

4

West Virginia

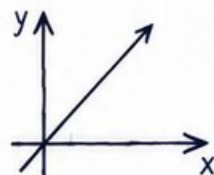
WVGSA

GRADE  
7  
MATH

## PRACTICE TESTS

Standards Aligned  
Problem Solving  
For Comprehensive  
Assessment Programs

$$y = mx + b$$



$$\frac{2x}{3} + \frac{x}{6} = 2$$



$$V = \frac{1}{3} \pi r^2 h$$



4 PRINTED TESTS



2 ONLINE TESTS



USE THESE TWO  
ADDITIONAL ONLINE  
PRACTICE TESTS

FOR EXTRA REVIEW AFTER  
THE PRINTED TESTS  
IN THIS BOOK.



Build  
Confidence



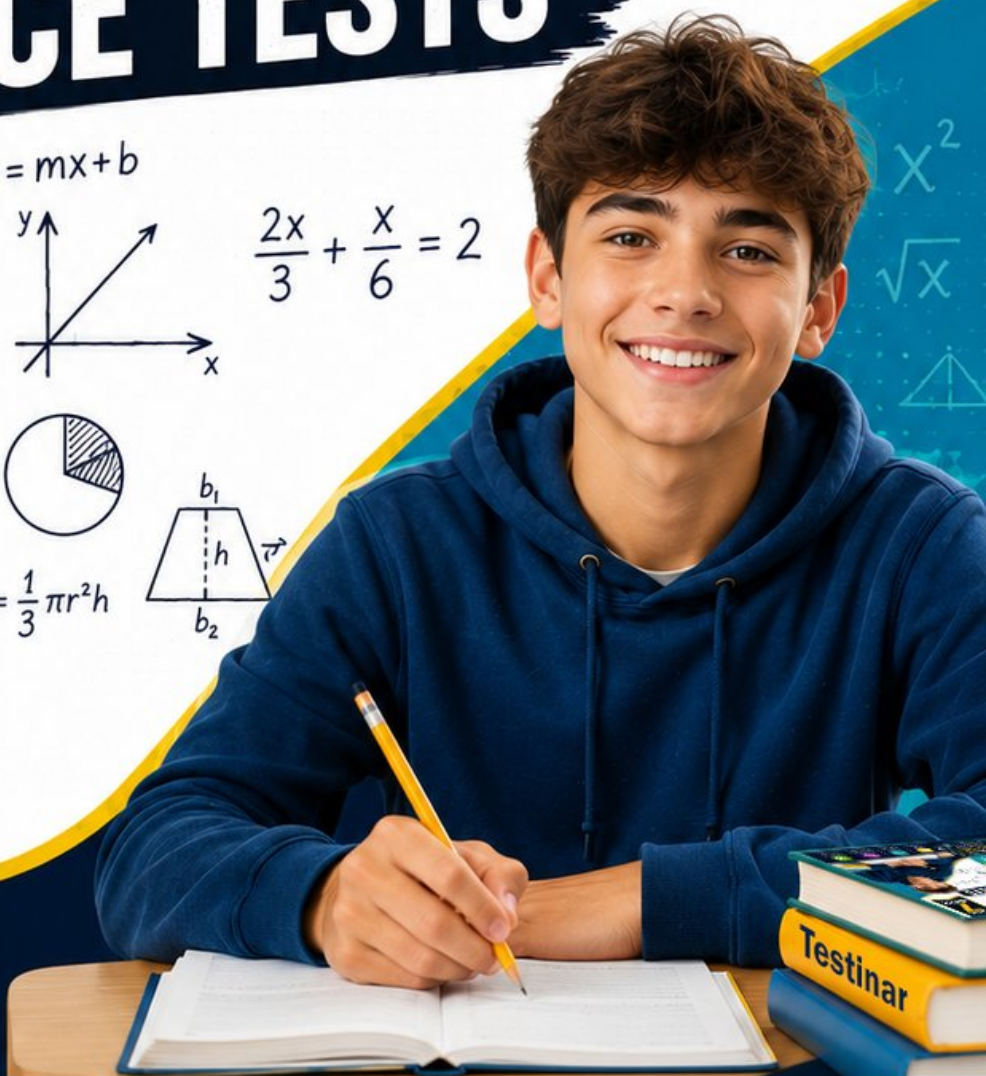
Strengthen  
Math Skills



Detailed Answers  
& Explanations



Improve Test  
Performance



# 4 West Virginia WVGSA Grade 7 Math Practice Tests

*Four West Virginia Review Rounds for Stronger Grade 7 Reasoning*



Four complete 40-question Grade 7 WVGSA 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, West Virginia Grade 7 Problem Solver!

