

8

New Mexico

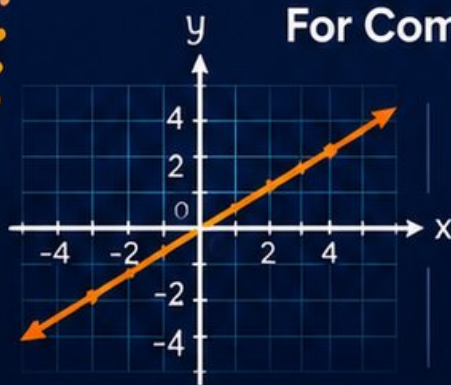
NM MSSA

GRADE 8

MATH

PRACTICE TESTS

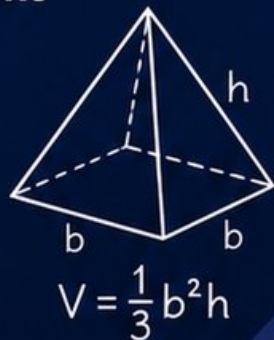
Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$

$$C = 2\pi r$$

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



8 PRINTED TESTS



2 ONLINE TESTS



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

8 New Mexico NM MSSA Grade 8 Math Practice Tests

New Mexico Practice for Functions, Geometry, Data, and Models



Eight 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!

Eight focused rounds for sharper NM MSSA math thinking

This book gives you eight 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

An eight-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?

Eight NM MSSA tests, 320 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real and irrational numbers, integer exponents, scientific notation, equations, and careful reading.
Tests 4–6	Slope, systems of equations, functions, inequalities, transformations, congruence, and similarity.
Tests 7–8	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
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 distance formula for a moving object is $d = 45t$, where d is distance in miles and t is time in hours. What is the slope, and what does it represent?

- ☐ A. Slope is 45; represents the speed in mph ☐ C. Slope is 1; represents constant velocity
☐ B. Slope is 45; represents the distance traveled ☐ D. Slope is 0; the object is stationary

2) Angles A and B are complementary. If $A = 38^\circ$, what is the measure of angle B ?

- ☐ A. 52° ☐ C. 142°
☐ B. 62° ☐ D. 128°

3) A pyramid has base area B and height h . If the base area doubles and the height is halved, how does the volume change?

- ☐ A. Stays the same ☐ C. Doubles
☐ B. Increases by $\frac{1}{2}$ ☐ D. Halves

4) A polygon has n sides. Which formula gives the measure of each interior angle if the polygon is regular?

- ☐ A. $\frac{(n-2) \times 180}{n}$ ☐ C. $(n-2) \times 180$
☐ B. $\frac{360}{n}$ ☐ D. $\frac{180}{n}$

5) A two-way table shows that 30 students like pizza and 20 like sandwiches. 15 of those who like pizza are girls. What is the relative frequency of girls among pizza-likers?

	Girls	Total
Pizza	15	30
Sandwiches	–	20

- ☐ A. 50% ☐ C. 30%
☐ B. 60% ☐ D. 75%

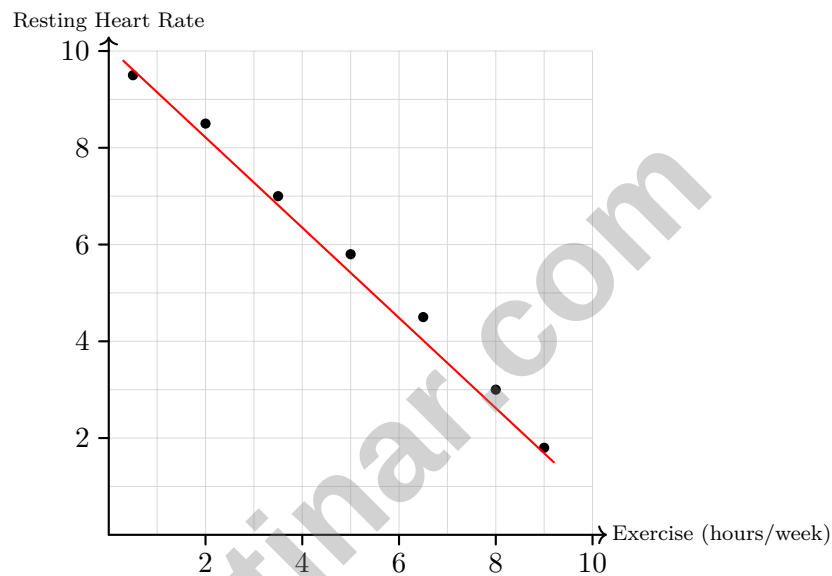


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6) If a data set has a small MAD, what does this tell us about the data?

