

NEW MEXICO

NM MSSA

GRADE 8 MATH

PRACTICE TESTS

5

PRINTED
TESTS



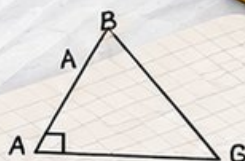
2

 ONLINE
TESTS

**Standards Aligned
Problem Solving For**
Comprehensive Assessment Programs



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



$$a^2 + b^2 = c^2$$



$$y = mx + b$$

5 New Mexico NM MSSA Grade 8 Math Practice Tests

Focused NM MSSA Practice for Algebra, Data, and Probability



Five complete 40-question Grade 8 NM MSSA 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, New Mexico Grade 8 Problem Solver!

Five focused rounds for sharper NM MSSA math thinking

This book gives you five full Grade 8 NM MSSA 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 New Mexico 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 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.

New Mexico 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 NM MSSA tests, 200 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–5	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

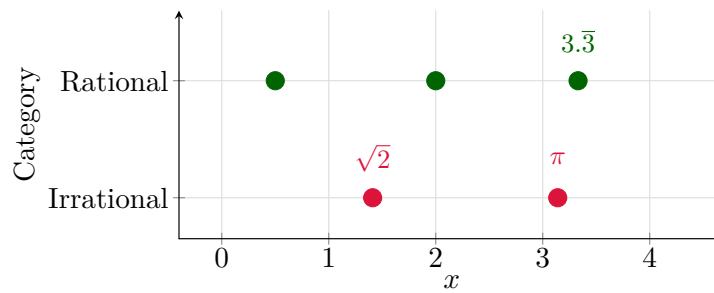
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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For more practice
& answers

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1)

Which number should be plotted as irrational (height 0)?

☐ A. 0.5

☐ C. $3.\bar{3}$
☐ B. 2

☐ D. $\sqrt{5}$

2) Which statement is true?

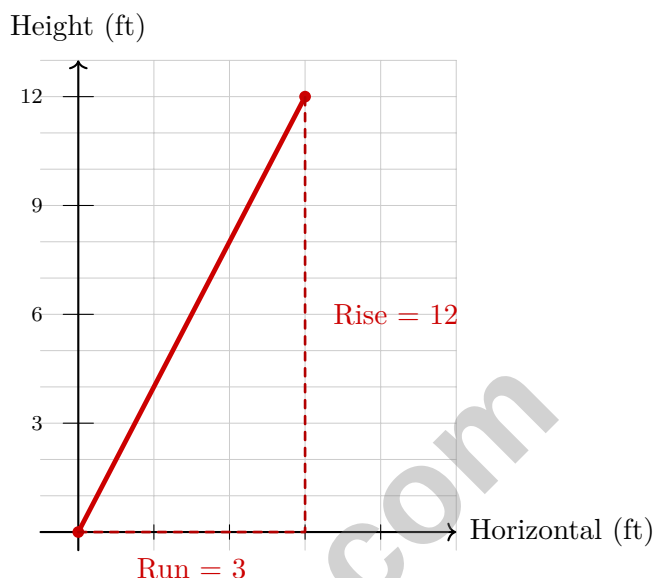
☐ A. $\sqrt[3]{8} = 2$ and $\sqrt[3]{27} = 3$
☐ C. $\sqrt{100} = 5$ and $\sqrt[3]{125} = 25$
☐ B. $\sqrt{36} = 6$ and $\sqrt{64} = 7$
☐ D. $\sqrt[3]{64} = 8$ and $\sqrt{144} = 11$

3) Which relation is NOT a function?

☐ A. $\{(3, 1), (3, 2), (4, 1)\}$
☐ C. $\{(0, 0), (1, 1), (2, 2)\}$
☐ B. $\{(1, 5), (2, 6), (3, 7)\}$
☐ D. $\{(2, 8), (3, 8), (4, 8)\}$


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- 4) A ladder against a building creates a line from $(0,0)$ on the ground to $(3,12)$ where coordinates are (horizontal distance in ft, height in ft). What is the slope?