Four focused rounds for sharper WVGSA math thinking

This book gives you four full Grade 7 WVGSA 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 West 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 four-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.

**West 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?

Four WVGSA tests, 160 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 3–4    | 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) A recipe uses 2.25 cups of sugar. If the recipe is doubled, how much sugar is needed?

☐ A. 2.25 cups

☐ C. 4.5 cups

☐ B. 3.25 cups

☐ D. 6.75 cups

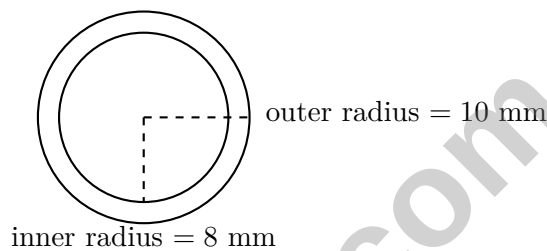
2) If  $\frac{x}{6} = \frac{12}{8}$ , what is the value of  $x$ ?

☐ A. 4

☐ C. 9

☐ B. 8

☐ D. 16



3)

A ring has outer diameter 20 mm and inner diameter 16 mm. What is the difference between the outer and inner circumferences? Use  $\pi \approx 3.14$ .

☐ A. 4 mm

☐ C. 25.12 mm

☐ B. 12.56 mm

☐ D. 50.24 mm

4) A sector with central angle  $120^\circ$  has an area of 37.68 square centimeters. What is the radius of the circle? (Use sector area =  $\frac{\text{angle}}{360^\circ} \times \pi r^2$  and  $\pi \approx 3.14$ .)

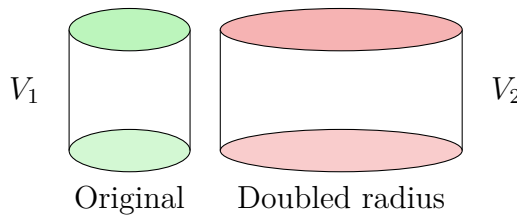
☐ A. 8 cm

☐ C. 6 cm

☐ B. 9 cm

☐ D. 12 cm





5)

If a cylinder's radius is doubled while the height remains the same, the volume increases by a factor of:

☐ A. 2☐ C. 8☐ B. 4☐ D. 16

6) A sports league compares two seasons' scoring:

| Season   | Q1 | Q3 | Median |
|----------|----|----|--------|
| Season 1 | 60 | 85 | 72     |
| Season 2 | 65 | 88 | 76     |

Which season shows overall improvement?

☐ A. Season 1 (lower scores are better for defense)☐ C. Both seasons are identical☐ B. Season 2 (higher median, Q1, and Q3)☐ D. Cannot determine without the means

7) A histogram shows the ages of 60 people in a fitness class: 10–20 (6), 20–30 (18), 30–40 (24), 40–50 (12). A gym owner wants to market the class to “young adults.” If “young adults” means ages 20–40, what percentage of the class fits that description?

