

6 Michigan M STEP

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



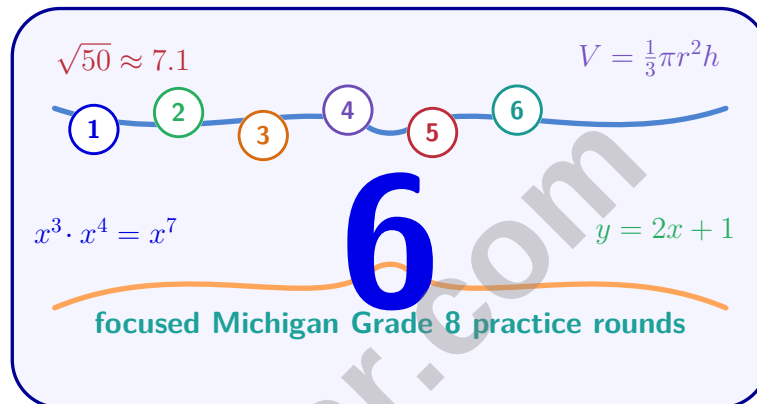
2 ONLINE
TESTS



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

6 Michigan M STEP Grade 8 Math Practice Tests

Standards-Based Grade 8 Prep for Test Skills and Mathematical Reasoning



Six complete 40-question Grade 8 M STEP 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, Michigan Grade 8 Problem Solver!

Six focused rounds for sharper M STEP math thinking

This book gives you six full Grade 8 M STEP 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 Michigan 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 six-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.

Michigan 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?

Six M STEP tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	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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Table of Contents

★ Practice Test 1	_____	15
★ Practice Test 2	_____	30
★ Practice Test 3	_____	46
★ Practice Test 4	_____	62
★ Practice Test 5	_____	78
★ Practice Test 6	_____	93
Practice Test Answer Keys	_____	109
Practice Test Answers and Explanations	_____	113

1) Which statement is false?

- ☐ A. Every whole number is rational ☐ C. $\sqrt{9}$ is rational
☐ B. No irrational number can be written as a fraction ☐ D. π is rational

2) Rewrite 6^{-3} using only positive exponents.

- ☐ A. $\frac{6}{3}$ ☐ C. 6^3
☐ B. -6^3 ☐ D. $\frac{1}{6^3}$

3) For the equation $y = 3x - \frac{1}{5}$, identify the slope and y -intercept. Is it linear?

- ☐ A. Slope 3, intercept $\frac{1}{5}$; nonlinear ☐ D. Cannot determine without more data
☐ B. Slope 3, intercept $-\frac{1}{5}$; linear
☐ C. Slope $-\frac{1}{5}$, intercept 3; linear

4) A data point is at $(3, 8)$ and the trend line at $x = 3$ predicts $y = 6$. What is the residual?

5) The value of $\sqrt{42.5}$ is closest to?

- ☐ A. 6.8 ☐ C. 6.7
☐ B. 6.6 ☐ D. 6.5



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6) Simplify and estimate $\sqrt{2} \times \sqrt{8}$.

☐ A. Approximately 4.5

☐ B. Exactly 8

☐ C. Approximately 3.4

☐ D. Exactly 4

7) A credit card offers 0% APR for 12 months on purchases, then 15% APR. If you buy \$800 during the promotional period and pay nothing, how much is owed after 12 months?

☐ A. \$1,400

☐ B. \$920

☐ C. \$1,200

☐ D. \$800

8) If $x^3 = 27$, what is x ?

☐ A. 2

☐ B. 5

☐ C. 4

☐ D. 3

9) How many times greater is 6×10^8 than 3×10^6 ?

☐ A. 2 times

☐ B. 20 times

☐ C. 200 times

☐ D. 2,000 times

10) Which quotient is the largest?