- ☐ A. 4 feet per foot ☐ C. 3 feet per foot
☐ B. $\frac{1}{4}$ feet per foot ☐ D. 12 feet per foot
- 5) Train A travels at 60 mph. Train B travels at 75 mph. If Train B leaves 1 hour later but they meet after Train A has traveled for 5 hours, which equation is correct?
- ☐ A. $60 \cdot 5 = 75 \cdot 4$ ☐ C. $60 \cdot 4 = 75 \cdot 5$
☐ B. $60 \cdot 5 + 75 \cdot 4 = \text{total distance}$ ☐ D. $60 \cdot 5 = 75 \cdot 5$
- 6) The table below shows values of function f . What is $f(2)$?

x	0	1	2	3
$f(x)$	5	7	9	11

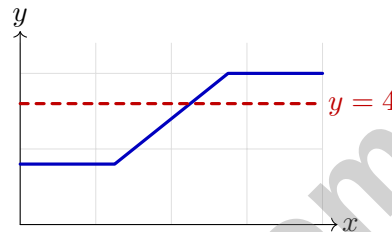
- ☐ A. 7 ☐ C. 11
☐ B. 9 ☐ D. 5



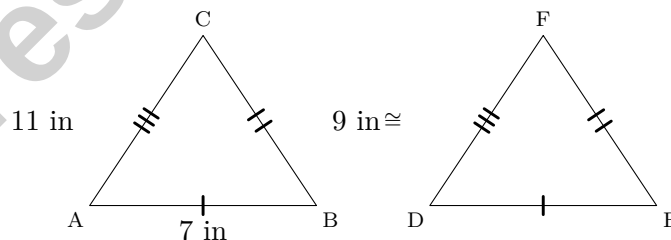
- 7) A car travels at a constant speed of 60 mph. After starting, the distance d (in miles) traveled after h hours is given by which equation?

- ☐ A. $d = 60h$
☐ C. $d = h + 60$
☐ B. $d = 60h + 1$
☐ D. $d = \frac{60}{h}$

- 8) A piecewise function has: constant segment at $y = 2$, then increasing segment, then constant segment at $y = 5$. How many times does it cross a horizontal line $y = 4$?



- ☐ A. Zero times (never)
 ☐ C. Exactly twice (at two different points)
☐ B. Exactly once (during the increasing segment)
 ☐ D. Cannot determine without seeing the graph
- 9) Triangle ABC is congruent to triangle DEF. In triangle ABC: $AB = 7$ in, $BC = 9$ in, $AC = 11$ in. In triangle DEF, which side corresponds to side AC ?



- ☐ A. Side DE
☐ D. Cannot be determined from the diagram
☐ B. Side EF
☐ C. Side DF



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- 1) Two students solve $2x + 5 = 11$ and get different answers: Student A gets $x = 3$ and Student B gets $x = 4$. Without solving, how can you determine which student is correct?

- ☐ A. Substitute each value into the original equation to check which one works
- ☐ B. Solve the equation and see who matched your answer
- ☐ C. Check which value is smaller
- ☐ D. Divide 11 by 2 to see which is closer

- 2) Evaluate 2^{-3} and express it as a decimal.

- 3) What is $\sqrt{196}$?

- ☐ A. 12
- ☐ B. 13
- ☐ C. 14
- ☐ D. 15

- 4) A dust particle has a mass of 2×10^{-8} kg. If 500 such particles are stacked, what is the total mass in scientific notation?



5) Which representation does NOT show a function?

- ☐ A. A table where each x -value appears exactly once.
- ☐ B. A graph of $y = |x|$.
- ☐ C. A parabola opening to the right: $x = y^2$.
- ☐ D. The relation $\{(1, 1), (2, 2), (3, 3)\}$.

6) Which equation is NONLINEAR?

- ☐ A. $y = -7x$
- ☐ B. $y = 4 - x$
- ☐ C. $y = x^4 - 3$
- ☐ D. $y = \frac{1}{3}x + 2$

7) A fitness trainer charges a client based on the number of sessions attended. The data table shows:

Sessions	2	5	8
Cost (\$)	60	150	240

What is the slope (cost per session)?