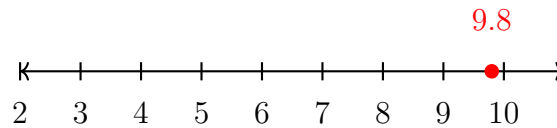
☐ A. 70%☐ C. 30%☐ B. 42%☐ D. 90%

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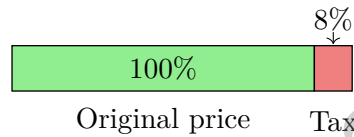
- 8) A dot plot shows the distance (in kilometers) traveled by two cycling groups in one afternoon. Group 1: 10, 12, 12, 13, 13, 14 km; Group 2: 5, 8, 15, 18, 22, 25 km. Which group had a more predictable cycling distance?
- ☐ A. Group 1 (range 4 km, clustered 12–13)      ☐ C. Both groups have the same predictability
- ☐ B. Group 2 (wider range, more adventure)      ☐ D. Group 2 (higher average distance)
- 9) A bag contains only red and blue marbles. A marble is drawn 150 times with replacement. Red appears 84 times. Based on this experiment, which is the best estimate of the probability of drawing a red marble on the next draw?
- ☐ A. 0.44      ☐ C. 0.56
- ☐ B. 0.50      ☐ D. 0.84
- 10) A fair six-sided die is rolled twice. What is the probability of rolling a 3 on the first roll AND a 5 on the second roll?
- ☐ A.  $\frac{1}{6}$       ☐ C.  $\frac{1}{36}$
- ☐ B.  $\frac{1}{12}$       ☐ D.  $\frac{1}{18}$
- 11) Raw data: 55, 52, 58, 51, 56, 53, 59. After creating a stem-and-leaf plot and ordering, what is the value at the second position?
- ☐ A. 51      ☐ C. 53
- ☐ B. 52      ☐ D. 55



- 1) Which point represents  $9.8 - 3.2$  on the number line below?



- ☐ A. 6.6                      ☐ C. 6.5  
☐ B. 7.6                      ☐ D. 13.0
- 2) Using the percent bar above, which expression represents the total cost (original price  $p$  plus tax)?



- ☐ A.  $1.08p$                       ☐ C.  $p + 0.08$   
☐ B.  $0.92p$                       ☐ D.  $p - 0.08p$
- 3) What is  $0 \times (-9)$ ?
- ☐ A.  $-9$                       ☐ C.  $9$   
☐ B.  $0$                       ☐ D.  $-1$
- 4) A store sells 6 notebooks for \$15. What is the unit price (cost per notebook)?
- ☐ A. \$1.50                      ☐ C. \$4.00  
☐ B. \$5.00                      ☐ D. \$2.50



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5) An equilateral triangle has all sides of length 7 cm. How many distinct triangles with these side lengths exist?

☐ A. 0

☐ C. 2

☐ B. 1

☐ D. Infinitely many

6) Temperature drops 20 degrees from 10 degrees. Express the drop (change) as a signed number.

☐ A. 20 (ignores the direction of change)

☐ D. -20 (correct; drop is negative change)

☐ B. 30 (adds instead of subtracts)

☐ C. -10 (starting temperature)

7) Simplify:  $2p^2 + 3p + 4p^2 + 2p$

☐ A.  $11p^3$

☐ C.  $6p + 8p^2$

☐ B.  $6p^2 + 5p$

☐ D.  $9p^2$

8) A simulation of drawing cards with replacement produces 60 trials. If outcome A appears 15 times and outcome B appears 45 times, what is the experimental error compared to the theoretical probability if outcome A has theoretical probability 0.20?

☐ A. 0.05

☐ C. 0.15

☐ B. 0.10

☐ D. 0.25

9) Find the GCF of  $8b$  and  $20b$ .

☐ A.  $4b$

☐ C.  $20b$

☐ B.  $8b$

☐ D.  $2b$



1) In a class of 25 students, 15 play a sport. What percent of the students play a sport?

☐ A. 25%

☐ C. 50%

☐ B. 40%

☐ D. 60%

2) What is the side length of a square with area 169 square units?

3) A histogram shows the price ranges for two car models. Model S: prices concentrated around \$25,000. Model T: prices spread from \$18,000 to \$32,000 with peak at \$24,000. Which model is easier to budget for?

☐ A. Model S (consistent pricing around \$25,000)

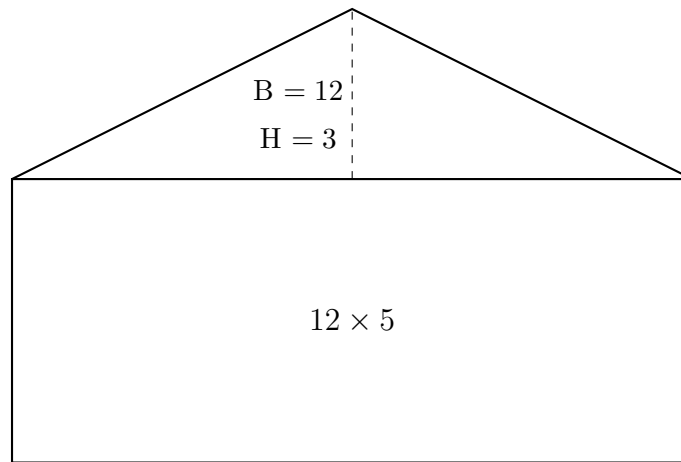
☐ C. Both models have identical pricing

☐ B. Model T (wider range means more options)

