

5

Virginia SOL

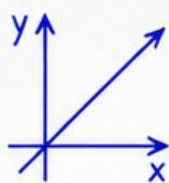
GRADE

7

MATH

PRACTICE TESTS

Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs



$$y = mx + b$$

$$\frac{2}{3} + \frac{1}{6} = \frac{5}{6}$$



$$V = \pi r^2 h$$



5 PRINTED
TESTS



2 ONLINE
TESTS

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



Build
Confidence



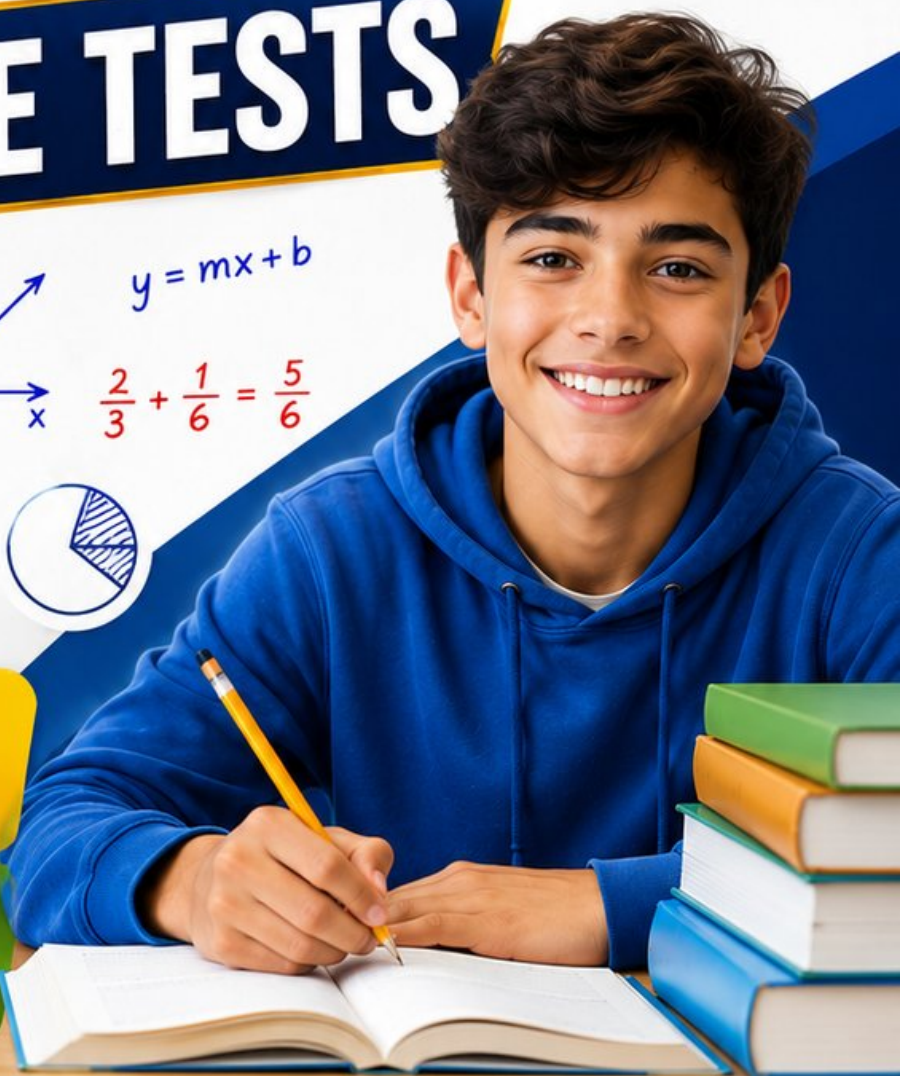
Strengthen
Math Skills



Detailed Answers
& Explanations



Improve Test
Performance



5 Virginia SOL Grade 7 Math Practice Tests

Standards-Focused Review with Practice Tests and Helpful Explanations



Five 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.

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Welcome, Virginia Grade 7 Problem Solver!

Five focused rounds for sharper SOL math thinking

This book gives you five 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 five-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?

Five SOL tests, 200 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 3–5	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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For more practice
& answers

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1) An error analysis: A student calculated the experimental probability of an event as $\frac{\text{total trials}}{\text{favorable outcomes}}$ instead of $\frac{\text{favorable outcomes}}{\text{total trials}}$. If an event occurred 32 times in 200 trials, what error did the student make?

