

9

Massachusetts

MCAS

GRADE 7

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

Program



9 PRINTED TESTS



2 ONLINE TESTS



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



BUILT FOR ACAP
Standards-Aligned



**STRENGTHEN
SKILLS**



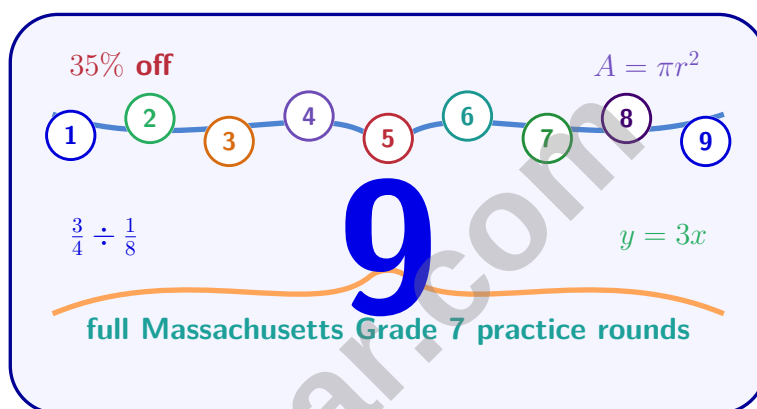
**SHARPEN
THINKING**



BE TEST-READY
Improve Performance

9 Massachusetts MCAS Grade 7 Math Practice Tests

Standards-Aligned Massachusetts Practice for Proportional Reasoning, Expressions, Geometry, Statistics, and Probability



Nine complete 40-question Grade 7 MCAS practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Massachusetts Grade 7 Problem Solver!

Nine focused rounds for sharper MCAS math thinking

This book gives you nine full Grade 7 MCAS math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, and explain your thinking with care.

Your Massachusetts 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 nine-session plan for confident Grade 7 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 a proportion, equation, diagram, number line, 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.

Massachusetts 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?

Nine MCAS tests, 360 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Tests 4–6	Expressions, equations, inequalities, scale drawings, geometry, and multi-step problem solving.
Tests 7–9	Statistics, probability, mixed review, stamina, and choosing efficient strategies.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.



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& answers

Table of Contents

★ Practice Test 1	_____	14
★ Practice Test 2	_____	28
★ Practice Test 3	_____	41
★ Practice Test 4	_____	57
★ Practice Test 5	_____	71
★ Practice Test 6	_____	87
★ Practice Test 7	_____	102
★ Practice Test 8	_____	117
★ Practice Test 9	_____	130
Practice Test Answer Keys	_____	145
Practice Test Answers and Explanations	_____	151

1) Solve: $6x - 15 = 3$

☐ A. $x = 2$

☐ C. $x = 4$

☐ B. $x = 3$

☐ D. $x = 5$

2) A frequency table shows results from drawing cards with replacement 500 times:

Card Type	Hearts	Diamonds	Clubs	Spades
Frequency	140	125	128	107

Which suit has the lowest experimental probability?

☐ A. Hearts

☐ C. Clubs

☐ B. Diamonds

☐ D. Spades

3) Convert 5,000 cubic inches to cubic feet. (Hint: $1 \text{ ft} = 12 \text{ in}$, so $1 \text{ ft}^3 = 1,728 \text{ in}^3$)

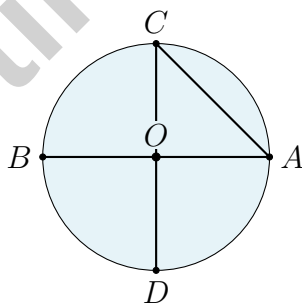
☐ A. 2.89 ft^3

☐ C. 3.68 ft^3

☐ B. 3.25 ft^3

☐ D. $8,640 \text{ ft}^3$

4) In the circle below, how many chords are shown?


