

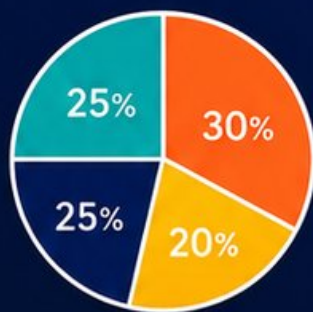
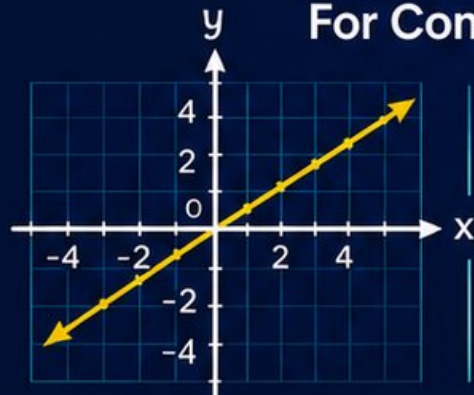
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Wyoming
WY TOPP

GRADE 8

MATH

PRACTICE TESTS

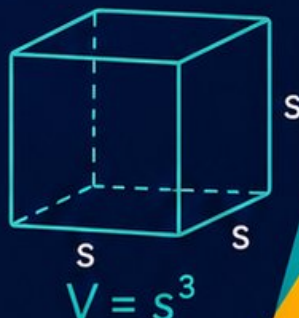
Standards Aligned Problem Solving
For Comprehensive Assessment Programs

$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$

4 PRINTED
TESTS2 ONLINE
TESTSUse these **two additional online practice tests**
for extra review after the printed tests in this book.

4 Wyoming WY TOPP Grade 8 Math Practice Tests

Four Grade 8 WY TOPP Rounds with Keys, Review, and Explanations



Four complete 40-question Grade 8 WY TOPP practice rounds with real numbers, exponents, scientific notation, equations, functions, transformations, geometry, data analysis, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Wyoming Grade 8 Problem Solver!

Four focused rounds for sharper WY TOPP math thinking

This book gives you four full Grade 8 WY TOPP math practice tests. Each round is built to help you recognize structure, reason with real numbers and exponents, analyze linear relationships, connect equations with graphs, and explain your thinking with care.

Your Wyoming 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 8 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 an exponent rule, equation, graph, transformation, diagram, 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.

Wyoming 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 WY TOPP tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.

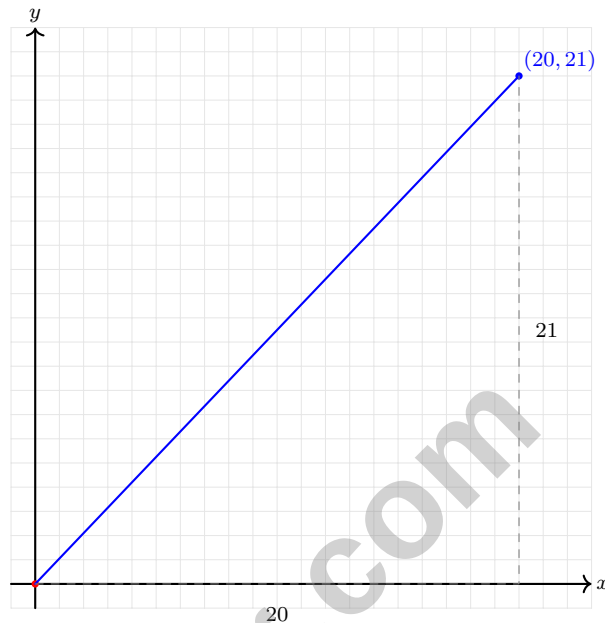


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- 1) A surveyor measures a plot of land with one corner at $(0, 0)$ and another at $(20, 21)$. What is the distance between these two corners?



- ☐ A. 41
☐ B. 29
☐ C. $\sqrt{800}$
☐ D. 1
- 2) A piggy bank holds 25 coins consisting of nickels (5¢) and dimes (10¢). The total value is \$1.70. How many nickels are in the bank?

- ☐ A. 10
☐ B. 16
☐ C. 12
☐ D. 8

3)

Value	4	8	12
Freq.	2	3	5

Frequency table: mean = 9.2. Calculate MAD.

- ☐ A. 2.0 (forgot to weight by frequency)
☐ B. 2.8
☐ C. 3.4 (used unweighted average of deviations)
☐ D. 4.2 (summed deviations without dividing by n)



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4) A student arranges 5 cards in a line. The first card can be any of the 5. The second can be any of the remaining, and so on. How many different arrangements are possible?

