

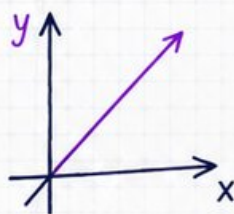
3

Virginia SOL

GRADE
7
MATH

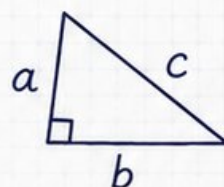
PRACTICE TESTS

- ✓ Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs



$$y = mx + b$$

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



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



3 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



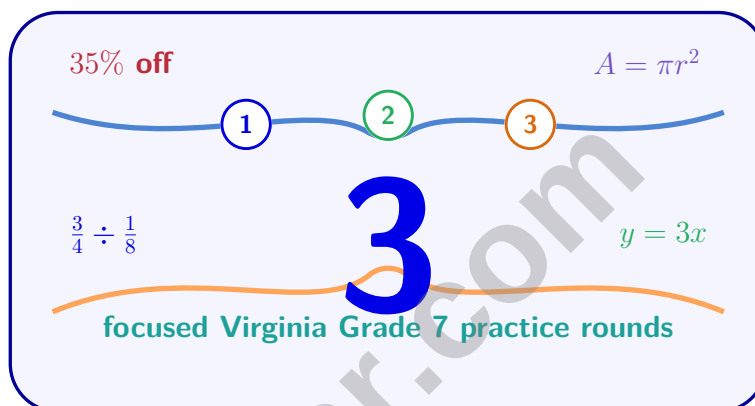
Detailed Answers
& Explanations



Improve Test
Performance

3 Virginia SOL Grade 7 Math Practice Tests

Three Focused Virginia Tests with Keys and Review



Three 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!

Three focused rounds for sharper SOL math thinking

This book gives you three 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 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.

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?

Three SOL 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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For more practice
& answers

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1) Evaluate $5m - 2n$ when $m = -2$ and $n = 4$.

☐ A. -18

☐ C. 10

☐ B. -10

☐ D. 18

2) A recipe calls for 2.5 cups of milk. A cook estimated 2.2 cups. What is the percent error?

☐ A. 14%

☐ C. 10.5%

☐ B. 3%

☐ D. 12%

3) The difference between two integers is -9 . If one integer is 4, what is the other integer? (Hint: difference means subtract.)

4) A cyclist travels $\frac{5}{6}$ mile in $\frac{1}{4}$ hour. Find the cyclist's speed in miles per hour.

5) Expand and simplify: $2(4p - 3) - 1$

☐ A. $6p - 7$

☐ C. $8p - 7$

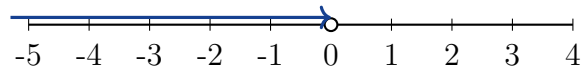
☐ B. $8p - 3$

☐ D. $8p - 6$



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6) What inequality is shown?



☐ A. $x > 0$

☐ C. $x < 0$

☐ B. $x \geq 0$

☐ D. $x \leq 0$

7) A person deposits money into a simple interest account. After the first year, they earn \$50 in interest. What can you predict will happen in the second year if no additional deposits are made?

☐ A. The amount of interest cannot be predicted without knowing the principal

☐ C. They will earn more than \$50 in interest

☐ B. They will earn less than \$50 in interest

☐ D. They will earn \$50 in interest again

8) Which pair of terms are like terms?

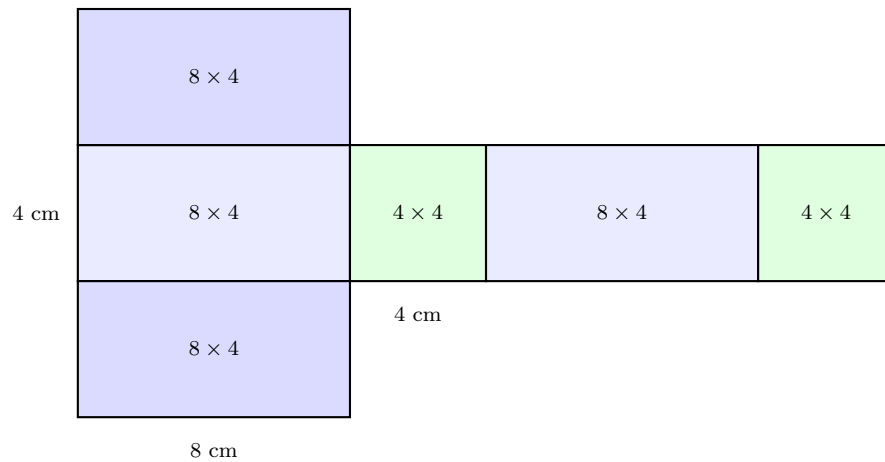
☐ A. $2x$ and $2y$

☐ C. $4x^2$ and $4x$

☐ B. $-5ab$ and $3ab$

☐ D. $6m^3$ and $6m^2$





9)

The net folds into a rectangular prism with dimensions $8\text{ cm} \times 4\text{ cm} \times 4\text{ cm}$. What is its surface area?