- ☐ A. The data is clustered close to the mean
☐ B. The data is widely spread out
☐ C. The data has no mean
☐ D. The data must all be positive

Explain: Why does a small MAD indicate consistency?



7)

The scatter plot shows a strong negative relationship between exercise and resting heart rate. Which statement is most accurate?

- ☐ A. Lower heart rates prevent people from exercising
☐ B. Exercise has no effect on heart rate
☐ C. People with higher heart rates exercise less on average
☐ D. More exercise causes lower heart rates



8) Which number can be expressed as a fraction?

☐ A. $\sqrt{11}$

☐ C. $\frac{8}{3}$

☐ B. 2π

☐ D. $\sqrt{2} + 1$

9) Which pair correctly matches the repeating block length to the multiplier used in the conversion method?

- | | |
|---|--|
| ☐ A. Block length $n \rightarrow$ multiply by $10n$. | ☐ C. All blocks $\rightarrow$ multiply by 10 regardless. |
| ☐ B. 1-digit block $\rightarrow$ multiply by 100;
2-digit block $\rightarrow$ multiply by 10. | ☐ D. 1-digit block $\rightarrow$ multiply by 10; 2-digit block $\rightarrow$ multiply by 100. |

10) Which best approximates $\sqrt{50}$?

☐ A. 6.5

☐ C. 5.0

☐ B. 7.5

☐ D. 7.1

11) Which is the best estimate of $\frac{\sqrt{10}}{\sqrt{2}}$?

☐ A. 1.4

☐ C. 2.8

☐ B. 5.0

☐ D. 2.2

12) A borrower needs to repay \$1,000. She has time but limited monthly cash flow. Comparing the plans, which choice represents the BEST overall financial decision (lowest total cost + manageable payments)?

- | | |
|--|---|
| ☐ A. \$50/month for 24 months (total \$1,200; low monthly cost) | ☐ C. \$125/month for 8 months (total \$1,000; high monthly cost) |
| ☐ B. \$100/month for 12 months (total \$1,200; medium monthly cost) | ☐ D. \$83/month for 18 months (total \$1,494; expensive overall) |



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- 1) The distance from Earth to the Sun is approximately 1.496×10^8 km. What is this distance in standard form?

☐ A. 149,600 km

☐ C. 149,600,000 km

☐ B. 1,496,000 km

☐ D. 1,496,000,000 km

- 2) The sum of two people's ages is 35. In 5 years, the older person will be twice the age of the younger person. If the younger person is currently y years old, find y .

- 3) A line has slope -2 and y -intercept 5. Which equation represents this line?

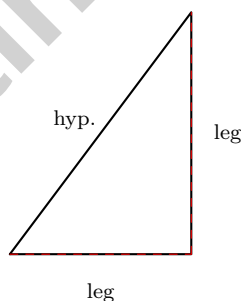
☐ A. $y = -2x + 5$

☐ C. $y = 5x - 2$

☐ B. $y = 2x + 5$

☐ D. $y = -2x - 5$

- 4) Which right triangle dimensions follow the Pythagorean Theorem?



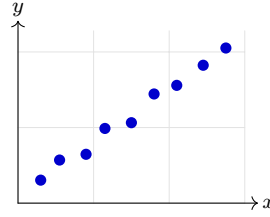
☐ A. 3, 4, 5

☐ C. 2, 3, 4

☐ B. 5, 10, 12

☐ D. 1, 2, 3





5)

A scatter plot shows the relationship between advertising spending (in hundreds of dollars) and product sales (in units). The data points form a tight cluster around an imaginary upward line. What does this indicate?

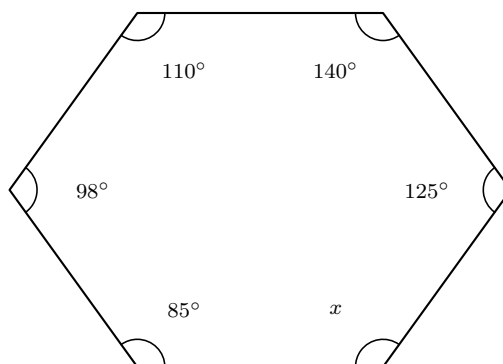
- | | |
|---|---|
| ☐ A. Weak positive correlation | ☐ C. Weak negative correlation |
| ☐ B. No correlation | ☐ D. Strong positive correlation |

6) Line A passes through $(0, 0)$ and $(3, 6)$. Line B passes through $(0, 1)$ and $(2, 7)$. Which line increases faster?

