with the same event and 1000 trials, the estimated probability is 0.38. Which statement is true?

☐ A. The first simulation is more accurate

☐ C. Both simulations must have made errors

☐ B. The second simulation is more reliable because it uses more trials

☐ D. The true probability is exactly 0.39



- 6) A card is drawn from a deck with 5 cards (labeled 1 to 5), and a coin is flipped. If you want to find outcomes where the card is even and the coin is Heads, how many favorable outcomes are there?

☐ A. 1 ☐ C. 3
☐ B. 2 ☐ D. 5

- 7) A fair die is rolled and a fair coin is flipped. What is the probability of rolling a 5 AND flipping heads?

☐ A. $\frac{1}{12}$ ☐ C. $\frac{1}{8}$
☐ B. $\frac{1}{6}$ ☐ D. $\frac{5}{12}$

- 8) **Which Estimate is Closest?**

Actual temperature: $72^{\circ}F$

Estimate A: $68^{\circ}F$ Estimate B: $75^{\circ}F$

☐ A. Estimate A is closer ☐ C. Cannot determine
☐ B. Both equally close ☐ D. Estimate B is closer

- 9) Expand and simplify: $2(3x + 5) + 4$

☐ A. $6x + 14$ ☐ C. $5x + 14$
☐ B. $6x + 9$ ☐ D. $6x + 5$

- 10) A scale model of a building uses a scale of 1 inch : 12 feet. If the actual building is 84 feet tall, how tall is the model (in inches)?

☐ A. 6 inches ☐ C. 8 inches
☐ B. 12 inches ☐ D. 7 inches



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1) Sophia had \$28 in her wallet. She spent \$35 on lunch. Write her account balance as an integer (assuming the wallet could go negative). What is her balance?

☐ A. \$ - 63

☐ C. \$7

☐ B. \$63

☐ D. \$ - 7

2) Which solution strategy is correct for $4x + 6 = 30$?

☐ A. Subtract 6, then divide by 4

☐ C. Multiply by 4, then add 6

☐ B. Divide by 4, then subtract 6

☐ D. Add 6, then divide by 4

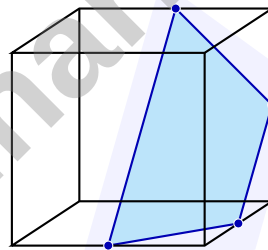
3) A temperature drops by 8°C and reaches -2°C . What was the starting temperature? Check reasonableness.

☐ A. -10°C

☐ C. 10°C

☐ B. 6°C

☐ D. 15°C



4)

A cube is sliced by a plane passing through the midpoints of four edges, forming a square cross-section. If the cube's edge is 6 cm, what is the side length of the square cross-section?

☐ A. 3 cm

☐ C. 4.5 cm

☐ B. $3\sqrt{2}$ cm

☐ D. 6 cm



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5) A line plot shows the number of goals scored by 15 soccer players this season:

Goals | 2 2 3 3 3 4 4 4 4 5 5 6 6 7 9

Which statement best describes the data?

- ☐ A. The data shows a uniform distribution with all scores equally common
☐ B. Most players scored between 3 and 5 goals, with one outlier at 9
☐ C. All players scored at least 2 goals, with the median at 4
☐ D. The mode is 4 goals, appearing 4 times
- 6) A six-sided die has the faces labeled 1, 1, 2, 4, 5, 6 (one face shows 1 twice and there is no 3). Each face is equally likely. What is the probability of rolling a 1 or 2?
- ☐ A. $\frac{1}{2}$
☐ B. $\frac{2}{6}$
☐ C. $\frac{1}{4}$
☐ D. $\frac{4}{6}$
- 7) Between which two consecutive integers does $\sqrt{200}$ lie?
- ☐ A. between 12 and 13
☐ B. between 13 and 14
☐ C. between 14 and 15
☐ D. between 15 and 16
- 8) A student factored $14a + 21b$ as $7(2a + 3b)$. Another factored it as $7(2a) + 7(3b)$. Are these equivalent?
- ☐ A. Yes, and both are fully factored
☐ B. No; the second form is not fully factored
☐ C. No; you cannot distribute a 7 twice
☐ D. Yes, but only the first is fully factored



