

10

Massachusetts

MCAS

GRADE

7

MATH

PRACTICE TESTS

Standards Aligned Problem
Solving For Comprehensive
Assessment Programs



10 PRINTED TESTS

Realistic practice to build
confidence and mastery



2 ONLINE TESTS

Extra practice for
continued success



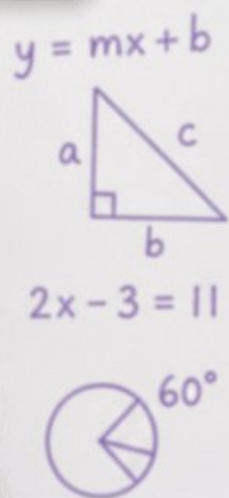
DETAILED ANSWER EXPLANATIONS

Learn with step-by-step
solutions



FOCUSED & EFFECTIVE

Target key math skills
with purposeful practice



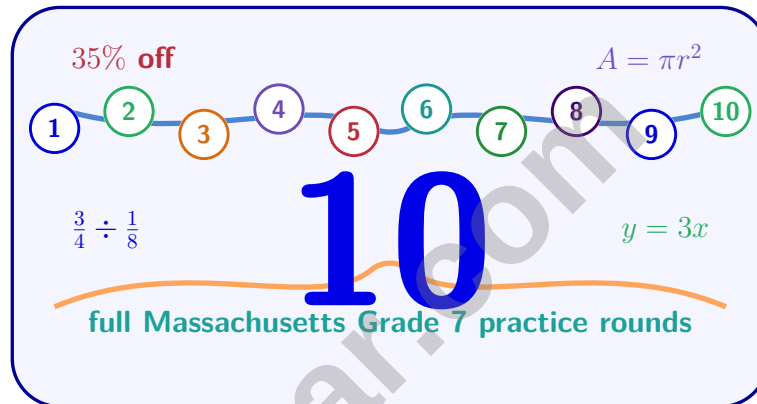
10 PRINTED TESTS
+2 ONLINE TESTS

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

PRACTICE ★ REVIEW ★ SUCCEED

10 Massachusetts MCAS Grade 7 Math Practice Tests

Massachusetts Grade 7 MCAS Practice for precise practice across proportional reasoning, expressions, equations, geometry, data, and probability



Ten 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!

Ten focused rounds for sharper Massachusetts MCAS math thinking

This book gives you ten 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 ten-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?

Ten Massachusetts MCAS tests, 400 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.
Test 10	A final Massachusetts round to show growth across the whole book.
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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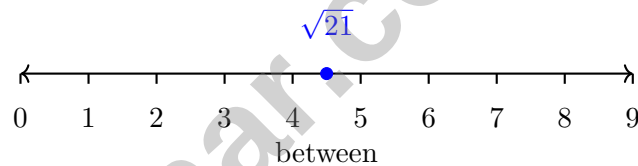
Table of Contents

★ Practice Test 1	_____	11
★ Practice Test 2	_____	25
★ Practice Test 3	_____	40
★ Practice Test 4	_____	54
★ Practice Test 5	_____	68
★ Practice Test 6	_____	82
★ Practice Test 7	_____	96
★ Practice Test 8	_____	110
★ Practice Test 9	_____	125
★ Practice Test 10	_____	140
Practice Test Answer Keys	_____	154
Practice Test Answers and Explanations	_____	160

- 1) Elena categorizes her expenses as **needs** (housing, food) versus **wants** (entertainment, dining out). She earns \$600 monthly. If needs total 50% and wants total 30%, how much is allocated to other categories like savings?

- ☐ A. \$60 ☐ C. \$180
☐ B. \$300 ☐ D. \$120

- 2) A cylindrical can contains 301.44 cubic inches of soup. If the radius is 3 inches, what is the height of the can? Use $\pi \approx 3.14$.



- 3) which two?

Between which two consecutive integers is $\sqrt{21}$?

- ☐ A. 3 and 4 ☐ C. 5 and 6
☐ B. 4 and 5 ☐ D. 6 and 7

- 4) Solve for x : $-3(x + 4) = 24$

- ☐ A. $x = -12$ ☐ C. $x = 4$
☐ B. $x = -8$ ☐ D. $x = 8$



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5) A container has 40 items: 16 are red, 14 are blue, and 10 are green. A student calculates $P(\text{red}) = \frac{16}{40}$, then simplifies to $\frac{2}{5}$. Is this correct?

- ☐ A. No; the correct simplified form is $\frac{1}{5}$.
☐ B. Yes; $\frac{16}{40} = \frac{2}{5}$.
☐ C. No; it should stay as $\frac{16}{40}$.
☐ D. No; the correct form is $\frac{4}{10}$.

6) A coin is flipped and a die showing 1, 2, or 3 is rolled. How many favorable outcomes involve Tails and a number less than 3?

- ☐ A. 1
☐ B. 2
☐ C. 3
☐ D. 4

7) A histogram shows the ages of 60 people in a fitness class: 10–20 (6), 20–30 (18), 30–40 (24), 40–50 (12). A gym owner wants to market the class to “young adults.” If “young adults” means ages 20–40, what percentage of the class fits that description?

- ☐ A. 70%
☐ B. 42%
☐ C. 30%
☐ D. 90%

8) A researcher wants to estimate the proportion of households in a city that have at least two pets. She randomly selects 200 households and finds that 76 households have at least two pets. What is the estimated proportion of households in the city with at least two pets?



- 9) Dataset M has range 8 and Dataset N has range 40. What is the ratio of N's range to M's range?

- 10) Two events A and B are independent. $P(A) = \frac{1}{2}$ and $P(B) = \frac{1}{3}$. What is $P(A \text{ or } B)$?