☐ D. Model T (cheaper at lower end)



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4)

A trapezoid-shaped roof can be split into a rectangle (12 m base, 5 m height) and a triangle (12 m base, 3 m height). What is the total roof area?

☐ A.  $36 \text{ m}^2$ 
☐ C.  $78 \text{ m}^2$ 
☐ B.  $60 \text{ m}^2$ 
☐ D.  $96 \text{ m}^2$ 

5) A triangular prism has a right-triangular base with legs 8 m and 9 m, and the prism has a depth of 5 m. What is the volume?

☐ A.  $90 \text{ m}^3$ 
☐ C.  $180 \text{ m}^3$ 
☐ B.  $108 \text{ m}^3$ 
☐ D.  $360 \text{ m}^3$ 

6) A sector of a circle is best described as:

☐ A. A line through the circle

☐ C. A chord and an arc

☐ B. A pie-shaped region bounded by two radii and an arc

☐ D. Half of a circle


**West Virginia WVGSA 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 West Virginia WVGSA practice test.**



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## Practice Test Answers and Explanations

### Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (7.EE.3-7.EE.4) Doubled amount =  $2 \times 2.25 = 4.5$  cups.
- 2) **Choice C is correct.** (7.G.1-7.G.5) Cross-multiply:  $8x = 12 \times 6 = 72$ , so  $x = \frac{72}{8} = 9$ .
- 3) **Choice B is correct.** (7.G.4-7.G.6) Outer:  $C_{\text{out}} = \pi d = 3.14 \times 20 = 62.8$  mm. Inner:  $C_{\text{in}} = \pi d = 3.14 \times 16 = 50.24$  mm. Difference =  $62.8 - 50.24 = 12.56$  mm.
- 4) **Choice C is correct.** (7.G.4-7.G.6)  $37.68 = \frac{120^\circ}{360^\circ} \times 3.14 \times r^2 \Rightarrow 37.68 = \frac{1}{3} \times 3.14 \times r^2 \Rightarrow 113.04 = 3.14 \times r^2 \Rightarrow r^2 = 36 \Rightarrow r = 6$  cm.
- 5) **Choice B is correct.** (7.G.4-7.G.6) Original:  $V_1 = \pi r^2 h$ . New:  $V_2 = \pi(2r)^2 h = 4\pi r^2 h = 4V_1$ .
- 6) **Choice B is correct.** (7.SP.1-7.SP.4) Season 2 has higher Q1 (65 vs. 60), median (76 vs. 72), and Q3 (88 vs. 85). The entire distribution shifted higher, with consistent spacing (IQR 23 for both), indicating uniform improvement.
- 7) **Choice A is correct.** (7.SP.1-7.SP.4) Ages 20–40 include:  $18 + 24 = 42$  people out of 60. Percentage =  $\frac{42}{60} = 0.70 = 70\%$ .
- 8) **Choice A is correct.** (7.SP.3) Group 1's data clusters tightly around 12–13 km with a range of 4 km. Group 2 spreads from 5 to 25 km (range 20 km), making it unpredictable. Predictability correlates with small spread.
- 9) **Choice C is correct.** (7.SP.6) Experimental probability =  $\frac{84}{150} = 0.56$ . The relative frequency of drawing red guides our prediction for future draws.
- 10) **Choice C is correct.** (7.SP.5-7.SP.8)  $P(3) \cdot P(5) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$  for independent events.
- 11) **Choice B is correct.** (7.SP.1-7.SP.4) Ordered: 51, 52, 53, 55, 56, 58, 59. The 2nd value is 52.
- 12) **Choice C is correct.** (7.G.4-7.G.6) Rectangle:  $10 \times 8 = 80$  in<sup>2</sup>. Semicircle (radius 5):  $\frac{1}{2} \times 3.14 \times 25 = 39.25$  in<sup>2</sup>. Total:  $80 + 39.25 = 119.25$  in<sup>2</sup>.
- 13) **Choice C is correct.** (7.G.4-7.G.6) Concentric circles share the same center.  $M$  is at the center of both circles.
- 14) **Choice C is correct.** (7.G.1-7.G.5) With one side and one angle, we have insufficient information. Adding a second side gives SAS; adding a second angle gives ASA. Either approach uniquely determines the triangle.