☐ A. $5^5 = 3,125$

☐ C. $5 \times 4 \times 3 \times 2 \times 1 = 120$

☐ B. $5 + 4 + 3 + 2 + 1 = 15$

☐ D. $\binom{5}{5} = 1$

5) When sketching a line of best fit by eye, the line should:

☐ A. Pass through every single point

☐ D. Have approximately equal numbers of points above and below it

☐ B. Have the steepest possible slope

☐ C. Avoid all outliers completely

6) Which pair of figures is NOT similar?

☐ A. Two circles with radii 3 and 6

☐ C. A rectangle 2×4 and a rectangle 3×6
☐ B. A 3–4–5 triangle and a 6–8–10 triangle

☐ D. A square 5×5 and a rectangle 5×10

7) The table shows values of function p :

x	-2	0	2	4
$p(x)$	3	7	11	15

If the pattern continues, what is $p(6)$?

☐ A. 17

☐ C. 20

☐ B. 19

☐ D. 22


- 8) Which shows an error in classification?
- ☐ A. $\sqrt{36} = 6$ is classified as rational ☐ C. $0.\overline{27}$ is classified as irrational
- ☐ B. π is classified as irrational ☐ D. $\sqrt{50}$ is classified as irrational
- 9) Convert $0.\overline{7}$ to a fraction.
- ☐ A. $\frac{1}{9}$ ☐ C. $\frac{7}{99}$
- ☐ B. $\frac{7}{10}$ ☐ D. $\frac{7}{9}$
- 10) Which interval contains $2 + \sqrt{3}$?
- ☐ A. Between 2 and 3 ☐ C. Between 4 and 5
- ☐ B. Greater than 5 ☐ D. Between 3 and 4
- 11) Sarah wants to buy a car for \$15,000. She can pay cash or finance it at 7% APR over 5 years. What is the total finance cost (interest only)?
- ☐ A. \$1,050 ☐ C. \$5,250
- ☐ B. \$2,100 ☐ D. \$10,500
- 12) Which is equivalent to 8.2×10^{-2} ?
- ☐ A. 820 ☐ C. 0.82
- ☐ B. 82 ☐ D. 0.082
- 13) A cubic metal box has an edge length of 6 cm. What is the surface area that needs to be painted?
- ☐ A. 36 cm^2 ☐ C. 144 cm^2
- ☐ B. 72 cm^2 ☐ D. 216 cm^2



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1) In triangle PQR , angle $P = (4x)^\circ$, angle $Q = (2x + 10)^\circ$, and angle $R = (3x - 10)^\circ$. Find angle P .

☐ A. 40° ☐ C. 80° ☐ B. 60° ☐ D. 100°

2) A ladder leans against a wall. The slope of the ladder line is undefined. What does this indicate?

☐ A. The ladder is horizontal☐ C. The ladder is at a 45° angle☐ B. The ladder is on the ground☐ D. The ladder is vertical

3) A student uses elimination to solve: $3x + 2y = 16$ and $5x - 2y = 24$. They add the equations to get $8x = 40$, so $x = 5$. Then they substitute to find $y = 0.5$. Is this correct?

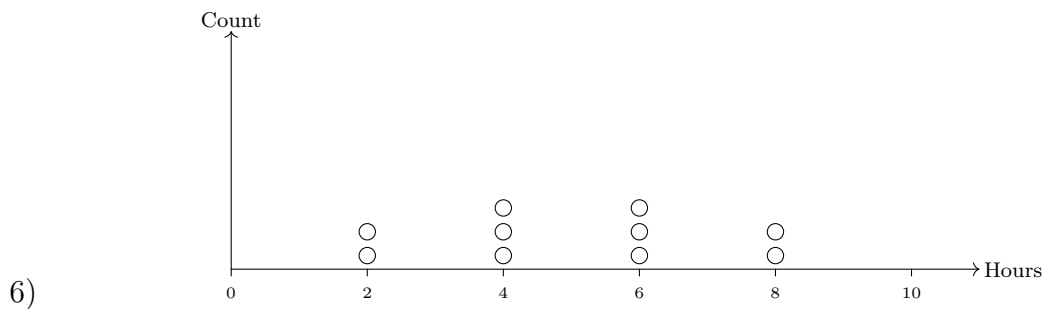
☐ A. No, adding eliminates x , not y .☐ C. No, the system has no solution.☐ B. No, the substitution is wrong.☐ D. Yes, the solution is correct.