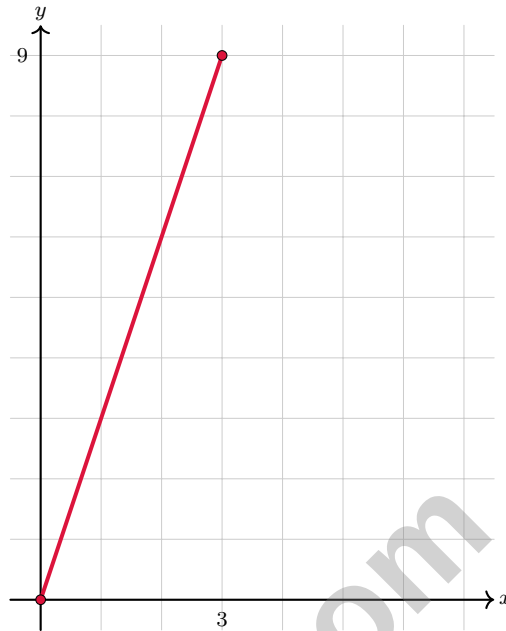
☐ A. $\frac{8 \times 10^6}{4 \times 10^2}$

☐ B. $\frac{6 \times 10^5}{2 \times 10^1}$

☐ C. $\frac{9 \times 10^4}{3 \times 10^{-2}}$

☐ D. $\frac{4 \times 10^7}{2 \times 10^3}$





11)

What is the slope?

☐ A. 2☐ C. $\frac{1}{3}$ ☐ B. $\frac{9}{2}$ ☐ D. 312) The relation $\{(0, -1), (1, 2), (2, 5), (3, 8)\}$ has what range?☐ A. $\{-1, 2, 5, 8\}$ ☐ C. $\{-1, 0, 1, 2, 3, 5, 8\}$ ☐ B. $\{0, 1, 2, 3\}$ ☐ D. $\{3\}$

13) A student earns \$15 per hour. Which table represents this relationship?

Hours	1	2	3
Earnings (\$)	15	30	45

What is the slope?

☐ A. 15☐ C. 30☐ B. $\frac{1}{15}$ ☐ D. $\frac{15}{30}$ 

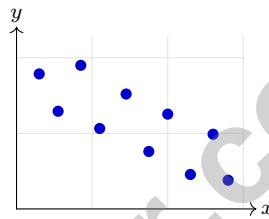
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- 1) A license plate has 2 letters followed by 3 digits. Letters can be any of A through Z, and digits can be 0 through 9. How many possible license plates are there?

- ☐ A. $26^2 \times 10^3 = 676,000$
☐ C. $26 \times 10 = 260$
☐ B. $26 + 26 + 10 + 10 + 10 = 82$
☐ D. $(26 + 10)^5 = 60,466,176$

- 2) 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



3)

A researcher studies the relationship between screen time (hours/day) and grade point average (GPA 0–4.0) for high school students. The scatter plot shows weak negative correlation ($r = -0.35$) with substantial scatter. The researcher writes: **“The data show that screen time weakly causes lower GPAs.”** Which phrase in this statement is incorrect?

- ☐ A. *screen time*
☐ C. *weakly*
☐ B. *lower GPAs*
☐ D. *causes*

- 4) Among 300 shoppers surveyed, 180 shop online and 120 shop in-store. Of those who shop online, 108 use mobile apps. What percentage of online shoppers use mobile apps?