- | | |
|--------------------------------------|--|
| ☐ A. Line A | ☐ C. Both increase equally. |
| ☐ B. Line B | ☐ D. Cannot determine. |



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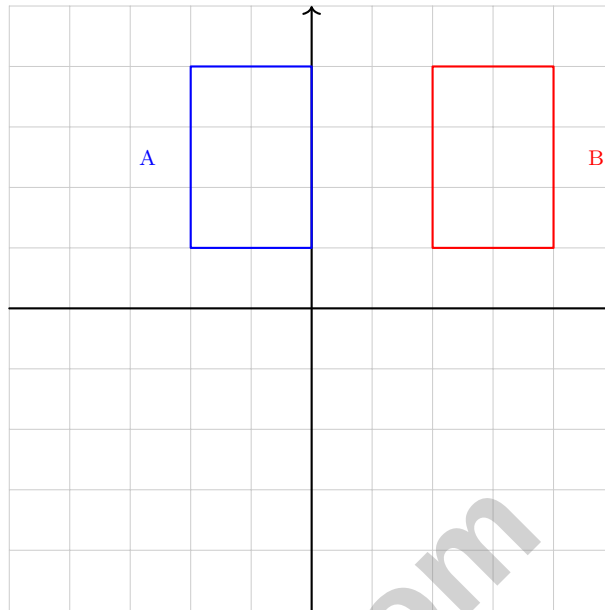
1)

A hexagon has interior angles: 85° , x , 125° , 140° , 110° , 98° . Find x .

☐ A. 162° ☐ C. 232° ☐ B. 227° ☐ D. 237°

2) Simplify $\frac{x^{10} \cdot x^{-3}}{x^4}$. What is the exponent on x in the final answer?





3)

The figure shows shape A and shape B. Which single transformation maps A to B?

- ☐ A. Reflection across the y -axis ☐ C. Rotation 90° counterclockwise
☐ B. Translation 4 units right ☐ D. Dilation with scale factor 2

4) Which expression is NOT in proper scientific notation?

Proper range for coefficient:

 $[1, 10)$ ✓

- ☐ A. 9.5×10^{-3} ☐ C. 1×10^6
☐ B. 10.2×10^4 ☐ D. 5.67×10^0



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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 A is correct.** (8.SP.A.3) In $d = mt + b$ form, $m = 45$ is the slope. Here it represents speed: 45 miles per hour.
- 2) **Choice A is correct.** (8.G.B.7) Complementary angles sum to 90° . So $B = 90 - 38 = 52^\circ$.
- 3) **Choice A is correct.** (8.G.C.9) Original: $V = \frac{1}{3}Bh$. New: $V' = \frac{1}{3}(2B) \times \frac{h}{2} = \frac{1}{3}Bh = V$. Volume is unchanged.
- 4) **Choice A is correct.** (8.G.A.5) The sum of interior angles is $(n - 2) \times 180$. For a regular polygon, divide by n sides to get each angle.
- 5) **Choice A is correct.** (8.SP.A.4) This is a row-conditional relative frequency. Among pizza-likers (30 total), 15 are girls: $\frac{15}{30} = 0.5 = 50\%$.
- 6) **Choice A is correct.** (8.G.B.8) A small MAD indicates that values are close to the mean on average, showing low variability. A large MAD indicates spread. Small MAD means most deviations are small, so most data points lie near the center.
- 7) **Choice C is correct.** (8.SP.A.2) The negative trend shows correlation, not necessarily causation. Those with lower resting heart rates tend to exercise more.
- 8) **Choice C is correct.** (8.NS.A.1) $\frac{8}{3}$ is already expressed as a fraction, so it is rational. All other options are irrational: $\sqrt{11}$ is a non-perfect-square root, 2π is an irrational multiple of π , and $\sqrt{2} + 1$ is an irrational plus a rational (still irrational).
- 9) **Choice D is correct.** (8.NS.A.1) The multiplier is 10^n where n is the block length. For $n = 1$: $10^1 = 10$; for $n = 2$: $10^2 = 100$.
- 10) **Choice D is correct.** (8.NS.A.2) $7^2 = 49$ and $8^2 = 64$. Since 50 is just above 49, $\sqrt{50} \approx 7.07$, closest to 7.1 (not 7.5).
- 11) **Choice D is correct.** (8.NS.A.2) $\frac{\sqrt{10}}{\sqrt{2}} = \sqrt{5} \approx 2.236$.
- 12) **Choice A is correct.** (8.G.B.7) Option C has zero interest (lowest cost) but requires \$125/month. Option A costs \$200 extra but is affordable at \$50/month. For someone with limited cash flow, Option A balances cost and affordability.
- 13) **Choice D is correct.** (8.EE.A.3) Divide the larger value by the smaller value: $\frac{1.5 \times 10^{-3}}{1.5 \times 10^{-6}} = \frac{1.5}{1.5} \times 10^{-3 - (-6)} = 1 \times 10^3 = 1,000$.
- 14) **Choice B is correct.** (8.EE.C.7b) The student made an error by adding. Since each route A-B can combine with any route B-C, we multiply: $6 \times 5 = 30$. This is the Counting Principle for independent choices.
- 15) **Choice D is correct.** (8.EE.A.1) Product rule: $3^5 \cdot 3^2 = 3^{5+2} = 3^7$.
- 16) **Choice D is correct.** (8.EE.A.4) Rewrite with common exponent: $5.8 \times 10^6 - 0.23 \times 10^6 = (5.8 - 0.23) \times 10^6 = 5.57 \times 10^6$.
- 17) **Choice D is correct.** (8.EE.B.6) Using $y = mx + b$: $5 = \frac{1}{2}(1) + b$, so $5 = \frac{1}{2} + b$, thus $b = \frac{9}{2}$.
- 18) **Choice C is correct.** (8.EE.C.7) Expand the right side: $6x - 4 = 6x - 4$. Both sides are identical, so every value of x is a solution.
- 19) **Choice A is correct.** (8.EE.C.8b) Subtract 7: $-4x \leq -12$. Divide by -4 (FLIP): $x \geq 3$.
- 20) **The correct answer is (3, -5).** (8.G.A.2) A reflection across the x -axis changes the sign of the y -coordinate while keeping the x -coordinate the same. Thus, $(3, 5)$ maps to $(3, -5)$.
- 21) **Choice C is correct.** (8.F.A.3) The y -values double with each unit increase in x (2, 4, 8, 16). This exponential growth pattern is nonlinear; first differences are not constant (2, 4, 8).
- 22) **The correct answer is A,C.** (8.F.A.2) A: f has slope 3 and g has slope -2 ✓. B: f intercept is 2, g intercept is 5; $5 > 2$, so g is greater, not f ✗. C: Slope $3 > 0$ (increases), slope $-2 < 0$ (decreases) ✓. D: Both intercepts are positive, not negative ✗. E: $|3| = 3$ and $|-2| = 2$; f is steeper, not g ✗.
- 23) **Choice B is correct.** (8.G.B.6, 8.G.B.7) Verify: $121 + 3600 = 3721 = 61^2$. This is the 11-60-61 Pythagorean triple.
- 24) **Choice D is correct.** (8.EE.A.2) If the volume is 343 cubic units, then $e^3 = 343$, so $e = \sqrt[3]{343} = 7$ units.
- 25) **Choice D is correct.** (8.EE.B.5) Unit price $k = \frac{30}{6} = 5$ dollars per pound.
- 26) **The correct answer is 10.** (8.G.A.5) Co-interior angles are supplementary: $(7a + 5) + (2a + 85) = 180$. Thus $9a + 90 = 180$, so $9a = 90$ and $a = 10$.



Hi, Calm Solver!

◇ This wide-ranging book gave you eight serious Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. A calm mind can see choices more clearly. That matters in Grade 8, where one problem may have several possible entry points. ◇

★ **Remember this:** You practiced building calm by doing full tests. Each completed page is rehearsal for staying steady when the real test feels serious. ★

Calm-Test Moves

- **Pause:** Give your brain one quiet second.
- **Choose:** Pick the first useful step.
- **Continue:** Do not demand perfection immediately.
- **Check:** Use review time wisely.

Grade 8 test-day tip: If you feel rushed, slow your reading for one sentence. Clear reading saves time.

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

Jay Daie

Your Calm-Test Coach

PRACTICE TODAY, SUCCEED TOMORROW!

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror 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.



BUILD SKILLS & BOOST CONFIDENCE

Strengthen understanding and feel prepared for test day.



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!



2 EXTRA ONLINE PRACTICE TESTS INCLUDED!

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

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More Practice. More Confidence.
Better Results.