

# 5

# FULL-LENGTH

# Michigan

# M STEP

# GRADE 5 MATH

## ★ PRACTICE TESTS ★



**5 FULL-LENGTH  
PRACTICE TESTS**



**COMPLETE  
STANDARDS  
REVIEW**



**SKILL PRACTICE,  
WORD PROBLEMS,  
AND MORE!**

$$\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$$



$$12 \times 3 = 36$$



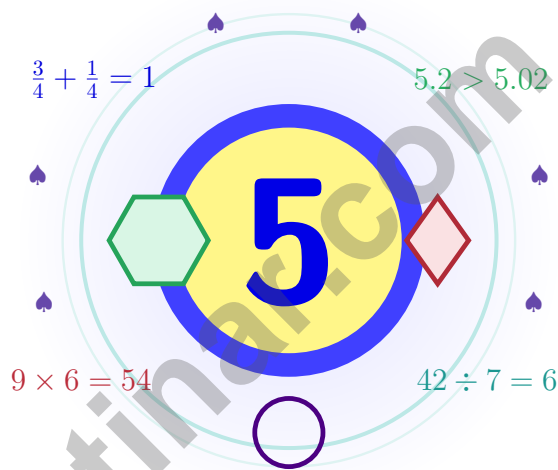
$$\frac{7}{10} = 0.7$$



**BUILT FOR SUCCESS. DESIGNED TO HELP EVERY STUDENT.**

# 5 Michigan M-STEP Grade 5 Math Practice Tests

*Five full tests and a coach's voice on every page*



Five full tests, a friendly quick review, smart strategy pages, and student-tested support that turn Grade 5 practice in The Great Lakes State into a steady quest of real growth.

**Jay Daie and Reza Nazari**



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# Strap In, Michigan – Five-Test Trail

Five full tests and a coach's voice on every page

## Michigan Mathematicians, Read This First

This book is your practice zone, not a place to be perfect. Each of the five tests gives you a chance to notice clues, choose a strategy, check your thinking, and come back stronger for the next round. Math thinking is a lot like Lake Michigan – wide, deep, calm on top, and full of careful currents underneath.

Some questions will feel easy right away. Some will make you slow down, draw, estimate, or retry. That is excellent news. It means your math brain is doing real work.

### See

See the whole question  
before you start the  
math.

### Plan

Plan one careful step  
before the next.

### Reflect

Reflect on what worked  
and what wobbled.

**A strong quest habit for Michigan:** slow down, write neatly, estimate before you solve, and keep going even when a problem looks tricky at first. That is exactly how confident math students are built.

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# From Cover to Final Test

A simple routine that turns five tests into real growth

## Step 1: Open

**Open the warm-up review and use it.**

Wake up important ideas before you begin so your brain is ready to use them.

## Step 2: Test

**Take the test with steady focus.**

Find a quiet space, work carefully, and let accuracy matter more than speed.

## Step 3: Reflect

**Notice what was sharp and what was shaky.**

Circle missed questions and look for patterns. Which skill or habit needs another try?

## Step 4: Sharpen

**Practice the shaky skills before the next round.**

Read the explanation, repair the work, and carry that lesson into the next test.

## A Five-Week Michigan Quest Map

Week	Mission Focus
Week 1	Take Test 1 and read your lake's surface and currents.
Week 2	Take Test 2 and notice one habit that grew steadier.
Week 3	Take Test 3 and polish fractions, decimals, and conversions.
Week 4	Take Test 4 and slow down on multi-step problems.
Week 5	Take Test 5 with calm crossings and careful checks.



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## Grade 5 Mathematics Reference Materials

### PERIMETER AND AREA

Perimeter of Rectangle  $P = 2l + 2w$  or  $P = 2(l + w)$

Area of Rectangle  $A = l \times w$

Area of Triangle  $A = \frac{1}{2} \times b \times h$

Volume of Rectangular Prism  $V = l \times w \times h$

### LENGTH

#### Customary

1 foot (ft) = 12 inches (in.)

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### WEIGHT AND MASS

#### Customary

1 pound (lb) = 16 ounces (oz)

#### Metric

1 kilogram (kg) = 1,000 grams (g)

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### TIME

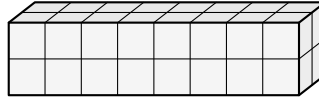
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- 1) A rectangular prism has length 8, width 2, and height 2. If you double only the length, what is the new volume?



- A. 32 unit cubes                       C. 64 unit cubes  
 B. 48 unit cubes                       D. 16 unit cubes
- 2) A rectangular aquarium has dimensions 20 inches, 12 inches, and 15 inches. What is the volume?