- ☐ A. Found 0.16 instead of 0.32. ☐ C. Found 0.32 instead of 0.16.
☐ B. Found 6.25 instead of 0.16. ☐ D. Made no error.

2) Consider the problem $6 - (-3)$. Which statement best explains why the answer is positive and larger than 6?

- ☐ A. Subtracting always makes the number smaller
☐ B. Subtracting a negative is like removing a debt, which increases the value
☐ C. The rule says to add when you see a negative sign
☐ D. Positive numbers are always larger than negative numbers

3) The table shows distance and time. What is the constant of proportionality in miles per hour?

Time (h)	Distance (mi)
2	120
3	180
5	300



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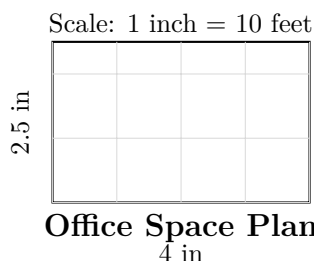
4) A sector measuring 162° represents what percent of the circle?

☐ A. 25%

☐ C. 45%

☐ B. 40%

☐ D. 50%



5)

Based on the scale, what is the perimeter of the office space in feet?

☐ A. 325 feet

☐ C. 6.5 feet

☐ B. 65 feet

☐ D. 130 feet

6) Evaluate $-2 + (-5) + 3 + 8$.

☐ A. -18

☐ C. 4

☐ B. -4

☐ D. 18

7) Evaluate $5a + 3b - 2$ when $a = 2$ and $b = -1$.

☐ A. 15

☐ C. 11

☐ B. 8

☐ D. 5

8) A savings account starts with \$1,500 and grows to \$1,650 after one year. What was the interest rate?

☐ A. 10%

☐ C. 20%

☐ B. 15%

☐ D. 25%



9) The table shows eggs and the cost. Find the missing number of eggs.

Eggs	6	$\frac{3}{4}$	?
Cost (\$)	2.40	0.30	1.20

☐ A. 6 eggs

☐ C. 2 eggs

☐ B. 4 eggs

☐ D. 3 eggs

10) Students sold raffle tickets. The table shows tickets sold and money earned. Which quantity is proportional to the other?

Tickets	10	20	30
Money (\$)	25	50	75

☐ A. Only if they sell more than 40 tickets

☐ C. Yes; $k = 10$

☐ D. Yes; $k = 2.5$

☐ B. No; the amounts are too large



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- 1) A rectangular blueprint shows a hallway as 3.6 cm by 5.4 cm at scale 1 cm : 0.8 m. If the drawing is reduced to 2.4 cm by 3.6 cm, what is the new scale?

- ☐ A. 1 cm : 0.8 m ☐ C. 1 cm : 0.53 m
☐ B. 1 cm : 1.2 m ☐ D. 1 cm : 1.6 m

- 2) Simplify $7a + 2b - 4a + 6b$, then evaluate when $a = 1$ and $b = 1$.

- 3) A survey of 70 people found 28 prefer hiking. Which estimate of the total population preferring hiking is most reasonable if the population is 3500?

- ☐ A. 980 ☐ C. 1400
☐ B. 1200 ☐ D. 1500

- 4) A bike normally costs \$200. During a sale, it is marked down by 35%. What is the sale price?

- ☐ A. \$235 ☐ C. \$65
☐ B. \$165 ☐ D. \$130

- 5) An online store charges a flat \$5.99 for shipping plus \$2.50 per item. Is the total cost proportional to the number of items?

- ☐ A. Yes, the equation is $C = 2.50n + 5.99$ ☐ C. Yes, the constant is 2.50
☐ B. No, because the equation $C = 2.50n + 5.99$ includes both multiplication and addition ☐ D. No, because there is a constant term (\$5.99)



6) A rectangular prism has length 10 cm, width 4 cm, and height 3 cm. What is the surface area?

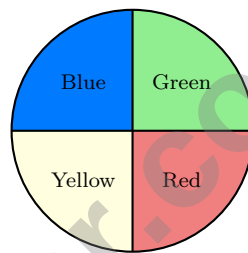
☐ A. 120 cm^2

☐ B. 164 cm^2

☐ C. 180 cm^2

☐ D. 240 cm^2

7) A survey asks: “Don’t you agree that our school lunch program provides terrible food?” What sampling problem does this question have?

☐ A. Convenience sample☐ B. Leading question☐ C. Voluntary response bias☐ D. Insufficient sample size

8)

The spinner above has 4 equal sections. In a simulation with 160 spins, the number of times each section appears is: Blue 52, Yellow 38, Red 41, Green 29. Which section has an estimated probability closest to its theoretical probability?