4) What is the distance between the points $(1, 2)$ and $(4, 6)$?

☐ A. 5☐ C. $\sqrt{7}$ ☐ B. 7☐ D. $\sqrt{26}$

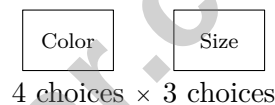
5) What is the domain of the relation $\{(1, 2), (3, 4), (5, 6), (7, 8)\}$?

☐ A. $\{2, 4, 6, 8\}$ ☐ C. $\{1, 2, 3, 4, 5, 6, 7, 8\}$ ☐ B. $\{1, 3, 5, 7\}$ ☐ D. $\{3, 6, 9, 12\}$ 



Study hours: 2, 2, 4, 4, 4, 6, 6, 6, 8, 8 (mean = 5.2). Calculate MAD.

- ☐ A. 1.76
☐ B. 2.0 (used range $\div 5$ instead of sum of deviations $\div n$)
☐ C. 2.6 (divided sum of deviations by 8 instead of 10)
☐ D. 3.2 (used largest deviation only)
- 7) A store sells T-shirts in 4 colors and 3 sizes. The diagram shows one color choice and one size choice. How many different T-shirt options are there?

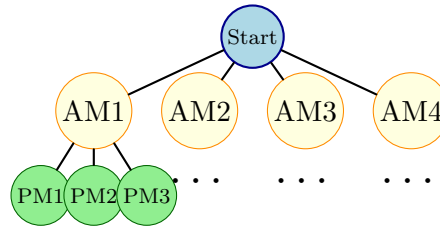


- ☐ A. $4 + 3 = 7$
☐ B. $4 \times 3 = 12$
☐ C. $3^4 = 81$
☐ D. $4 - 3 = 1$
- 8) A residual plot shows the residuals for a trend line fit to a data set. What would a residual plot with no clear pattern indicate?
- ☐ A. There are no residuals
☐ B. The trend line is a good fit
☐ C. The data is nonlinear
☐ D. The trend line is a poor fit



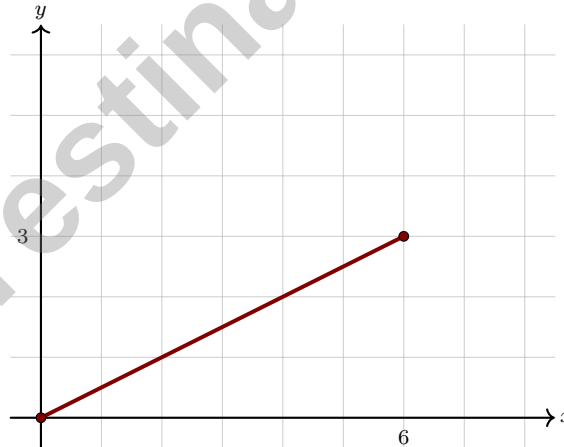
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- 1) A student chooses a morning task (4 options) and an afternoon task (3 options). A partial tree diagram is drawn. How many final outcome branches are there?



- ☐ A. $4 + 3 = 7$
☐ C. $4^3 = 64$
☐ B. $4 \times 3 = 12$
☐ D. $3^4 = 81$
- 2) Solve the system using elimination:
$$\begin{cases} 5x + 2y = 16 \\ 3x - 2y = 0 \end{cases}$$

- ☐ A. $(2, 3)$
☐ C. $(3, \frac{1}{2})$
☐ B. $(\frac{8}{5}, \frac{12}{5})$
☐ D. $(0, 8)$



3)

What is the unit rate shown in the graph?

- ☐ A. 3 units of y per unit of x
☐ C. $\frac{1}{2}$ unit of y per unit of x
☐ B. 2 units of y per unit of x
☐ D. 6 units of y per unit of x



4) Which of the following relations is a function?

☐ A. $\{(1, 2), (1, 3), (2, 4)\}$

☐ C. $\{(2, 5), (2, 6), (3, 7)\}$

☐ B. $\{(1, 2), (2, 3), (3, 4)\}$

☐ D. $\{(4, 1), (4, 2), (4, 3)\}$

5) Which scenario describes a negative slope?

☐ A. Population increases each year

☐ C. Your bank account grows with deposits

☐ B. Temperature increases over time

☐ D. Water drains from a tank over time

6) Maria is currently 4 years older than her sister Emma. In 3 years, Maria will be twice Emma's age. How old is Emma now?