Aquarium  
 20 in × 12 in × 15 in

- A. 2400 in<sup>3</sup>                       C. 3600 in<sup>3</sup>  
 B. 3000 in<sup>3</sup>                       D. 4000 in<sup>3</sup>
- 3) Imagine building a rectangular prism by stacking identical square layers. If the base is  $6 \times 6$  unit cubes and you stack 3 layers, what is the volume?

Prism  
 Base:  $6 \times 6$ , Layers: 3

- A. 12 cubic units                       C. 36 cubic units  
 B. 18 cubic units                       D. 108 cubic units
- 4) Which statement is true about  $2\frac{1}{2} \times 1\frac{1}{4}$ ?
- A. The product is less than  $2\frac{1}{2}$                        C. The product equals 3  
 B. The product is greater than 3 but less than 4                       D. The product is less than 2



5) A rectangular planter has volume 30 cubic feet. Its base is 5 feet by 3 feet. What is its height?

A. 1 foot

C. 2 feet

B. 3 feet

D. 15 feet

6) A garden plot is  $6\frac{3}{4}$  feet long and needs a fence. If  $2\frac{7}{10}$  feet is already fenced, estimate how much more fencing is needed.

A. About 3 feet

C. About 5 feet

B. About 4 feet

D. About 6 feet

7) What is  $2 \div \frac{1}{5}$ ?

A. 5

C. 8

B. 15

D. 10

8) A  $\frac{1}{2}$ -pound block of cheese is divided into 4 equal portions. How heavy is each portion?

*Record your answer in the space provided.*

9) Maria has \$25.00 and spends \$8.65 on a book and \$3.50 on a pen. How much does she have left?

*Record your answer in the space provided.*



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1) What is  $12 \div \frac{1}{2}$ ?

A. 6

C. 18

B. 12

D. 24

2) Which is the decimal result of  $6,300 \div 10,000$ ?

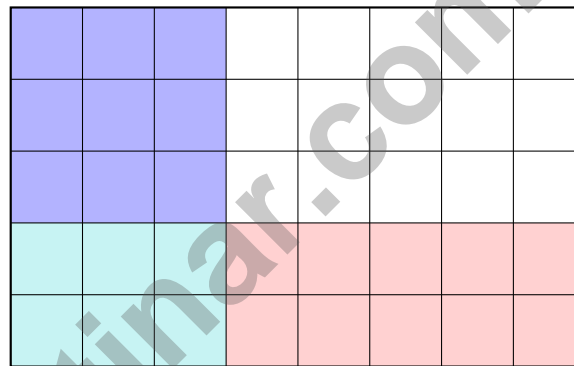
A. 0.63

C. 0.063

B. 6.3

D. 63

3) In the area model, the blue stripe represents  $\frac{3}{8}$  and the red stripe represents  $\frac{2}{5}$ . What is the area of the overlap region?



A.  $\frac{6}{40}$

C.  $\frac{1}{4}$

B.  $\frac{3}{13}$

D.  $\frac{5}{13}$

4) How many times greater is  $5 \times (12 + 8)$  than  $(12 + 8)$ ?

*Record your answer in the space provided.*



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1) A plumber needs  $\frac{4}{7}$  inch and  $\frac{3}{8}$  inch of copper pipe. Estimate the total inches.

- A. Less than  $\frac{1}{2}$  inch  
 B. About 1 inch  
 C. About  $1\frac{1}{2}$  inches  
 D. About 2 inches

2) What rule defines: 1, 2, 4, 8, 16?

- A. Add 1 each time  
 B. Multiply by 2 each time  
 C. Multiply by 3 each time  
 D. Subtract 2 each time

3) Subtract:  $5\frac{1}{6} - 2\frac{5}{6}$  (requires borrowing).

- A.  $2\frac{1}{6}$   
 B.  $2\frac{2}{6}$   
 C.  $3\frac{1}{6}$   
 D.  $2\frac{4}{6}$

4) What is the total volume of a composite solid made from non-overlapping prisms that measure 6 cm by 4 cm by 3 cm and 5 cm by 4 cm by 3 cm?

*Record your answer in the space provided.*

5) Compare  $8 \times 1\frac{1}{2}$  to 8. Which statement is correct?

- A.  $8 \times 1\frac{1}{2} < 8$   
 B.  $8 \times 1\frac{1}{2} = 8$   
 C.  $8 \times 1\frac{1}{2} > 8$   
 D. They are not comparable



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- 1) A water tank contains  $\frac{1}{8}$  of a litre. The water is to be equally distributed to 4 containers. How much water goes in each container?

- A.  $\frac{1}{2}$  litre  
 B.  $\frac{1}{4}$  litre  
 C.  $\frac{1}{32}$  litre  
 D.  $\frac{1}{12}$  litre

- 2) Evaluate:  $56 - (7 \times 4) + 18 \div 3$

- A. 30  
 B. 32  
 C. 34  
 D. 36

- 3) Which place-value chart represents  $10^2 = 100$ ?

