

10 Virginia SOL

GRADE
7
MATH

PRACTICE TESTS

Standards Aligned Problem Solving For Comprehensive Assessment Programs



10 PRINTED TESTS

Realistic practice to build confidence and mastery



2 ONLINE TESTS

Extra practice for continued success



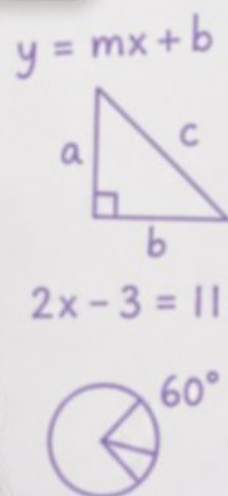
DETAILED ANSWER EXPLANATIONS

Learn with step-by-step solutions



FOCUSED & EFFECTIVE

Target key math skills with purposeful practice



10 PRINTED TESTS
+2 ONLINE TESTS

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

PRACTICE ★ REVIEW ★ SUCCEED

10 Virginia SOL Grade 7 Math Practice Tests

Virginia Grade 7 SOL Practice for historic-route review of proportional thinking, rational numbers, algebra, geometry, and statistics



Ten 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!

Ten focused rounds for sharper Virginia SOL math thinking

This book gives you ten 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 ten-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?

Ten Virginia SOL tests, 400 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.
Test 10	A final Virginia round to show growth across the whole book.
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 circle graph shows a restaurant's revenue: Food Sales 60%, Beverages 25%, Merchandise 10%, Other 5%. The Food Sales sector has a central angle of how many degrees?

- ☐ A. 216 degrees ☐ C. 60 degrees
☐ B. 150 degrees ☐ D. 240 degrees

2)

n	$n - 2$	$3(n - 2)$
3	1	3
4	2	6
5	3	9

If $3(n - 2) = 15$, what is n ?

- ☐ A. $n = 5$ ☐ C. $n = 9$
☐ B. $n = 7$ ☐ D. $n = 10$

- 3) Order these three numbers from smallest to largest: 8.1×10^{-2} , 1.3×10^1 , 5.6×10^{-1} .

- ☐ A. 8.1×10^{-2} , 5.6×10^{-1} , 1.3×10^1 ☐ C. 8.1×10^{-2} , 1.3×10^1 , 5.6×10^{-1}
☐ B. 1.3×10^1 , 5.6×10^{-1} , 8.1×10^{-2} ☐ D. 5.6×10^{-1} , 8.1×10^{-2} , 1.3×10^1

- 4) A student rolls a die once and flips a coin once. They claim the probability of getting a 6 AND heads is $\frac{1}{12}$. Is this correct?

- ☐ A. No; it is $\frac{1}{2}$. ☐ C. No; it is $\frac{1}{8}$.
☐ B. Yes; $\frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$. ☐ D. No; it is $\frac{1}{6} + \frac{1}{2} = \frac{2}{3}$.



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5) A menu offers 4 drinks, 6 main courses, and 3 desserts. How many complete meals can be ordered if you choose one of each?

☐ A. 13☐ C. 72☐ B. 24☐ D. 84

6) A restaurant offers 3 appetizers, 4 entrees, and 2 desserts. How many different meals (appetizer, entree, dessert) are possible?

☐ A. 9☐ C. 24☐ B. 12☐ D. 30

7) A game involves spinning a spinner. The results of 600 spins are shown:

Outcome	Green	Yellow	Purple
Times	240	200	160

If the spinner is spun 1 more time, which outcome has the highest experimental probability of occurring?

☐ A. Green☐ C. Purple☐ B. Yellow☐ D. All are equally likely

8) If a dataset contains 20 values and you place them in a stem-and-leaf plot, what is the median position?

☐ A. Between 10th and 11th values☐ C. The 11th value☐ B. The 10th value☐ D. Between 9th and 10th values

9) A student says the probability of an event is $\frac{2}{3}$ and the probability of its complement is $\frac{1}{3}$. Is this correct?

- ☐ A. Yes, because $\frac{2}{3} + \frac{1}{3} = 1$
☐ D. Cannot tell without more information
- ☐ B. No, the complement should be $\frac{1}{2}$
- ☐ C. No, the complement should be $\frac{3}{3}$

10) A rectangular prism has a volume of 480 m^3 and a base area of 60 m^2 . What is the height in meters?