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.3) Markup percent = $\frac{\text{markup}}{\text{cost}} \times 100 = \frac{4}{8} \times 100 = 50\%$.
- 2) **Choice D is correct.** (7.RP.3) The correct proportion is part over whole equals percent over 100: $\frac{18}{24} = \frac{p}{100}$. Cross-multiply: $p = 75\%$.
- 3) **Choice C is correct.** (7.EE.4a) Distribute: $2x - 16 = 10$. Add 16: $2x = 26$. Divide by 2: $x = 13$.
- 4) **Choice A is correct.** (7.G.1-7.G.5) By the Triangle Inequality, $5 + 7 = 12$. Since the sum of two sides must be STRICTLY greater than the third, no triangle exists.
- 5) **Choice B is correct.** (7.SP.1-7.SP.4) Stratified sampling ensures both groups are represented in the sample, maintaining proportion and representativeness.
- 6) **Choice C is correct.** (7.SP.5-7.SP.8) First spin: 3 outcomes. Second spin: 3 outcomes. Total: $3 \times 3 = 9$ outcomes.
- 7) **The correct answer is (6, -4).** (7.G.1-7.G.5) The translation vector is found by subtracting the starting point from the ending point: $(4, -1) - (-2, 3) = (4 - (-2), -1 - 3) = (4 + 2, -4) = (6, -4)$.
- 8) **Choice B is correct.** (7.G.4-7.G.6) The volume formula is $V = \pi r^2 h$. With $r = 3$ and $h = 7$, this is $\pi \times 3^2 \times 7$.
- 9) **Choice D is correct.** (7.SP.5-7.SP.8) By the counting principle: $3 \times 5 \times 2 = 30$ complete meals.
- 10) **Choice A is correct.** (7.SP.1-7.SP.4) Both have the same mean (\$1200), but Morning Brew has a smaller MAD (0.8 vs. 2.1), indicating more consistent daily revenue.
- 11) **Choice B is correct.** (7.SP.1-7.SP.4) In a box plot, the box spans from Q1 to Q3, representing the middle 50% of the data. Scores between 70 and 88 represent this middle half.
- 12) **Choice B is correct.** (7.SP.5-7.SP.8) Each section is $\frac{1}{4}$. Red + Green = $\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$.
- 13) **The correct answer is 12.** (7.G.1-7.G.5) Area ratio 4 : 9 gives linear scale factor $\sqrt{4} : \sqrt{9} = 2 : 3$. Larger base = $8 \times \frac{3}{2} = 12$ cm.
- 14) **The correct answer is 44.** (7.G.4-7.G.6) $C = 2\pi r = 2 \times \frac{22}{7} \times 7 = 2 \times 22 = 44$ cm.
- 15) **Choice A is correct.** (7.SP.3) Student M's errors concentrate at 2-4 with peak at 3 and range 3 (2-5). Student N's errors vary widely from 1-7 (range 6), showing inconsistent performance.
- 16) **Choice C is correct.** (7.SP.6) Experimental probability = $\frac{36}{180}$, which simplifies to $\frac{1}{5} = 0.20$. Note that this differs from the theoretical probability of $\frac{1}{6} \approx 0.167$ for an equally likely spinner.
- 17) **Choice B is correct.** (7.SP.5-7.SP.8) Multiples of 3: 3, 6, 9, 12, 15, 18 and multiples of 5: 5, 10, 15, 20. Total: 3, 5, 6, 9, 10, 12, 15, 18, 20 = 9 numbers. So $\frac{9}{20}$.
- 18) **Choice A is correct.** (7.SP.5-7.SP.8) Lower probabilities represent less likely events. Ordering: $0.2 < 0.5 < 0.9 < 1$.
- 19) **Choice D is correct.** (7.RP.3) Percent error = $\frac{|1.2 - 1.5|}{1.5} \times 100\% = \frac{0.3}{1.5} \times 100\% = 20\%$.
- 20) **The correct answer is B,C.** (7.G.1-7.G.5) B and C are equivalent and correct: two angles are equal (50° each), so by the Isosceles Triangle Theorem, the sides opposite those angles must be equal. A is wrong (equilateral requires all angles 60°). D is wrong (two angles are the same).
- 21) **Choice C is correct.** (7.EE.1-7.EE.2) Distribute -7: $-7(3n) - 7(-2) = -21n + 14$. Negative times negative is positive.
- 22) **Choice C is correct.** (7.RP.3) If $45 = 0.50 \times n$, then $n = \frac{45}{0.50} = 90$.
- 23) **The correct answer is 1386.** (7.G.4-7.G.6) $A = \frac{22}{7} \times 21^2 = \frac{22}{7} \times 441 = 22 \times 63 = 1386$ cm².
- 24) **Choice C is correct.** (7.RP.3) $180 = 5000 \times 0.036 \times t \Rightarrow 180 = 180t \Rightarrow t = 1$ year. Convert to months: $1 \times 12 = 12$ months.
- 25) **Choice D is correct.** (7.NS.1-7.NS.3) $-11 - (-5) = -11 + 5 = -6$.
- 26) **Choice C is correct.** (7.EE.1) Option C has no like terms remaining. All other options have like terms that can still be combined.
- 27) **Choice C is correct.** (7.SP.1-7.SP.4) 20% of \$3000 = $0.20 \times 3000 = \$600$.
- 28) **Choice D is correct.** (7.NS.1b) Check each: A: $-5 + 3 = -2$, not 8. B: $-5 + 3 = -2$ ✓. C: $4 + (-9) = -5$, not 5. D: $-12 + 20 = 8$, not -8.



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Hi, Persistent Problem Solver!

◇ Some Grade 7 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 6 full Grade 7 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 7 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **6** 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:

6 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answers & 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



Build Confidence

Practice regularly to feel prepared and test-ready.



Strengthen Math Skills

Develop key math concepts and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Boost Performance

Apply your knowledge and achieve your best score!

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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