☐ A. Blue☐ B. Yellow☐ C. Red☐ D. Green

9) Which inequality represents “the difference of a number and 5 is greater than 8”?

☐ A. $5 - x > 8$

☐ B. $x - 5 > 8$

☐ C. $x - 5 < 8$

☐ D. $x + 5 > 8$



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1) A model airplane has a scale of 1 : 72. If a real airplane is 72 meters long, how long is the model?

☐ A. 1 cm

☐ B. 72 cm

☐ C. 1 meter

☐ D. 100 cm

2) Solve: $-2x + 3 < 9$

☐ A. $x > -3$

☐ B. $x < -3$

☐ C. $x < 6$

☐ D. $x \geq 3$

3) A rectangular blueprint shows a hallway that is 2.5 inches by 8 inches at a scale of 1 in : 4 ft. Another blueprint of the same hallway shows it as 5 inches by 16 inches. What is the scale of the second blueprint?

☐ A. 1 in : 2 ft

☐ B. 1 in : 4 ft

☐ C. 1 in : 8 ft

☐ D. 2 in : 1 ft

4) Subtract: $\frac{5}{8} - \frac{7}{8}$

☐ A. $-\frac{1}{4}$

☐ B. $\frac{1}{4}$

☐ C. $-\frac{2}{8}$

☐ D. $\frac{3}{4}$

5) Evaluate $-\frac{7}{8} \div (-\frac{3}{4})$.

☐ A. $-\frac{7}{6}$

☐ B. $-\frac{21}{32}$

☐ C. $\frac{7}{6}$

☐ D. $\frac{21}{32}$



6) Convert $\frac{4}{11}$ to a decimal.

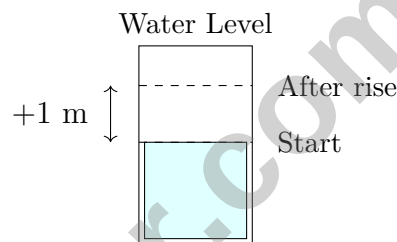
☐ A. 0.4

☐ B. $0.\overline{4}$

☐ C. $0.\overline{36}$

☐ D. 0.40

7) Solve for x : $-2(x - 6) = 8$



8)

A water reservoir is at level -3 m (below ground level). After heavy rain, it rises 1 m. What is the new water level?

☐ A. -4 m

☐ B. -2 m

☐ C. 2 m

☐ D. 4 m

9) The distance from Earth to the Sun is approximately 1.5×10^8 kilometers. Express this in standard form.