☐ A. 128 cm^2
☐ C. 160 cm^2
☐ B. 144 cm^2
☐ D. 192 cm^2

10) A window measures 3 feet wide and 4 feet tall. A scale drawing shows it as 1.5 inches wide. What is the height on the scale drawing?

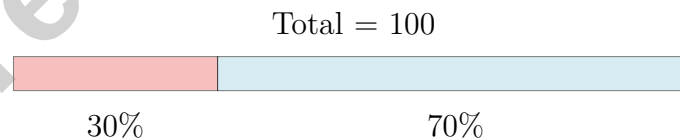
☐ A. 1 inch

☐ C. 3 inches

☐ B. 4 inches

☐ D. 2 inches

11)



The bar model shows 30% and 70% of a total. If the total is 100, how much is 30%?

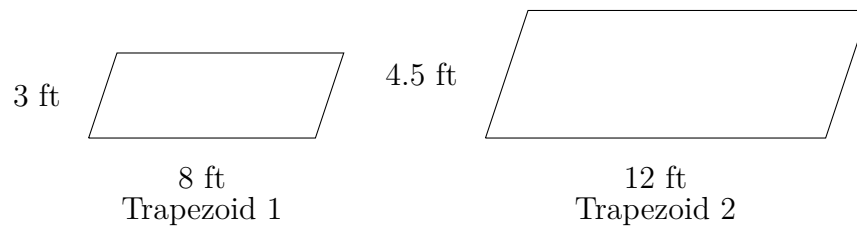
☐ A. 25

☐ C. 35

☐ B. 40

☐ D. 30


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1)

These similar trapezoids have heights of 3 ft and 4.5 ft. If Trapezoid 1 has a base of 8 ft, what is the base of Trapezoid 2?

- ☐ A. 10 ft ☐ C. 12 ft
☐ B. 11 ft ☐ D. 14 ft

2) A scale drawing uses a scale of 5 mm : 1 cm. What is the scale factor?

- ☐ A. 0.5 ☐ C. 2
☐ B. 1 ☐ D. 5

3) A blueprint shows a room measuring 3 cm by 5 cm at a scale of 1 cm : 1 m. What are the actual room dimensions?

- ☐ A. 3 m by 5 m ☐ C. 1 m by 1.67 m
☐ B. 300 cm by 500 cm ☐ D. 6 m by 10 m

4) A square pyramid with base side 8 cm and height 10 cm is sliced perpendicular to its base, passing through the apex and the center of the base. What is the shape of the cross-section?

- ☐ A. Equilateral triangle ☐ C. Right triangle
☐ B. Isosceles triangle ☐ D. Scalene triangle



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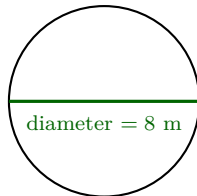
5) A circular mirror has radius $\frac{1}{2}$ meter. What is its circumference? Use $\pi \approx 3.14$.

☐ A. 0.785 m

☐ C. 3.14 m

☐ B. 1.57 m

☐ D. 6.28 m



6)

A circle has a diameter of 8 meters. What is its area? Use $\pi \approx 3.14$.

☐ A. 25.12 m²

☐ C. 100.48 m²

☐ B. 50.24 m²

☐ D. 200.96 m²

7) A researcher compares test-retest reliability of two assessments:

Assessment	Mean Difference	MAD of Differences
Test A	0.5	1.2
Test B	0.8	0.3

Which assessment is more reliable?