- ☐ A. 36%
 ☐ C. 60%
☐ B. 48%
 ☐ D. 72%

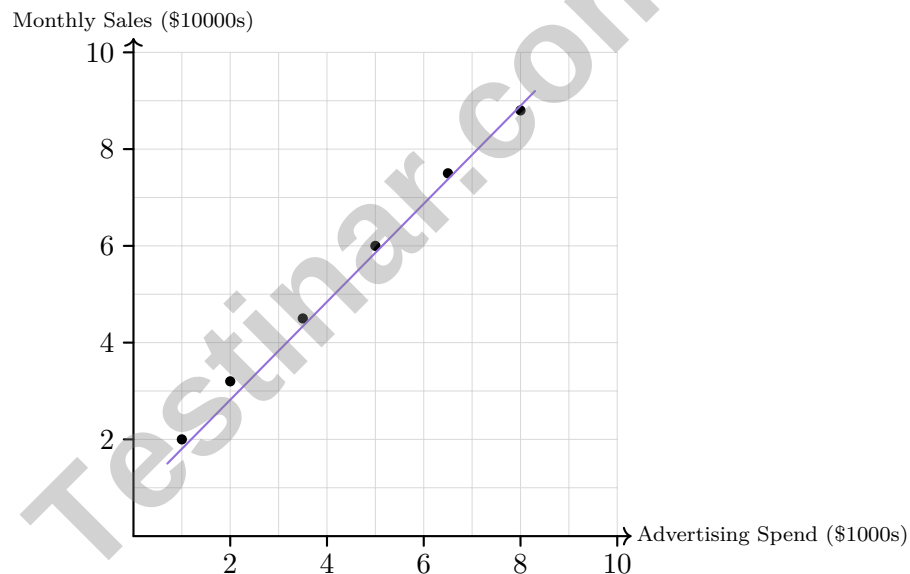


- 5) Two classes took the same test (mean = 75 for both): Class P: {73, 74, 75, 76, 77} Class Q: {60, 70, 75, 80, 90} Which class should receive more targeted instruction?

- ☐ A. Class P (more consistent) ☐ C. Both equally
☐ B. Class Q (higher variation in understanding) ☐ D. Neither (both have mean 75)

- 6) A bag contains 7 red marbles and 3 blue marbles. If two marbles are drawn without replacement, what is the probability that the first is red AND the second is blue?

- ☐ A. $\frac{3}{10}$ ☐ C. $\frac{21}{100}$
☐ B. $\frac{7}{30}$ ☐ D. $\frac{7}{90}$



7)

A business tracks advertising spend versus monthly sales. Based on the trend line, what is the approximate y -intercept (sales with no advertising)?

- ☐ A. \$30,000 ☐ C. \$10,000
☐ B. \$20,000 ☐ D. \$0



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1) $\sqrt{89}$ is between 9 and 10. Which decimal is the better approximation?

☐ A. 9.7

☐ C. 9.6

☐ B. 9.5

☐ D. 9.4

2) Pentagon JKLMN is congruent to pentagon PQRST. In pentagon JKLMN, all sides have equal length and each interior angle measures 108° . What can you conclude about pentagon PQRST?

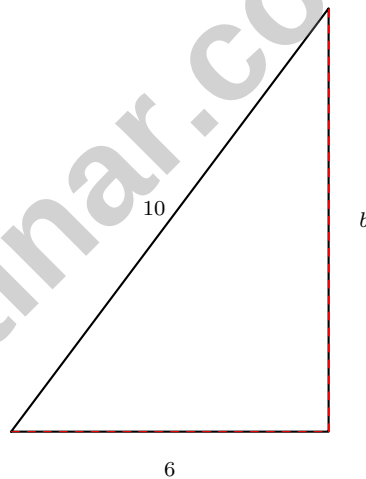
☐ A. It is a regular pentagon

☐ C. Its interior angles are not 108°

☐ B. Its sides have different lengths

☐ D. It is smaller than JKLMN

3) The hypotenuse of a right triangle is 10 units and one leg is 6 units. What is the length of the other leg?



☐ A. 4 units

☐ C. $\sqrt{63}$ units

☐ B. 8 units

☐ D. 16 units



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4) If each interior angle of a regular polygon is 150° , how many sides does it have?

☐ A. 11

☐ C. 13

☐ B. 12

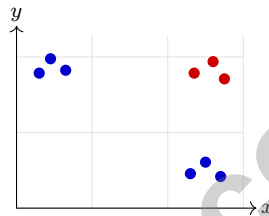
☐ D. 14

5) Triangle ABC is similar to Triangle DEF . Side $AB = 4$ cm, $BC = 5$ cm, $CA = 6$ cm. The perimeter of DEF is 45 cm. Find the length of EF .