- 15) **The correct answer is 55.** (7.NS.1-7.NS.3) To cancel out the loss of  $-55$ , you add its opposite, which is  $+55$ . Then  $-55 + 55 = 0$  (break even).
- 16) **Choice D is correct.** (7.SP.5-7.SP.8)  $\frac{3}{5} = 0.6 = 60\%$ . Only 65% is different.
- 17) **Choice C is correct.** (7.SP.1-7.SP.4)  $\frac{84}{200} = \frac{x}{50000}$ . Reduce:  $\frac{21}{50} = \frac{x}{50000} \Rightarrow x = 21000$ .
- 18) **The correct answer is  $\frac{2}{3}$ .** (7.NS.2)  $-\frac{3}{4} \times (-\frac{8}{9}) = \frac{3 \times 8}{4 \times 9} = \frac{24}{36} = \frac{2}{3}$ . Negative times negative is positive.
- 19) **Choice C is correct.** (7.NS.1-7.NS.3) The change is: final – initial =  $-125 - (-50) = -125 + 50 = -75$  meters. The negative sign indicates she descended 75 meters deeper.
- 20) **The correct answer is A,D.** (7.RP.1-7.RP.3) A and D are unit rates because each gives a price per single unit of weight. Option B is a distance, and option C is a total count.
- 21) **Choice D is correct.** (7.RP.1-7.RP.3) Multiply each dimension by the scale factor:  $3 \times 8 = 24$  feet and  $2.5 \times 8 = 20$  feet.
- 22) **Choice D is correct.** (7.RP.3) The discount is 40% of \$80:  $0.40 \times 80 = 32$  dollars.
- 23) **Choice C is correct.** (7.SP.1-7.SP.4) 31% of 400 =  $0.31 \times 400 = 124$  pies.
- 24) **Choice D is correct.** (7.RP.1-7.RP.3) Age and height do not have constant ratio (e.g., doubling age doesn't double height). Options B, C, D all have  $y = kx$  form.
- 25) **Choice D is correct.** (7.RP.1-7.RP.3) Rate is  $\frac{3 \text{ miles}}{30 \text{ min}} = 0.1$  miles per minute.
- 26) **The correct answer is \$24.** (7.EE.1-7.EE.2) A 50% markup adds 50% to the cost: selling price =  $c + 0.5c = 1.5c$ . With  $c = 16$ :  $1.5(16) = 24$ . The selling price is \$24.
- 27) **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.
- 28) **Choice D is correct.** (7.RP.1-7.RP.3)  $\frac{3}{5}$  pages/min  $\times 15$  min =  $\frac{3}{5} \times 15 = \frac{45}{5} = 9$  pages.



**You Are Building Test Stamina**

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**Hi, Stamina Builder!**

◇ This carefully paced book gave you four steady Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Completing practice tests builds more than math knowledge. It builds the focus needed to think clearly for a long stretch. ◇

★ **Remember this:** That stamina matters. On real test day, calm pacing can be just as important as remembering a formula. ★

**Stamina Skills**

- **Breathe:** Reset before a difficult page.
- **Pace:** Do not spend too long in one place.
- **Return:** Come back to skipped questions with fresh eyes.
- **Finish Strong:** Use the last minutes to check.

**Grade 7 test-day tip:** Practice a simple reset: pause, breathe, reread, then choose your next step.

If you want to share something or ask a question, please email me at [jay@testinar.com](mailto:jay@testinar.com).

**Jay Daie**

Your Test-Stamina Coach

# PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **4** full-length Math practice tests and **2** online tests to help Grade **7** students build confidence, strengthen skills, and excel on standardized assessments.

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