11) **Four Estimation Attempts**

Attempt	Estimate	Actual	% Error
P	84	100	?
Q	28	32	?
R	66	75	?
S	54	60	?

Which attempt has the largest percent error?

- ☐ A. P (16%)
 ☐ C. R (12%)
- ☐ B. Q (12.5%)
 ☐ D. S (10%)

12) Expand: $0.5(8x + 4)$

- ☐ A. $0.5x + 2$
☐ C. $8x + 2$
- ☐ B. $4x + 2$
☐ D. $4x + 4$



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1) Simplify: $(o^5 \cdot o^3)^2$

☐ A. o^{10}

☐ C. o^{64}

☐ B. o^{16}

☐ D. o^8

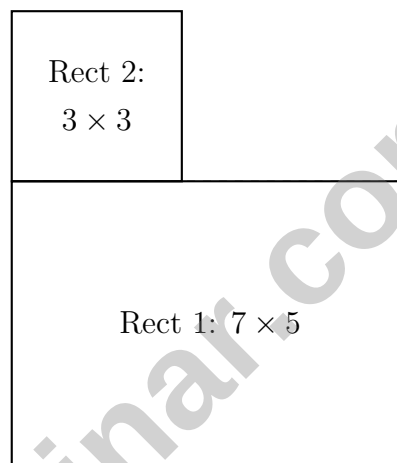
2) A stem-and-leaf plot has stem 3 with leaves 2, 5, 7, 8. Which values does this represent?

☐ A. 23, 35, 37, 38

☐ C. 2, 5, 7, 8

☐ B. 32, 35, 37, 38

☐ D. 3.2, 3.5, 3.7, 3.8



3)

An L-shaped room consists of a large rectangle (7 m $\times$ 5 m) and a small rectangle (3 m $\times$ 3 m) attached at a corner. Which equation correctly finds the total area?

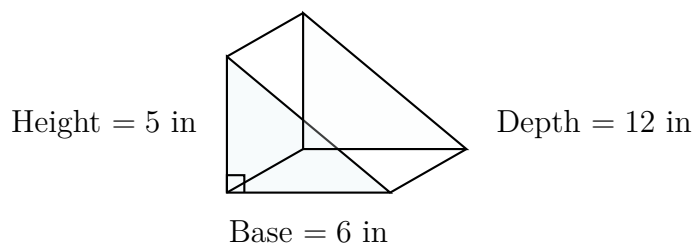
☐ A. $7 \times 5 \times 3 \times 3$

☐ C. $7 \times 5 + 3 \times 3$

☐ B. $(7 + 5) + (3 + 3)$

☐ D. $7 + 3 \times 5 + 3$





4)

A triangular prism has a right-triangular base with legs 6 inches and 5 inches, and the prism has a depth of 12 inches. What is the volume? (Area of a right triangle $= \frac{1}{2} \times \text{leg}_1 \times \text{leg}_2$)

☐ A. 90 in^3

☐ C. 360 in^3

☐ B. 180 in^3

☐ D. 720 in^3

5) Expand: $-6(2 - 3p)$

☐ A. $-12 + 18p$

☐ C. $12 + 18p$

☐ B. $-12 - 18p$

☐ D. $-12 - 3p$

6) Which expression equals $9x - 2y + 3x + 5y$?

☐ A. $12x + 3y$

☐ C. $6x + 3y$

☐ B. $12x + 7y$

☐ D. $12xy$

7) Factor: $7a + 14b$

☐ A. $7(a + 2b)$

☐ C. $14(a + b)$

☐ B. $7a(1 + b)$

☐ D. $a(7 + 14b)$



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- 1) An accountant estimated revenues of \$250,000 but actual revenues were \$280,000. What is the percent error?

☐ A. 10.7% ☐ C. 30%
☐ B. 12% ☐ D. 89.3%

- 2) A circle graph shows the distribution of pets owned by households in a neighborhood. Dogs account for 40% of the 80 households surveyed. How many households own dogs?