☐ A. 15 cm

☐ C. 22.5 cm

☐ B. 18 cm

☐ D. 10 cm


6)

Two groups appear in a scatter plot of video game experience (x-axis) versus reaction time (y-axis). Experienced players (many hours played) have fast reaction times (lower y-values). Inexperienced players (few hours played) have slow reaction times (higher y-values). What does this clustering pattern tell you about the relationship?

☐ A. More experience causes longer reaction times

☐ C. Reaction time improves with experience in a curved way

☐ B. Experience and reaction time are unrelated

☐ D. More experience is associated with faster reaction times

7) Which scenario requires permutation (order matters)?

☐ A. Selecting 2 students from a group of 10 to form a study pair.

☐ C. Picking 2 toppings from a pizza menu.

☐ B. Arranging 2 students from a group of 10 in a line (first and second position).

☐ D. Choosing 2 books to bring home from a library shelf.


Michigan M STEP 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 Michigan M STEP 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)** This is false. π is irrational; it cannot be written as a fraction of two integers and has a non-terminating, non-repeating decimal expansion. All other statements are true.
- 2) **Choice D is correct.** **(8.EE.A.1)** Negative exponent rule: $6^{-3} = \frac{1}{6^3}$.
- 3) **Choice B is correct.** **(8.F.A.3)** $y = 3x - \frac{1}{5}$ is in the form $y = mx + b$ with $m = 3$ and $b = -\frac{1}{5}$, so it is linear.
- 4) **The correct answer is 2.** **(8.SP.A.2)** Residual = actual – predicted = $8 - 6 = 2$.
- 5) **Choice D is correct.** **(8.NS.A.2)** $(6.5)^2 = 42.25$ and $(6.6)^2 = 43.56$. Since 42.5 is closer to 42.25, $\sqrt{42.5}$ is closer to 6.5.
- 6) **Choice D is correct.** **(8.NS.A.2)** $\sqrt{2} \times \sqrt{8} = \sqrt{16} = 4$ exactly. Perfect pair product.
- 7) **Choice D is correct.** **(8.G.B.7)** During promotional 0% APR, no interest accrues. Amount owed remains \$800 after 12 months.
- 8) **Choice D is correct.** **(8.EE.A.2)** $3 \times 3 \times 3 = 27$, so $\sqrt[3]{27} = 3$.
- 9) **Choice C is correct.** **(8.EE.A.3)** Divide: $\frac{6 \times 10^8}{3 \times 10^6} = \frac{6}{3} \times 10^{8-6} = 2 \times 10^2 = 200$.
- 10) **Choice C is correct.** **(8.EE.A.4)** Evaluate each: A) 2×10^4 , B) 3×10^4 , C) 3×10^6 , D) 2×10^4 . Choice C is largest at $3 \times 10^6 = 3,000,000$.
- 11) **Choice D is correct.** **(8.EE.B.5)** Slope = $\frac{9-0}{3-0} = \frac{9}{3} = 3$. The rise is 9 and the run is 3, so the slope is 3.
- 12) **Choice A is correct.** **(8.F.A.1)** The range is the set of all outputs (y -coordinates): $-1, 2, 5, 8$.
- 13) **Choice A is correct.** **(8.EE.B.5)** Using points $(1, 15)$ and $(2, 30)$: slope = $\frac{30-15}{2-1} = \frac{15}{1} = 15$ dollars per hour.
- 14) **Choice A is correct.** **(8.EE.C.8c)** Let t = the number of years from now. Then $42 + t = 3(10 + t)$. This gives $42 + t = 30 + 3t$, so $12 = 2t$ and $t = 6$ years.
- 15) **Choice B is correct.** **(8.F.A.1)** Substitute $h = 2$: $T(2) = 25 - 6(2) = 25 - 12 = 13$.
- 16) **The correct answer is $\frac{1}{4}$.** **(8.G.B.7)** There are 13 spades in a standard deck. $P(\text{spade}) = \frac{13}{52} = \frac{1}{4}$.