- ☐ A. \$30 per session
- ☐ B. \$60 per session
- ☐ C. \$20 per session
- ☐ D. \$150 per session

8) Alice, Bob, and Clara are three friends. Alice is twice as old as Bob. Clara is 1 year older than Bob. The sum of all their ages is 49 years. How old is Bob?

- ☐ A. 8
- ☐ B. 10
- ☐ C. 12
- ☐ D. 14



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1) Simplify $5^0 \cdot n^7 \cdot n^{-7}$.

☐ A. n^{14}

☐ C. $5n$

☐ B. n

☐ D. 1

2) A student solved $5x - 8 = 12$ and got $x = 3$. Is this correct?

☐ A. Yes, the answer is correct

☐ C. No; the correct answer is $x = 2.8$

☐ B. No; the correct answer is $x = 1$

☐ D. No; the correct answer is $x = 4$

3) A store offers a warranty on a \$600 laptop for \$89. The warranty covers 2 years. Based on historical data, 1 in 10 laptops need repair costing an average of \$300. Is the warranty a good deal?

☐ A. Yes; expected repair cost is \$89

☐ C. No; expected repair cost is \$30

☐ B. Yes; warranty costs less than repairs

☐ D. No; warranty should be free

4) What is $\sqrt{400}$?

☐ A. 18

☐ C. 20

☐ B. 19

☐ D. 21

5) Is the equation $y = 7$ (a horizontal line) a function?

☐ A. No, because y never changes.

☐ C. Yes, each x produces exactly one

☐ B. No, because there is no variable x .

output ($y = 7$).

☐ D. Yes, only if x is positive.



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& answers

6) A function has the first differences: 4, 4, 4, 4. Is the function linear?

- ☐ A. No, because differences are all the same
- ☐ B. Yes, constant first differences mean linear
- ☐ C. No, because only x -values can be constant
- ☐ D. Yes, only if the starting value is positive

7) A water tank is being drained at a constant rate. The relationship between time and remaining water is shown:

Time (min)	5	15	25
Water (gal)	60	40	20

What is the slope (rate of drainage)?

- ☐ A. -2 gallons per minute
- ☐ B. 2 gallons per minute
- ☐ C. -3 gallons per minute
- ☐ D. 60 gallons per minute