☐ A. 20 ☐ C. 48
☐ B. 32 ☐ D. 64

- 3) A garden bed is 8 meters long and 4 meters wide. If you scale all dimensions by a factor of $\frac{1}{2}$, what is the new length?

- 4) In a sample of 140 workers, 35 work the night shift. The company employs 4200 people. How many workers are expected to work the night shift?



- 5) Simplify: $f^7 \cdot f^2 \cdot f^1$
- ☐ A. f^9 ☐ C. f^{14}
☐ B. f^{10} ☐ D. $2f^{10}$
- 6) A printing company charges \$25 for the first 100 copies and \$0.10 for each additional copy. Which equation represents the total cost C for x copies beyond 100?
- ☐ A. $C = 0.10x + 25$ ☐ C. $C = 0.10 + 25x$
☐ B. $C = 25x + 0.10$ ☐ D. $C = 25(x + 0.10)$
- 7) Which of the following is the correct first step to solve $4x - 3 = 13$?
- ☐ A. Subtract 4 from both sides ☐ C. Divide both sides by 4
☐ B. Add 3 to both sides ☐ D. Multiply both sides by 4
- 8) A rectangle has width x and length $2x + 3$. If the perimeter is 36 cm, what is the width?
- ☐ A. $x = 4$ cm ☐ C. $x = 6$ cm
☐ B. $x = 5$ cm ☐ D. $x = 8$ cm
- 9) Solve: $\frac{1}{2}x - 3 = 5$ and check that your answer is reasonable.
- ☐ A. $x = 6$ ☐ C. $x = 16$
☐ B. $x = 10$ ☐ D. $x = 24$
- 10) 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