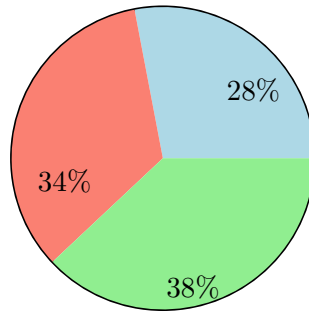
☐ A. Test A (larger MAD means more precision)

☐ C. Both are equally reliable

☐ D. Cannot determine from this data

☐ B. Test B (smaller MAD indicates consistent retest results)





1)

The circle graph shows student lunch preferences at a middle school. Blue is hot lunch (28%), salmon is packed lunch (34%), and green is purchased from vending (38%). If 750 students eat lunch daily, how many buy from vending?

☐ A. 210☐ C. 285☐ B. 255☐ D. 570

2) A classroom has 15 boys and 10 girls. A student is chosen at random. What is $P(\text{girl})$?

☐ A. $\frac{10}{25}$ ☐ C. $\frac{1}{2}$ ☐ B. $\frac{2}{3}$ ☐ D. $\frac{3}{5}$

3) A sales associate earned \$150 in commission on \$2,500 worth of sales. What is the commission rate?

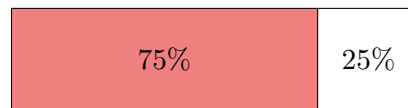
☐ A. 4%☐ C. 6%☐ B. 5%☐ D. 8%

4) A savings account offers 2% annual interest on a balance of \$500. How much interest will be earned in one year?

☐ A. \$5☐ C. \$15☐ B. \$25☐ D. \$10

- 5) An investment earning $r\%$ per year grows from \$400 to \$441 after 2 years (compound interest). What is r ?

- ☐ A. 5% ☐ C. 20.25%
☐ B. 10% ☐ D. 41%



- 6) Original: \$80 New: ?

A bar graph shows that an item has been reduced. The shaded (coral) region represents 75% of the original price of \$80. What is the percent decrease?

- ☐ A. 75% ☐ C. 20%
☐ B. 30% ☐ D. 25%

- 7) A rectangular prism has dimensions 9 in $\times$ 3 in $\times$ 6 in. What is the surface area?

- ☐ A. 54 in² ☐ C. 198 in²
☐ B. 108 in² ☐ D. 324 in²

- 8) A restaurant bill is \$120 before tax and tip. The customer pays 8% sales tax and then adds a 15% tip on the pre-tax bill. What is the total amount paid?

- ☐ A. \$129.60 ☐ C. \$147.60
☐ B. \$139.20 ☐ D. \$148.80

- 9) A baker makes 18 loaves of bread in 3 hours. At this constant rate, how many loaves are made per hour?