Place	Hundreds	Tens	Ones
Value	1	0	0

- A. 10 tens  
 B. 100 ones  
 C. 1 hundred  
 D. All represent  $10^2$

- 4) A large jug holds 2 gallons. How many cups can be filled from this jug? (1 gallon = 16 cups)

- A. 32 cups  
 B. 20 cups  
 C. 48 cups  
 D. 16 cups

- 5) Which pair of fractions already has a common denominator?

- A.  $\frac{1}{6}$  and  $\frac{5}{9}$   
 B.  $\frac{1}{2}$  and  $\frac{3}{7}$   
 C.  $\frac{2}{3}$  and  $\frac{4}{5}$   
 D.  $\frac{3}{8}$  and  $\frac{7}{8}$



## Practice Test Answer Keys

### How to use this section:

1. check your answer
2. circle missed questions
3. rework them before reading the explanation

**Good correction habits build strong scores.**

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## Practice Test Answers and Explanations

### Practice Test 1 Answers and Explanations

- Choice C is correct.** (5.MD.C.4) Original:  $8 \times 2 \times 2 = 32$  cubes. Double the length to 16:  $16 \times 2 \times 2 = 64$  unit cubes.
- Choice C is correct.** (5.MD.C.5a) Volume =  $20 \times 12 \times 15 = 240 \times 15 = 3600$  in<sup>3</sup>.
- Choice D is correct.** (5.MD.C.3b) Base:  $6 \times 6 = 36$  sq. units per layer. With 3 layers:  $36 \times 3 = 108$  cubic units.
- Choice B is correct.** (5.NF.B.5b)  $2\frac{1}{2} \times 1\frac{1}{4} = \frac{5}{2} \times \frac{5}{4} = \frac{25}{8} = 3\frac{1}{8}$ , which is between 3 and 4.
- Choice C is correct.** (5.MD.C.5) The base layer has  $5 \times 3 = 15$  square units. Divide the volume by the base area:  $30 \div 15 = 2$ , so the height is 2 feet.
- Choice B is correct.** (5.NF.A.2)  $6\frac{3}{4} \approx 7$  and  $2\frac{7}{10} \approx 3$ . So  $6\frac{3}{4} - 2\frac{7}{10} \approx 7 - 3 = 4$  feet.
- Choice D is correct.** (5.NF.B.7c)  $2 \div \frac{1}{5} = 2 \times 5 = 10$ .
- The correct answer is  $\frac{1}{8}$ .** (5.NF.B.7c)  $\frac{1}{2} \div 4 = \frac{1}{8}$  lb. Each portion is a fair share of the half-pound block.
- The correct answer is 12.85.** (5.MD.C.5) Total spent:  $8.65 + 3.50 = 12.15$ . Remaining:  $25.00 - 12.15 = 12.85$ .
- Choice C is correct.** (5.NBT.A.2) Following the pattern,  $1.2 \times 1000 = 1200$  (move decimal 3 places right).
- Choice A is correct.** (5.NBT.B.7) Line up decimal points and subtract place by place.  $6.75 - 2.43 = 4.32$  cups needed. This confirms the answer.
- Choice A is correct.** (5.OA.A.1) Do the grouped and multiplication parts first:  $9 \times 2 = 18$ ,  $10 - 3 = 7$ , and  $7 \times 3 = 21$ . Then  $18 + 21 = 39$ .
- Choice C is correct.** (5.NBT.A.2) A is true; B is true; C is false ( $5,400 \div 100 = 54$ ); D is true.
- Choice A is correct.** (5.NF.A.1) Simplify:  $\frac{4}{12} = \frac{1}{3}$ . Then LCM(3,5) = 15.  $\frac{1}{3} = \frac{5}{15}$  and  $\frac{2}{5} = \frac{6}{15}$ .  $\frac{5}{15} + \frac{6}{15} = \frac{11}{15}$ .
- Choice B is correct.** (5.MD.C.5a) Prism B has volume  $7 \times 4 \times 4 = 112$  cubic units, which is the greatest.
- Choice D is correct.** (5.MD.B.2) Count X marks at  $3\frac{1}{2}$ , 4, and  $4\frac{1}{2}$  miles. That is  $4 + 2 + 1 = 7$  swimmers.
- Choice C is correct.** (5.MD.C.5a)  $V = 5 \times 4 \times 6 = 120$  cm<sup>3</sup>.
- Choice A is correct.** (5.OA.A.2) In 8 minutes, the tub loses  $5 \times 8$  gallons. Subtract that amount from the starting 60 gallons:  $60 - 5 \times 8$ .
- Choice C is correct.** (5.OA.B.3) For (6, 4):  $4 \neq 6/2 = 3$ . The correct pair should be (6, 3).
- Choice A is correct.** (5.G.A.1) In an ordered pair (x, y), the first number tells how far to move right, and the second number tells how far to move up.
- Choices A, B are correct.** (5.NBT.B.7) Dividing 10 by a value less than 1 gives a quotient greater than 10, so A and B work. C and D have divisors greater than 1, so those quotients are less than 10.
- Choice B is correct.** (5.G.B.4) When all three angles in a triangle are less than 90 degrees, the triangle is called acute.
- Choice B is correct.** (5.NF.B.4)  $10 \times \frac{2}{5} = \frac{20}{5} = 4$ .
- Choice A is correct.** (5.NBT.A.1) In expanded form,  $7.346 = 7 + 0.3$  (tenths) +  $0.04$  (hundredths) +  $0.006$  (thousandths).
- The correct answer is  $5 \div \frac{1}{4} = n$ .** (5.NF.B.7c) The total is 5 cups and each serving is one fourth cup, so divide total by serving size.
- Choice C is correct.** (5.NF.A.2) Convert:  $\frac{1}{5} = \frac{2}{10}$ . Total:  $\frac{2}{10} + \frac{2}{10} = \frac{4}{10} = \frac{2}{5}$  of the inventory sold.
- Choice D is correct.** (5.G.B.4) Looking up the table, only the Square row has check marks in BOTH "All sides equal" and "90° angles". A quadrilateral, parallelogram, and rectangle don't all guarantee equal sides; only the square does. So the most specific name is Square.
- Choice A is correct.** (5.NF.A.1) Borrow 1 from 6:  $5\frac{7}{5} - 3\frac{4}{5} = 2\frac{3}{5}$ .
- Choice B is correct.** (5.MD.C.5c) Find each part first: Prism A is  $9 \times 4 \times 2 = 72$  cubic inches, and Prism B is  $6 \times 4 \times 1 = 24$  cubic inches. Because the parts do not overlap, add them:  $72 + 24 = 96$  cubic inches.
- Choice C is correct.** (5.NF.B.7c) Start with one unit fraction,  $\frac{1}{4}$ , and share it into 5 equal parts. Each part is  $\frac{1}{4} \div 5 = \frac{1}{20}$  of the whole.