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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 A is correct.** (7.SP.1-7.SP.4) Central angle = $\frac{60\%}{100\%} \times 360^\circ = 0.60 \times 360^\circ = 216^\circ$.
- 2) **Choice B is correct.** (7.EE.3-7.EE.4) Divide by 3: $n - 2 = 5$. Add 2: $n = 7$.
- 3) **Choice A is correct.** (7.NS.1-7.NS.3) Convert to decimals: 0.081, 0.56, 13. Ordered: $0.081 < 0.56 < 13$.
- 4) **Choice B is correct.** (7.SP.5-7.SP.8) For independent events: $P(6 \text{ AND heads}) = P(6) \times P(\text{heads}) = \frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$.
- 5) **Choice C is correct.** (7.SP.5-7.SP.8) By the counting principle: $4 \times 6 \times 3 = 72$ complete meal combinations.
- 6) **Choice C is correct.** (7.SP.5-7.SP.8) By the Fundamental Counting Principle: $3 \times 4 \times 2 = 24$.
- 7) **Choice A is correct.** (7.SP.6) Green: $\frac{240}{600} = 0.40$; Yellow: $\frac{200}{600} \approx 0.33$; Purple: $\frac{160}{600} \approx 0.27$. Green has the highest probability.
- 8) **Choice A is correct.** (7.SP.1-7.SP.4) For $n = 20$ (even), median is between positions $n/2 = 10$ and $n/2 + 1 = 11$.
- 9) **Choice A is correct.** (7.SP.5-7.SP.8) An event and its complement sum to 1. Here, $\frac{2}{3} + \frac{1}{3} = \frac{3}{3} = 1$, so both probabilities are correct.
- 10) **The correct answer is 8.** (7.G.4-7.G.6) $h = \frac{V}{B} = \frac{480}{60} = 8$ m.
- 11) **Choice A is correct.** (7.RP.3) P: $\frac{|84-100|}{100} \times 100\% = 16\%$. Q: $\frac{|28-32|}{32} \times 100\% = 12.5\%$. R: $\frac{|66-75|}{75} \times 100\% = 12\%$. S: $\frac{|54-60|}{60} \times 100\% = 10\%$. Attempt P has the largest error.
- 12) **Choice B is correct.** (7.EE.1-7.EE.2) Distribute 0.5: $0.5(8x) + 0.5(4) = 4x + 2$.
- 13) **Choice C is correct.** (7.NS.1-7.NS.3) Distance: $|-4 - 5| = |-9| = 9$. Distance is always positive (non-negative).
- 14) **The correct answer is 9.** (7.G.4-7.G.6) $SA = 2\pi r^2 + 2\pi rh \Rightarrow 326.56 = 2(3.14)(16) + 2(3.14)(4)(h) \Rightarrow 326.56 = 100.48 + 25.12h \Rightarrow 226.08 = 25.12h \Rightarrow h = 9$ cm.
- 15) **Choice D is correct.** (7.RP.1-7.RP.3) If the toy is $\frac{1}{10}$ the size, the real car is 10 times larger: $8 \times 10 = 80$ inches.
- 16) **Choice C is correct.** (7.RP.3) $\frac{30}{120} = \frac{1}{4} = 0.25 = 25\%$.
- 17) **Choice D is correct.** (7.RP.3) After discount: $480 \times 0.50 = \$240$. Tax: $0.055 \times 240 = \$13.20$. Final: $240 + 13.20 = \$253.20$.
- 18) **The correct answer is A,B.** (7.G.4-7.G.6) Choice A: Diameter = $2r = 2 \times 6 = 12$ m is correct. Choice B: Area = $3.14 \times 6^2 = 113.04 \text{ m}^2$ is correct. C confuses circumference with area (37.68 m vs m^2). D fails because square area is 36 m^2 , much less than circle's 113.04 m^2 .
- 19) **Choice C is correct.** (7.RP.3) $I = 3000 \times 0.11 \times 2 = \660 . $A = 3000 + 660 = \$3660$.
- 20) **Choice D is correct.** (7.NS.1b) Check each: A: $8 + (-3) = 5$. B: $2 + (-7) = -5$ ✓. C: $-1 + 6 = 5$. D: $-9 + 3 = -6$. Only B equals -5 .
- 21) **Choice B is correct.** (7.EE.1) Like terms with x : $8x$ and $-5x$ give $(8 - 5)x = 3x$. Like terms with y : $3y$ and $-2y$ give $(3 - 2)y = y$. Answer: $3x + y$.
- 22) **Choice A is correct.** (7.EE.1-7.EE.2) Factor out -5 : $-5a - 20b = -5(a + 4b)$.
- 23) **The correct answer is 432.** (7.SP.1-7.SP.4) The sample proportion is $\frac{18}{50}$. Use a proportion to estimate the population: $\frac{18}{50} = \frac{x}{1200}$. Cross-multiply: $50x = 21,600$, so $x = 432$ students. This estimate assumes the random sample is representative of all students.
- 24) **Choice C is correct.** (7.SP.1-7.SP.4) 38% of $200 = 0.38 \times 200 = 76$ employees.
- 25) **Choice D is correct.** (7.EE.1-7.EE.2) Substitute: $\frac{10}{2} + 6 = 5 + 6 = 11$.
- 26) **The correct answer is Class 1.** (7.SP.3) Both classes may have the same median of 30 sit-ups, but the distribution shape matters. Class 1's tight clustering (small range) means less variability and easier group improvement. Class 2's spread (large range) indicates inconsistency within the group.
- 27) **Choice D is correct.** (7.RP.1-7.RP.3) Rate is $\frac{200 \text{ oz}}{4 \text{ sec}} = 50$ ounces per second.
- 28) **Choice D is correct.** (7.RP.1-7.RP.3) Using either marked point: $(2, 1)$ gives $k = 1/2 = 0.5$; $(4, 2)$ gives $k = 2/4 = 0.5$. Constant of proportionality is 0.5 .



Hi, Math Hero!

◇ This full-length book gave you ten complete Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. You showed up for Grade 7 practice again and again. That is what real growth looks like: steady effort, honest review, and a willingness to try. ◇

★ **Remember this:** A math hero is not someone who never misses a question. A math hero learns from the miss and comes back stronger. ★

Hero Habits

- **Courage:** You try problems that are not automatic.
- **Honesty:** You review what needs work.
- **Patience:** You let skills grow over time.
- **Pride:** You recognize the effort you gave.

Grade 7 test-day tip: Save one solved problem you are proud of. Looking back at progress helps motivation stay strong.

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

Jay Daie

Your Math Hero Guide

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes 10 full-length Math practice tests and 2 extra 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:

10 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
- ✓ Fractions & Decimals
- ✓ Percents
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ And More!



2 EXTRA ONLINE TESTS

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



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SUCCEED
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