☐ A. 1

☐ C. 3

☐ B. 2

☐ D. 4


- 5) A student draws a card from a standard deck. The probability of drawing a heart is $\frac{1}{4}$. What is this as a percent?
- ☐ A. 4% ☐ C. 25%
- ☐ B. 14% ☐ D. 40%
- 6) A retirement fund has \$50,000 that earns 3.2% simple interest per year. What will be the total value of the fund after 10 years?
- ☐ A. \$51,600 ☐ C. \$66,000
- ☐ B. \$56,000 ☐ D. \$66,400
- 7) A model train set uses a scale of 1 : 87. If a real train car is 26 meters long, which is closest to the model length?
- ☐ A. 0.3 cm ☐ C. 3 cm
- ☐ B. 30 cm ☐ D. 22.6 m
- 8) A recipe requires $\frac{3}{4}$ cup of milk to make $\frac{5}{8}$ of a batch. How much milk is needed per full batch?
- ☐ A. $\frac{5}{6}$ cup ☐ C. $\frac{32}{15}$ cups
- ☐ B. $\frac{15}{32}$ cups ☐ D. $\frac{6}{5}$ cups
- 9) If y is proportional to x , and a point is (2, 6), what is the constant of proportionality?
- ☐ A. $k = \frac{1}{3}$ ☐ C. $k = 6$
- ☐ B. $k = 2$ ☐ D. $k = 3$



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- 10) If you get a 20% discount on a \$50 item, how much money do you save?
- ☐ A. \$5 ☐ C. \$20
☐ B. \$30 ☐ D. \$10
- 11) A hiker is at an elevation of 1,450 feet. She climbs up 325 feet, then descends 180 feet. What is her final elevation?
- ☐ A. 1,595 feet ☐ C. 1,450 feet
☐ B. 1,270 feet ☐ D. 1,955 feet
- 12) A student got $(5e + 2) + (3e - 7) = 8e - 5$. Is this correct?
- ☐ A. Yes, the work is correct ☐ C. No, the e terms were not combined correctly
☐ B. No, the constant term is wrong; should be $8e - 5$ not $8e + 5$ ☐ D. No, the answer should be $8e + 5$
- 13) Simplify: $\frac{g^{14}}{g^6}$
- ☐ A. g^8 ☐ C. g^{84}
☐ B. g^{20} ☐ D. g^2
- 14) Solve: $\frac{x}{4} + 5 = 9$
- ☐ A. $x = 8$ ☐ C. $x = 16$
☐ B. $x = 12$ ☐ D. $x = 20$
- 15) If $H(5, -2)$ is reflected over the line $y = -x$, what is the image?
- ☐ A. $(2, -5)$ ☐ C. $(5, 2)$
☐ B. $(-2, -5)$ ☐ D. $(-5, 2)$



- 1) A store bought items for \$500 total and marked them up by 60%. What is the selling price for all items?

- ☐ A. \$3000 ☐ C. \$300
☐ B. \$500 ☐ D. \$800

- 2) The table shows distance and time. Find the unit rate in miles per hour.

Distance (mi)	$\frac{2}{3}$	$1\frac{1}{3}$	2
Time (hr)	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$

- ☐ A. 1 mph ☐ C. $\frac{2}{3}$ mph
☐ B. $\frac{3}{10}$ mph ☐ D. $\frac{10}{3}$ mph

- 3) A consultant charges clients a base rate of \$100 per hour plus a 10% project management fee on the total billable hours. For a 10-hour project, what is the total cost?

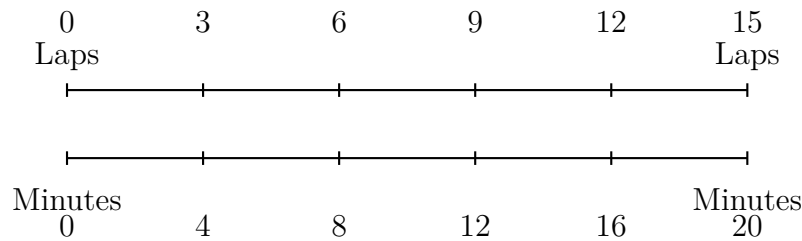
- 4) Two quantities are shown below. Which represents a non-proportional relationship?

- ☐ A. Number of hours worked at hourly wage and earnings ☐ C. The number of items bought at constant price and total cost
☐ B. The side of a square and its area ☐ D. A person's age and height (within normal range)



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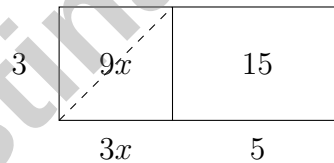
- 5) A double number line relates laps completed to minutes elapsed.



What is the constant of proportionality (laps per minute)?

- ☐ A. 1.2 laps/min ☐ C. 1.0 laps/min
☐ B. 0.6 laps/min ☐ D. 0.75 laps/min
- 6) Are the expressions $12a - 5a + 3a$ and $10a$ equivalent?
- ☐ A. Yes, because $12 - 5 + 3 = 10$. ☐ C. Yes, both are equal to $10a$.
☐ B. No, because the coefficients are different. ☐ D. No, because $12a - 5a + 3a$ cannot be simplified.