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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.EE.1-7.EE.2) Substitute: $5(-2) - 2(4) = -10 - 8 = -18$.
- 2) **Choice D is correct.** (7.RP.3) Percent error = $\frac{|2.2-2.5|}{2.5} \times 100\% = \frac{0.3}{2.5} \times 100\% = 12\%$.
- 3) **The correct answer is 13.** (7.NS.1-7.NS.3) If the difference is $4 - x = -9$, then $x = 4 - (-9) = 4 + 9 = 13$. Check: $4 - 13 = -9$ ✓.
- 4) **The correct answer is 10/3 mph.** (7.RP.1-7.RP.3) Unit rate = $\frac{5/6}{1/4} = \frac{5}{6} \times 4 = \frac{20}{6} = \frac{10}{3} = 3\frac{1}{3}$ mph.
- 5) **Choice C is correct.** (7.EE.1-7.EE.2) Expand: $2(4p) - 2(3) - 1 = 8p - 6 - 1 = 8p - 7$.
- 6) **Choice C is correct.** (7.EE.4b) An open circle at 0 with a left-pointing arrow indicates $x < 0$.
- 7) **Choice D is correct.** (7.RP.3) Simple interest is calculated on the original principal only, not on accumulated interest. If the principal, rate, and one-year time interval stay the same, the account earns the same dollar amount of interest each year: \$50.
- 8) **Choice B is correct.** (7.EE.1) Like terms have the same variable(s) and exponent(s). Both $-5ab$ and $3ab$ have the same variables and exponents.
- 9) **Choice C is correct.** (7.G.4-7.G.6) Use $SA = 2(\ell w + \ell h + wh)$ with $\ell = 8$, $w = 4$, $h = 4$: $SA = 2(8 \cdot 4 + 8 \cdot 4 + 4 \cdot 4) = 2(32 + 32 + 16) = 2(80) = 160 \text{ cm}^2$.
- 10) **Choice D is correct.** (7.RP.1-7.RP.3) Scale factor: $3 \text{ ft}/1.5 \text{ in} = 2 \text{ ft per inch}$. Height: $4 \div 2 = 2$ inches.
- 11) **Choice D is correct.** (7.RP.3) 30% of 100 is $0.30 \times 100 = 30$.
- 12) **Choice D is correct.** (7.RP.3) Correct calculation: tax = $0.07 \times 85 = \$5.95$, final = $85 + 5.95 = \$90.95$. Student's error was treating 7% as the amount \$0.07 instead of computing 7% of the discounted price.
- 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 A is correct.** (7.EE.1-7.EE.2) The GCF of 16, 24, and 8 is 8. Factor: $16a + 24b + 8 = 8(2a + 3b + 1)$.
- 15) **Choice C is correct.** (7.SP.1-7.SP.4) Only people motivated to respond (those with strong opinions) participate, making the sample non-representative of all customers.
- 16) **Choice B is correct.** (7.SP.5-7.SP.8) Sample space: HH, HT, TH, TT (four equally likely outcomes). Successful outcomes (exactly one heads): HT and TH (two outcomes). Probability = $\frac{2}{4} = \frac{1}{2}$.
- 17) **Choice C is correct.** (7.RP.3) Emergency savings = $8\% \times \$48,000 = 0.08 \times 48000 = \$3,840$.
- 18) **Choice A is correct.** (7.EE.4b) Add 3: $1.5x \leq 7.5$. Divide by 1.5: $x \leq 5$.
- 19) **Choice C is correct.** (7.G.1-7.G.5) Adjacent angles on a line sum to 180° : $n = 180 - 88 = 92^\circ$.
- 20) **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%.
- 21) **Choice B is correct.** (7.G.1-7.G.5) Translating (5, 0) by $(-2, 4)$: $(5, 0) + (-2, 4) = (3, 4)$.
- 22) **Choice B is correct.** (7.G.4-7.G.6) The correct volume formula is $V = \pi r^2 h = 3.14 \times 3^2 \times 4 = 3.14 \times 9 \times 4 = 113.04 \text{ m}^3$. The student's incorrect formula gives $2\pi rh = 2(3.14)(3)(4) = 75.36 \text{ m}^3$ (which is the lateral area formula).
- 23) **Choice B is correct.** (7.SP.5-7.SP.8) The bread level splits into 2 branches. Each bread branches into 3 spreads, making the second level have more paths.
- 24) **Choice D is correct.** (7.RP.1-7.RP.3) The price per notebook is $\frac{24}{8} = 3$ dollars. For 5 notebooks: $5 \times 3 = 15$ dollars.
- 25) **Choice C is correct.** (7.RP.1-7.RP.3) Proportional relationships have the form $y = kx$ (passing through the origin). Option C has a +2 term, so it does not pass through (0, 0) and is not proportional.
- 26) **Choice D is correct.** (7.RP.3) Office workers: $\frac{12}{100} \times 250 = 30$. Remote workers: $250 - 30 = 220$.
- 27) **Choice B is correct.** (7.NS.1-7.NS.3) Start at 0. Descend (go down) 3.5 m: $0 - 3.5 = -3.5$ m. Ascend (go up) 1.2 m: $-3.5 + 1.2 = -2.3$ m.
- 28) **Choice B is correct.** (7.NS.1-7.NS.3) $\frac{2}{9} \div \frac{4}{3} = \frac{2}{9} \times \frac{3}{4} = \frac{6}{36} = \frac{1}{6}$.



Hi, Future Algebra Thinker!

◇ Grade 7 practice prepares you for the next math steps. Expressions, equations, proportional relationships, and graphs are all part of that bridge. This short, concentrated book gave you three focused Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence.

◇

★ **Remember this:** Every time you solved for an unknown or explained a relationship, you were building skills that future math will use again. ★

Bridge Skills

- **Use Variables:** Let letters stand for unknown values.
- **Balance Equations:** Keep both sides fair.
- **Read Graphs:** Connect points to meaning.
- **Compare Rates:** Look for constant relationships.

Grade 7 test-day tip: When you see a variable, say what it represents. That keeps algebra connected to the problem.

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

Jay Daie

Your Algebra Bridge Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **3** 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.



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2 Online Practice Tests

 Detailed Answers & Explanations



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Develop key math concepts and problem solving abilities.



Detailed Answers & Explanations

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



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- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Geometry
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- ✓ Data Analysis
- ✓ Measurement & Conversions
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