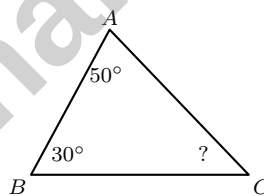
☐ A. 1

☐ C. 3

☐ B. 2

☐ D. 5

7) In triangle ABC , angle $BAC = 50^\circ$ and angle $ABC = 30^\circ$. What is angle ACB ?



☐ A. 20°

☐ C. 80°

☐ B. 50°

☐ D. 100°

8) Which set of side lengths does NOT form a right triangle?

☐ A. 9, 12, 15

☐ C. 7, 9, 11

☐ B. 8, 6, 10

☐ D. 20, 21, 29



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Wyoming WY TOPP Grade 8 Practice Test Answer Keys**How to use this section with a Grade 8 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 Wyoming WY TOPP practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice B is correct.** (8.G.H.8) $d = \sqrt{20^2 + 21^2} = \sqrt{400 + 441} = \sqrt{841} = 29$. (This is a 20-21-29 Pythagorean triple.)
- 2) **Choice C is correct.** (8.EE.D.8C) Let n = nickels, d = dimes. Then $n + d = 25$ and $0.05n + 0.10d = 1.70$. From the first equation, $d = 25 - n$. Substituting: $0.05n + 0.10(25 - n) = 1.70$, so $0.05n + 2.5 - 0.10n = 1.70$, giving $-0.05n = -0.8$, so $n = 12$.
- 3) **Choice B is correct.** (8.G.H.8) Expanded data: 4, 4, 8, 8, 8, 12, 12, 12, 12, 12. The mean is 9.2. Deviations: $|4 - 9.2| = 5.2$ (twice), $|8 - 9.2| = 1.2$ (three times), $|12 - 9.2| = 2.8$ (five times). Sum = $10.4 + 3.6 + 14 = 28$. $MAD = 28/10 = 2.8$.
- 4) **Choice C is correct.** (8.NS.A.1C) Arrange all 5 cards in sequence: $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$ arrangements.
- 5) **Choice D is correct.** (8.SP.J.2) A good trend line balances points on both sides. This balance minimizes residuals overall and captures the true trend, even if the line passes through no individual points.
- 6) **Choice D is correct.** (8.G.G.4) The square has aspect ratio 1 : 1 while the rectangle has aspect ratio 1 : 2. Different aspect ratios mean they are not similar.
- 7) **Choice B is correct.** (8.F.F.4) The pattern shows outputs increase by 4 for every 2-unit increase in x . From $p(4) = 15$, the next value is $p(6) = 15 + 4 = 19$.
- 8) **Choice C is correct.** (8.NS.A.1) The repeating decimal $0.\overline{27} = 0.272727\ldots = \frac{27}{99} = \frac{3}{11}$ is rational, not irrational. All repeating decimals are rational. The other classifications are correct.
- 9) **Choice D is correct.** (8.NS.A.1) Let $x = 0.\overline{7}$. Multiply by 10: $10x = 7.\overline{7}$. Subtract: $10x - x = 7$, so $9x = 7$ and $x = \frac{7}{9}$.
- 10) **Choice D is correct.** (8.NS.A.2) $\sqrt{3} \approx 1.73$, so $2 + \sqrt{3} \approx 3.73$, which lies between 3 and 4.
- 11) **Choice C is correct.** (8.EE.B.4) Interest: $I = 15000 \times 0.07 \times 5 = \$5,250$.
- 12) **Choice D is correct.** (8.EE.B.4) Move the decimal 2 places left: $8.2 \times 10^{-2} = 0.082$.
- 13) **Choice D is correct.** (8.G.I.9) $SA = 6(6)^2 = 6(36) = 216 \text{ cm}^2$.
- 14) **Choice A is correct.** (8.G.G.1) Step 1: Rotate 90° CCW: $(x, y) \rightarrow (-y, x)$. Step 2: Translate 3 units right (add 3 to x-coordinate): $(-y, x) \rightarrow (-y + 3, x)$.
- 15) **The correct answer is $\frac{1}{4}$.** (8.F.F.4A) Slope = $\frac{500}{2000} = \frac{1}{4} = 0.25$.
- 16) **Choice D is correct.** (8.EE.C.6) In the context of a linear equation, the slope represents the rate of change. Here, the fare increases by \$2 for each additional mile.
- 17) **Choice D is correct.** (8.EE.D.7B) Find common denominator (6): $\frac{3y}{6} + \frac{2y}{6} = 10 \Rightarrow \frac{5y}{6} = 10$. Multiply by 6: $5y = 60$. Divide by 5: $y = 12$.
- 18) **The correct answer is (5, 3).** (8.EE.D.8A) Add the two equations to eliminate y : $(x + y) + (x - y) = 8 + 2$, so $2x = 10$, giving $x = 5$. Substitute into the first equation: $5 + y = 8$, so $y = 3$.
- 19) **Choice A is correct.** (8.EE.D.7) Solving $-x + 2 > 5$ gives $-x > 3$, so $x < -3$. Only $x = -4$ satisfies this (since $-4 < -3$).
- 20) **The correct answer is A,D.** (8.EE.C.5) The line goes through (0, 0) and (8, 4), so the slope and constant of proportionality are $\frac{4}{8} = 0.5$. A point on the line must have $y = 0.5x$; when $x = 6$, $y = 3$, so (6, 3) is on the line.
- 21) **Choice A is correct.** (8.EE.D.7) Substitute: $0 > 0 - 3 \Rightarrow 0 > -3$ TRUE. So (0, 0) is in the solution region.
- 22) **Choice B is correct.** (8.EE.B.4) Original: $V = \pi r^2 h$. New: $V' = \pi(2r)^2(\frac{h}{2}) = \pi \times 4r^2 \times \frac{h}{2} = 2\pi r^2 h = 2V$.
- 23) **Choice A is correct.** (8.SP.J.3) The slope is 75, meaning the account increases by \$75 each month.
- 24) **Choice C is correct.** (8.NS.A.2) The midpoint between 4 and 5 is 4.5. Check: $(4.5)^2 = 20.25$. Since $17 < 20.25$, we have $\sqrt{17} < 4.5$. Therefore $\sqrt{17}$ is closer to 4.
- 25) **Choice D is correct.** (8.F.F.4) Product rule: $3^5 \cdot 3^2 = 3^{5+2} = 3^7$.
- 26) **Choice D is correct.** (8.EE.B.2A) $\sqrt{64} = 8$. The other numbers are not perfect squares.
- 27) **Choice D is correct.** (8.EE.B.3) Divide coefficients: $6 \div 2 = 3$. Subtract exponents: $10^{5-10} = 10^{-5}$. Result: 3×10^{-5} .
- 28) **The correct answer is 14.** (8.F.E.1) Substitute $x = 5$ into the function: $y = 3(5) - 1 = 15 - 1 = 14$.
- 29) **Choice A is correct.** (8.EE.D.7) Find two numbers that multiply to 12 and add to 7: 3 and 4. So $x^2 + 7x + 12 = (x + 3)(x + 4)$.