☐ A. 15,000,000 km

☐ B. 150,000,000 km

☐ C. 1,500,000,000 km

☐ D. 15,000,000,000 km



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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 B is correct.** (7.SP.6) Correct probability: $\frac{32}{200} = 0.16$. Student's error: $\frac{200}{32} = 6.25$. The student inverted the fraction.
- 2) **Choice B is correct.** (7.NS.1-7.NS.3) When we subtract a negative number, we are undoing a debt or reversing a loss. This is why $6 - (-3) = 6 + 3 = 9$, which is both positive and larger than the original 6. Choice B directly addresses this conceptual reasoning.
- 3) **The correct answer is 60.** (7.RP.1-7.RP.3) Each ratio gives the same unit rate: $120 \div 2 = 60$, $180 \div 3 = 60$, and $300 \div 5 = 60$.
- 4) **Choice C is correct.** (7.SP.1-7.SP.4) $162^\circ \div 360^\circ \times 100 = 45\%$.
- 5) **Choice D is correct.** (7.RP.1-7.RP.3) Actual dimensions: $4 \times 10 = 40$ feet; $2.5 \times 10 = 25$ feet. Perimeter = $2(40 + 25) = 130$ feet.
- 6) **Choice C is correct.** (7.NS.1b) Combine step-by-step: $-2 + (-5) = -7$, then $-7 + 3 = -4$, then $-4 + 8 = 4$. Or group: $(-2 - 5) + (3 + 8) = -7 + 11 = 4$.
- 7) **Choice D is correct.** (7.EE.1-7.EE.2) Substitute: $5(2) + 3(-1) - 2 = 10 - 3 - 2 = 5$.
- 8) **Choice A is correct.** (7.RP.3) Interest rate = $(\$1,650 - \$1,500) \div \$1,500 = \$150 \div \$1,500 = 0.10 = 10\%$.
- 9) **Choice D is correct.** (7.RP.1-7.RP.3) Unit rate from first pair: $\frac{2.40}{6} = 0.40$ \$ per egg. For cost \$1.20: number of eggs = $\frac{1.20}{0.40} = 3$ eggs.
- 10) **Choice D is correct.** (7.RP.1-7.RP.3) Each ratio: $25/10 = 2.5$, $50/20 = 2.5$, $75/30 = 2.5$. The constant ratio is \$2.50 per ticket.
- 11) **Choice D is correct.** (7.RP.1-7.RP.3) The unit-rate point (1, 0.8) shows that $k = 0.8$, so the equation is $y = 0.8x$.
- 12) **Choice C is correct.** (7.RP.3) Increase: $\frac{15}{100} \times 5000 = 750$. New revenue: $5000 + 750 = \$5750$.
- 13) **Choice C is correct.** (7.NS.1-7.NS.3) Evaluate: A: $\frac{2}{4} - \frac{3}{4} = -\frac{1}{4} = -0.25$; B: $-\frac{2}{8} + \frac{1}{8} = -\frac{1}{8} = -0.125$; C: $\frac{3}{8} - \frac{8}{8} = -\frac{5}{8} = -0.625$; D: $-0.5 = -0.5$. The smallest is C at -0.625 .
- 14) **Choice A is correct.** (7.NS.1-7.NS.3) (A) Neg $\div$ neg = pos: $(-18) \div (-9) = 2$. (B) Neg $\div$ pos = neg. (C) Pos $\div$ neg = neg. (D) Neg $\div$ pos = neg.
- 15) **The correct answer is \$60.** (7.RP.3) A 20% discount means the sale price is $100\% - 20\% = 80\%$ of the original. So $48 = \text{original} \times 0.80$, giving original = $48 \div 0.80 = \$60$. Check: $60 \times 0.80 = 48$ ✓
- 16) **Choice A is correct.** (7.NS.2d) Divide $7 \div 12 = 0.58333... = 0.58\bar{3}$. Since $12 = 2^2 \times 3$, the 3 causes repetition.
- 17) **Choice C is correct.** (7.NS.1-7.NS.3) Current temp (at mercury level) is -1°C . Drop of 2°C : $-1 - 2 = -3^\circ\text{C}$.
- 18) **Choice B is correct.** (7.NS.1-7.NS.3) New rate = $200 + 15 - 8 + 12 = 219$ items/hour.
- 19) **Choice B is correct.** (7.NS.1-7.NS.3) $6,800,000,000 = 6.8 \times 10^9$. Decimal moves 9 places left.
- 20) **Choice A is correct.** (7.SP.5-7.SP.8) Since probabilities for all outcomes must sum to 1, and there are only two outcomes, $P(\text{Tails}) = 1 - 0.6 = 0.4$.
- 21) **The correct answer is A, C.** (7.SP.1-7.SP.4) Sample 1: $\frac{36}{120} = 0.30$; Sample 2: $\frac{27}{90} = 0.30$. Both show 30%, so A is true. Equal proportions allow reliable population estimates (C is true). B and D is false (Sample 1 is larger at 120 vs 90).
- 22) **Choice C is correct.** (7.NS.1-7.NS.3) The area of a square is s^2 . If the area is 100, then $s^2 = 100$, so $s = \sqrt{100} = 10$ meters.
- 23) **Choice A is correct.** (7.EE.1-7.EE.2) A 7% increase is $p + 0.07p = p(1 + 0.07) = 1.07p$. Factoring shows the scale factor.
- 24) **The correct answer is \$2500.** (7.RP.3) $500 = P \times 0.05 \times 4 \Rightarrow 500 = 0.2P \Rightarrow P = \2500 .
- 25) **Choice D is correct.** (7.RP.3) Ticket cost = $4 \times 12 = \$48$. Total = $48 + 1.50 = \$49.50$.
- 26) **Choice B is correct.** (7.NS.2) Three groups of -2 : $3 \times (-2) = -6$. The arrows move left 2 units, 3 times, landing on -6 .
- 27) **Choice A is correct.** (7.SP.1-7.SP.4) There are 13 values (odd). Ordered: 72, 75, 78, 78, 81, 83, 85, 86, 89, 90, 92, 94, 97. The 7th value is 85.
- 28) **Choice D is correct.** (7.RP.1-7.RP.3) Distance = speed $\times$ time = $15 \times 2.5 = 37.5$ miles.



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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 5 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 **5** 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:

5 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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