- 17) **Choice C is correct.** **(8.G.C.9)** Radius $r = 5$ feet. Lateral (curved) surface area = $2\pi rh = 2(3.14)(5)(20) = 628$ sq. ft. Cost = $628 \times \$2 = \$1,256$.
- 18) **Choice B is correct.** **(8.G.A.1)** Reflect (x, y) across x -axis: $(x, -y)$. Then across y -axis: $(-x, -y)$. A 180° rotation also gives $(-x, -y)$.
- 19) **Choice C is correct.** **(8.EE.B.6)** When $x = 0$, $y = -1$. The y -intercept is the y -coordinate when $x = 0$.
- 20) **The correct answer is A, C.** **(8.G.A.4)** Correct: (A) All linear measurements (sides, perimeter) are multiplied by 2.5. (C) Area is multiplied by $(2.5)^2 = 6.25$. Incorrect: (B) Angles are congruent in dilation, not scaled. (D) Perimeter is multiplied, not divided, by 2.5. (E) Dilation preserves shape; polygon type does not change.
- 21) **Choice A is correct.** **(8.EE.C.7)** Distribute: $6x + 12 = 30$. Subtract 12: $6x = 18$. Divide by 6: $x = 3$.
- 22) **Choice C is correct.** **(8.EE.C.8b)** Multiply by 5: $x - 2 \leq 15$. Add 2: $x \leq 17$.
- 23) **Choice B is correct.** **(8.EE.C.8b)** Substitute: $4(3) - 3(3) = 12 - 9 = 3$. Test: $3 \geq 3$ TRUE. The point is on the boundary and included in the solution because of $\geq$.
- 24) **Choice B is correct.** **(8.G.C.9)** $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 16 \times 9 = \frac{1}{3} \times 452.16 = 150.72 \text{ in}^3$.
- 25) **Choice A is correct.** **(8.SP.A.3)** Set $h = 10$: $10 = 1.2t + 2 \Rightarrow 1.2t = 8 \Rightarrow t = \frac{8}{1.2} \approx 6.67$ weeks.
- 26) **The correct answer is 60.** **(8.EE.C.7b)** Apply the Counting Principle: $3 \times 5 \times 4 = 60$ different sandwiches.
- 27) **Choice A is correct.** **(8.EE.C.8a)** Rewrite $6x - 2y = 4$ as $y = 3x - 2$. The system has lines $y = 3x + 2$ and $y = 3x - 2$, which have the same slope and different y -intercepts. Therefore, the system has no solution.
- 28) **Choice A is correct.** **(8.EE.C.7)** FOIL: $(x + 7)(x - 1) = x^2 - x + 7x - 7 = x^2 + 6x - 7$.
- 29) **Choice B is correct.** **(8.F.A.2)** From $m(x) = -2x + 5$, slope $m = -2 < 0$ (negative) and y -intercept $b = 5 > 0$ (positive).
- 30) **Choice B is correct.** **(8.F.B.4)** Current value \$18,000 (intercept). Depreciates (decreases) by \$2000 per year (negative slope). Equation: $V = -2000t + 18000$.



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Hi, Smart Reviewer!

◇ The best learning often happens after the test, when you look back and notice what worked and what needs attention. This deep and steady book gave you six full Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** You can use these practice tests as a map. The questions you solved quickly show strengths; the questions you missed show where to train next. ★

Review Routine

- **Sort:** Group mistakes by skill.
- **Reread:** Check whether the question was misunderstood.
- **Resolve:** Do the problem again without looking.
- **Record:** Write the lesson in one sentence.

Grade 8 test-day tip: Review in short focused sessions. Ten careful minutes can be more useful than an hour of rushing.

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

Jay Daie

Your Review Coach

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 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 |
| | ✓ And More! |



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