The Power of Showing Work

Hi, Organized Solver!

◇ You practiced Grade 8 skills that often require more than one step. That means your written work matters. ◇

★ **Remember this:** Showing work is not extra. It is how you track your thinking, find errors, and prove that your answer did not happen by luck. You practiced across 4 full Grade 8 practice tests, and that repeated effort matters. ★

Organized Work Habits

- **One Line Per Step:** Keep the path readable.
- **Box the Answer:** Make the final result easy to find.
- **Use Labels:** Tell what each value represents.
- **Check the Path:** Follow your steps backward if needed.

Grade 8 test-day tip: When a problem has several steps, write less on each line. Space makes checking easier.

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

Jay Daie

Your Organized-Work Coach

PRACTICE TODAY, ACHIEVE TOMORROW!

Give your child the confidence and skills they need with **4 full-length Grade 8 Math** practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving success on test day!

4



WHAT'S INSIDE?



Standards-Aligned Practice

Questions designed to cover essential Grade 8 math standards.



Variety of Question Types

Multiple-choice, short answer, and more to build well-rounded skills.



Real-World Applications

Engaging problems that connect math to everyday life.



Step-by-Step Progress

Track improvement and build confidence with every test.



COVERS ALL ESSENTIAL TOPICS

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Ratios & Proportional Relationships
- ✓ Linear Equations
- ✓ Functions
- ✓ Geometry
- ✓ Measurement & Data
- ✓ Statistics & Probability
- ✓ Pythagorean Theorem
- ✓ Volume & Surface Area
- ✓ Transformations
- ✓ Inequalities
- ✓ Data Analysis & Graphing
- ✓ And More!



4 PRINTED TESTS



2 ONLINE TESTS



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