7)



The area model above represents the factorization of $9x + 15$. What is the common factor shown as the height?

- ☐ A. 3 ☐ C. 9
☐ B. 5 ☐ D. 15



- 1) A cone with height 15 cm and base radius 6 cm is cut horizontally at a height of 5 cm from the apex. What is the radius of the circular cross-section?

☐ A. 2 cm

☐ C. 5 cm

☐ B. 4 cm

☐ D. 6 cm

- 2) Between which two consecutive integers does $\sqrt{40}$ lie? (Write your answer in the form “between a and b ”)

- 3) Solve for x : $2x + 7 = 19$

☐ A. $x = 4$

☐ C. $x = 6$

☐ B. $x = 5$

☐ D. $x = 13$

- 4) Solve: $-2x + 6 = 18$ and check that a negative answer is reasonable.

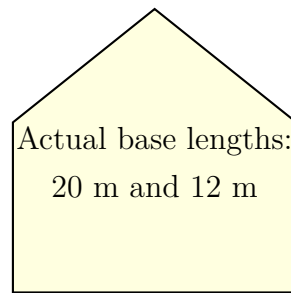
☐ A. $x = -6$

☐ C. $x = 4$

☐ B. $x = -4$

☐ D. $x = 6$





5)

Scale: 1 cm = 4 m

A scale drawing of a trapezoid uses a scale of 1 cm : 4 m. If the actual bases are 20 m and 12 m, what are the drawing's base lengths?

☐ A. 5 cm and 3 cm☐ C. 8 cm and 4 cm☐ B. 4 cm and 2.4 cm☐ D. 20 cm and 12 cm

Original

Scaled



8 cm × 4.8 cm scale 1 : 1.25k

6)

A scale drawing of a rectangular room is 8 cm × 4.8 cm. The drawing is enlarged proportionally so the new dimensions are 10 cm × 6 cm. If the original scale was 1 cm : 5 m, what is the scale of the enlarged drawing?