## Greetings, Mathematical Composer!

★ Beautiful composition! You've written five complete mathematical symphonies, carefully arranging mathematical notes, creating harmonious solutions, and expressing elegant problem-solving like a master composer! Each problem was a musical piece requiring rhythm, structure, and creative expression. Your mathematical compositions have reached professional quality! ★

◇ **Here's what renowned composers understand:** creating beautiful music requires understanding musical theory, practicing techniques, and developing personal style. They compose numerous pieces, refining their craft with each creation. You've done exactly that through these five tests! Each test was a new composition, and you've developed your unique mathematical voice! ◇

### Musical Review of Compositions

- **Melody Creation:** Your solution paths flow smoothly and logically!
- **Harmonic Balance:** You combine different methods beautifully!
- **Rhythm Precision:** You maintain steady pacing throughout tests!
- **Performance Ready:** Your compositions are ready for the grand concert!

**Remember this musical truth:** great composers trust their instincts when performing. After five complete compositions, your mathematical instincts are finely tuned. On test day, let your knowledge flow naturally like music. Don't overthinktrust the beautiful mathematical melodies you've composed through practice!

Want to share a particularly elegant mathematical composition or discuss solution harmonies? Send your musical works to [reza@testinar.com](mailto:reza@testinar.com). I appreciate mathematical artistry!

**Reza Nazari & Jay Daie**

Your Math Coaches for Calm Test-Day Thinking

# 5 FULL-LENGTH TESTS. STRONG SKILLS. BRIGHTER RESULTS.



Build confidence and master math with **5 full-length** practice tests designed to reflect the real test experience. This book provides the practice, review, and support students need to succeed in Grade 5 and beyond!

## WHAT'S INSIDE:



### 5 FULL-LENGTH PRACTICE TESTS

Realistic tests that build familiarity, boost focus, and improve test readiness.



### COMPLETE STANDARDS REVIEW

Covers all essential Grade 5 math topics with clear explanations and examples.



### SKILL PRACTICE

Strengthen key math skills through a wide variety of practice questions.



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Build critical thinking and problem-solving skills with real-world questions.



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Step-by-step explanations for every question to help students learn and improve.



## PRACTICE MORE. LEARN BETTER. SUCCEED ANYWHERE.



**Build Confidence**  
with consistent  
practice



**Improve Accuracy**  
and problem-  
solving skills



**Time Management**  
strategies for  
test success



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