New Mexico NM MSSA 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 New Mexico NM MSSA practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** (8.NS.A.1) Only $\sqrt{5}$ is irrational (a square root of a non-perfect square). The others are rational: $0.5 = \frac{1}{2}$, 2 is an integer, and $3.\overline{3} = \frac{10}{3}$.
- 2) **Choice A is correct.** (8.EE.A.2) Check each: A is correct. B: $\sqrt{64} = 8 \neq 7$. C: $\sqrt{100} = 10 \neq 5$. D: $\sqrt[3]{64} = 4 \neq 8$.
- 3) **Choice A is correct.** (8.F.A.1) Option A fails the function test: input 3 maps to both 1 and 2. The other options each have unique input-output pairs.
- 4) **Choice A is correct.** (8.EE.B.5) Slope = $\frac{12-0}{3-0} = \frac{12}{3} = 4$. This means for every 1 foot horizontal, the ladder rises 4 feet.
- 5) **Choice A is correct.** (8.EE.C.8c) Train A travels for 5 hours. Train B leaves 1 hour later, so it travels for 4 hours. Since they meet after covering the same distance, the equation is $60 \cdot 5 = 75 \cdot 4$.
- 6) **Choice B is correct.** (8.F.A.1) Locate $x = 2$ in the table; the corresponding $f(x)$ value is 9.
- 7) **Choice A is correct.** (8.F.B.4) At constant speed with no initial distance, the slope is 60 mph and the intercept is 0. Equation: $d = 60h$.
- 8) **Choice B is correct.** (8.F.B.5) The constant segments at $y = 2$ and $y = 5$ stay below and above $y = 4$. The increasing segment must cross $y = 4$ exactly once.
- 9) **Choice C is correct.** (8.G.A.2) Side $AC = 11$ in is the longest side in triangle ABC. In congruent triangle DEF, side DF must be the longest side (11 in), so AC corresponds to DF .
- 10) **Choice D is correct.** (8.G.A.3) Dilation scales all lengths by the scale factor. Perimeter: $24 \times 0.5 = 12$.
- 11) **Choice B is correct.** (8.G.A.5) The two acute angles in a right triangle sum to 90° . So $p + (2p + 18) = 90$, which gives $3p = 72$ and $p = 24^\circ$.
- 12) **Choice B is correct.** (8.G.B.6, 8.G.B.7) The diagonal is $d = \sqrt{70^2 + 24^2} = \sqrt{5476} = 74$ m. Walking along the length and width is $70 + 24 = 94$ m, so the diagonal is $94 - 74 = 20$ m shorter.
- 13) **Choice A is correct.** (8.G.B.8) Check: $15^2 + 20^2 = 225 + 400 = 625 = 25^2$. Yes, it's a Pythagorean triple (a multiple of 3-4-5).
- 14) **Choice B is correct.** (8.G.B.7) Alternate interior angles are congruent when a transversal cuts parallel lines. So $q = 89^\circ$.
- 15) **Choice C is correct.** (8.G.C.9) $V = \frac{1}{3} \times B \times h \Rightarrow 500 = \frac{1}{3} \times 100 \times h \Rightarrow h = 15$ m.
- 16) **Choice B is correct.** (8.G.B.7) Decompose: square plus triangles. Square area = $9 \times 9 = 81$ cm². Each right triangle area = $\frac{1}{2} \times 3 \times 4 = 6$ cm². Three triangles total = 18 cm². Total area = $81 + 18 = 99$ cm².
- 17) **The correct answer is no solution.** (8.EE.C.8a) The two equations represent lines with the same slope $\frac{1}{2}$ but different y -intercepts (1 and 4), making them parallel. Parallel lines never intersect, so the system has no solution.
- 18) **Choice B is correct.** (8.G.A.5) A polygon with n sides can be divided into $n - 2$ triangles. Since each triangle has interior angles summing to 180° , the total sum is $(n - 2) \times 180$.
- 19) **Choice D is correct.** (8.SP.A.1) At low doses, effectiveness increases sharply; at high doses, the increase levels off. This represents a nonlinear (logarithmic or power) relationship.
- 20) **The correct answer is B,D.** (8.EE.C.7) A: $5x + 2 = 5x - 3 \Rightarrow 2 = -3$ (no solution). B: $2x + 4 = x + 8 \Rightarrow x = 4$ (one solution). C: $3x - 5 = 3x - 5$ (identity, infinitely many). D: $4x + 1 = 2x + 9 \Rightarrow 2x = 8 \Rightarrow x = 4$ (one solution). E: $x = x$ (identity, infinitely many). Correct answers: B and D.
- 21) **Choice A is correct.** (8.SP.A.4) Joint frequency of morning track athletes: $\frac{50}{160} = 0.3125 = 31.25\%$.
- 22) **Choice D is correct.** (8.G.B.8) Data A: Deviations are $\{2, 1, 0, 1, 2\}$, MAD = $(2 + 1 + 0 + 1 + 2)/5 = 1.2$. Data B: Deviations are $\{5, 2, 0, 2, 5\}$, MAD = $(5 + 2 + 0 + 2 + 5)/5 = 2.8$. Data B has larger MAD, indicating greater spread from the mean.
- 23) **Choice B is correct.** (8.G.B.7) $P(C, C, C) = \frac{1}{3} \times \frac{1}{3} \times \frac{1}{3} = \frac{1}{27}$.
- 24) **The correct answer is 45.** (8.EE.C.7) Substitute $x = 1$: $(1 + 4)(1 + 8) = 5 \cdot 9 = 45$.
- 25) **Choice C is correct.** (8.EE.C.7b) Choose 1st (5 choices), then 2nd (4 remaining), then 3rd (3 remaining): $5 \times 4 \times 3 = 60$.



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Hi, Persistent Problem Solver!

◇ Some Grade 8 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 8 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 8 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!

Give your child the confidence and skills they need with **5 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!



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

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