☐ A. 1 cm : 4 m☐ C. 1 cm : 3.125 m☐ B. 1 cm : 6.25 m☐ D. 1 cm : 2.5 m

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Massachusetts MCAS Grade 7 Practice Test Answer Keys**How to use this section with a Grade 7 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 Massachusetts MCAS practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice B is correct.** (7.EE.3-7.EE.4) Add 15: $6x = 18$. Divide by 6: $x = 3$.
- 2) **Choice D is correct.** (7.SP.6) Compare relative frequencies: Hearts $\frac{140}{500} = 0.28$, Diamonds $\frac{125}{500} = 0.25$, Clubs $\frac{128}{500} = 0.256$, Spades $\frac{107}{500} = 0.214$. Spades has the lowest.
- 3) **Choice A is correct.** (7.G.4-7.G.6) $\frac{5,000 \text{ in}^3}{1,728 \text{ in}^3/\text{ft}^3} \approx 2.89 \text{ ft}^3$.
- 4) **Choice C is correct.** (7.G.4-7.G.6) The three chords are: AB (diameter), CD (diameter), and AC . Each connects two points on the circle.
- 5) **Choice C is correct.** (7.SP.5-7.SP.8) $\frac{1}{4} = 0.25 = 25\%$.
- 6) **Choice C is correct.** (7.RP.3) Interest earned: $I = 50000 \times 0.032 \times 10 = \$16,000$. Total value: $A = P + I = 50000 + 16000 = \$66,000$.
- 7) **Choice C is correct.** (7.RP.1-7.RP.3) Divide actual length by scale: $26 \text{ m} \div 87 \approx 0.299 \text{ m} \approx 30 \text{ cm}$. The closest option is 3 cm (or 0.03 m, noting that 30 cm would overestimate).
- 8) **Choice D is correct.** (7.RP.1-7.RP.3) Unit rate: $\frac{3/4}{5/8} = \frac{3}{4} \times \frac{8}{5} = \frac{24}{20} = \frac{6}{5} = 1\frac{1}{5}$ cups per full batch.
- 9) **Choice D is correct.** (7.RP.1-7.RP.3) From $y = kx$: $6 = k(2)$, so $k = \frac{6}{2} = 3$.
- 10) **Choice D is correct.** (7.RP.3) The discount is $\frac{20}{100} \times 50 = 10$, so you save \$10.
- 11) **Choice A is correct.** (7.NS.1-7.NS.3) Final elevation $= 1,450 + 325 - 180 = 1,595$ feet.
- 12) **Choice A is correct.** (7.EE.1-7.EE.2) $(5e + 3e) + (2 - 7) = 8e - 5$ ✓. The student correctly combined like terms.
- 13) **Choice A is correct.** (7.EE.1-7.EE.2) Quotient rule: subtract exponents with the same base: $\frac{g^{14}}{g^6} = g^{14-6} = g^8$.
- 14) **Choice C is correct.** (7.EE.3-7.EE.4) Subtract 5: $\frac{x}{4} = 4$. Multiply by 4: $x = 16$.
- 15) **Choice A is correct.** (7.G.1-7.G.5) Using the rule $(x, y) \rightarrow (-y, -x)$ with $(5, -2)$: $(-(-2), -(5)) = (2, -5)$.
- 16) **The correct answer is $\frac{1}{2}$.** (7.SP.5-7.SP.8) Outcomes with exactly one head: HT or TH. Total outcomes: HH, HT, TH, TT = 4. Favorable outcomes: 2. Probability: $\frac{2}{4} = \frac{1}{2}$.
- 17) **Choice D is correct.** (7.RP.1-7.RP.3) The constant is $k = \frac{6}{3} = 2$. The equation is $y = 2x$.
- 18) **The correct answer is A,C.** (7.G.1-7.G.5) A is true: three specific side lengths uniquely determine a triangle. C is true: two sides and the angle between them uniquely determine a triangle. B is false: three angles determine shape but not size (infinitely many similar triangles). D is false: two sides and a non-included angle can produce 0, 1, or 2 triangles.
- 19) **Choice C is correct.** (7.RP.3) Savings = 35% of \$80 $= 0.35 \times 80 = \$28$.
- 20) **Choice C is correct.** (7.NS.1-7.NS.3) $15 \times 15 = 225$, so $\sqrt{225} = 15$.
- 21) **The correct answer is 35.** (7.RP.1-7.RP.3) Ratio 2 : 5: if juice = 14, then $\frac{2}{5} = \frac{14}{x}$. Cross multiply: $2x = 70$, so $x = 35$ cups water.
- 22) **Choice A is correct.** (7.EE.1-7.EE.2) $\text{gcd}(6, 9) = 3$, so $6x - 9 = 3(2x - 3)$ by factoring out the GCF.
- 23) **Choice B is correct.** (7.EE.4a) Haircut is \$25 plus \$8 per treatment. Equation: $8t + 25 = 73$.
- 24) **Choice C is correct.** (7.G.1-7.G.5) Vertical angles are congruent: $n = 95^\circ$.
- 25) **Choice C is correct.** (7.G.1-7.G.5) Scale factor $= \frac{4.5}{3} = 1.5$. Base of Trapezoid 2 $= 8 \times 1.5 = 12 \text{ ft}$.
- 26) **Choice C is correct.** (7.SP.5-7.SP.8) Each spin is independent: $P(A) = \frac{1}{4}$ and $P(B) = \frac{1}{4}$, so $P(A \text{ and then } B) = \frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$.
- 27) **Choice A is correct.** (7.SP.3) Median shows the center/typical value. Even if B's median (55) exceeds A's (50), overlap means some values in A exceed some in B. Median comparison shows typical difference, not individual comparisons.
- 28) **Choice D is correct.** (7.NS.2) $2 \times (-3) = -6$. Then $(-6) \times (-2) = 12$. Two negatives (one in the (-3) and one in the (-2)) give a positive.
- 29) **Choice B is correct.** (7.G.4-7.G.6) Start with the square: $14 \times 14 = 196 \text{ cm}^2$. Subtract the four corner triangles: $4 \times (\frac{1}{2} \times 3 \times 3) = 18 \text{ cm}^2$. Remaining: $196 - 18 = 178 \text{ cm}^2$.



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Hi, Confident Learner!

◇ This high-stamina book gave you nine substantial Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 7 math can feel big because it brings together rational numbers, expressions, equations, geometry, probability, and data. ◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 7 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **9** full-length Math practice tests and **2** online tests to help Grade 7 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.

THIS BOOK INCLUDES:

9 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answer Explanations



MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

WHAT YOU'LL GAIN



Stronger Math Skills

Build a solid foundation through targeted practice and review.



Better Problem Solving

Develop logical thinking and effective solution strategies.



Deeper Understanding

Reinforce key concepts with clear explanations and meaningful practice.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Achieve Success

Build confidence and perform your best on test day.

TOPICS COVERED

- ✓ Ratios & Proportions
- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Geometry
- ✓ Percents & Decimals
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ Algebraic Thinking
- ✓ And More!



2 ONLINE TESTS

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



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

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