☐ A. $\frac{2}{5}$
☐ B. $\frac{2}{3}$

☐ C. $\frac{5}{6}$
☐ D. $\frac{1}{6}$

- 11) A bag contains marbles. In an experiment with replacement, a red marble was drawn 45 times out of 300 draws. If the experiment is repeated with 600 draws, approximately how many red marbles would be expected?

Draws	300	$\xrightarrow{\times 2}$	600
Red draws	45	$\xrightarrow{\times 2}$	?

☐ A. 45
☐ B. 90

☐ C. 135
☐ D. 180

- 12) A bag contains 8 red marbles and 12 blue marbles. If you pick one marble without looking, what is the probability of picking a red marble?

☐ A. $\frac{8}{20}$
☐ B. $\frac{12}{20}$

☐ C. $\frac{8}{12}$
☐ D. $\frac{20}{8}$



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- 1) A data company offers cloud storage at \$9.99 per month with a one-time activation fee of \$29.99. Which expression shows the total cost C for n months?

☐ A. $C = 29.99n + 9.99$ ☐ C. $C = 9.99 + 29.99n$
☐ B. $C = 9.99n + 29.99$ ☐ D. $C = (9.99 + 29.99)n$

- 2) Two box plots compare monthly rainfall (in inches) for Region A and Region B. Region A: IQR (Interquartile Range) = 3 inches; Region B: IQR = 8 inches. What does this comparison reveal?

☐ A. Region A has more variable rainfall ☐ C. Both regions have identical rainfall patterns
☐ B. Region B has a wider middle 50% of data (more variability in the middle) ☐ D. Region A receives more total rain annually

- 3) A dataset has minimum 28 and maximum 94. If you create a stem-and-leaf plot with single-digit stems, how many stems are required?

☐ A. 6 ☐ C. 8
☐ B. 7 ☐ D. 9

- 4) A composite figure consists of a semicircle (diameter 10 inches) placed on top of a rectangle (10 inches $\times$ 8 inches). What is the total area? (Use $\pi \approx 3.14$.)

☐ A. 80 in^2 ☐ C. 119.25 in^2
☐ B. 99.25 in^2 ☐ D. 159.25 in^2

- 5) A rectangular prism has a volume of 360 in^3 . If the length is 10 inches and the width is 6 inches, what is the height?

☐ A. 3 in ☐ C. 9 in
☐ B. 6 in ☐ D. 12 in



6) Simplify: $9x^2 + 3x^2 + 2x - 4x$

☐ A. $12x^2 - 2x$

☐ B. $12x^3 - 2x$

☐ C. $11x^2 - x$

☐ D. $12x^2 + 2x$

7) Factor: $12p - 8$

☐ A. $4(3p - 2)$

☐ B. $2(6p - 4)$

☐ C. $8(4p - 1)$

☐ D. $6(2p - 1.33)$

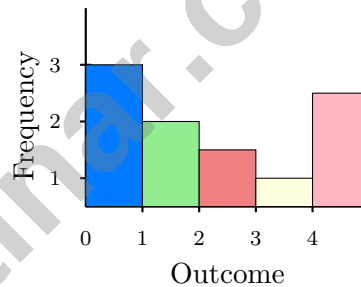
8) A survey shows that in a group of 240 people, 22% prefer tea over coffee. How many people prefer tea?

☐ A. 22

☐ B. 48

☐ C. 52.8

☐ D. 66



9)

Based on the bar graph showing 100 simulation trials, what is the estimated probability of Outcome 1?

☐ A. 0.10

☐ B. 0.15

☐ C. 0.25

☐ D. 0.30



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1) What is $(-1) \times 2 \times (-3) \times 4$?

☐ A. -24

☐ C. 10

☐ B. -10

☐ D. 24

2) A hospital tracks patient visit types. If emergency visits occupy 216° of a circle graph, what percent do they represent?

☐ A. 36%

☐ C. 60%

☐ B. 54%

☐ D. 72%

3) To create a simulation of selecting a random student from a class of 28 students, a researcher uses a die rolled 4 times. Is this an appropriate model?

☐ A. Yes, because a die can represent any number

☐ C. No, because the die produces at most 6 outcomes per roll

☐ B. Yes, because 4 rolls produce many different outcomes

☐ D. No, because the die does not produce equally likely outcomes for all values 1–28

4) Which expression is equivalent to $(4b + 7) + (6b - 12) - (2b + 1)$?

☐ A. $8b - 6$

☐ C. $8b + 18$

☐ B. $10b - 6$

☐ D. $10b - 8$



Match each expression to the rule used:

Expression	Rule
$x^5 \cdot x^7 = x^{12}$	I. Power Rule
$(x^3)^4 = x^{12}$	II. Product Rule
$\frac{x^{20}}{x^8} = x^{12}$	III. Quotient Rule

5)

Which statement correctly matches an expression to its rule?

- ☐ A. $x^5 \cdot x^7 = x^{12}$ uses Power Rule
 ☐ C. $\frac{x^{20}}{x^8} = x^{12}$ uses Product Rule
- ☐ B. $(x^3)^4 = x^{12}$ uses Quotient Rule
 ☐ D. $\frac{x^{20}}{x^8} = x^{12}$ uses Quotient Rule
- 6) Naomi buys 3 books at \$8 each and a \$5 bookmark. Let t be her total cost. Which equation models this situation?
- ☐ A. $t = 3 + 8 + 5$
☐ C. $t = 3(8) + 5$
- ☐ B. $t = 3(8 + 5)$
☐ D. $t = 3 + 8 \times 5$
- 7) What is x if $3(x - 2) = 9$?
- ☐ A. $x = 2$
☐ C. $x = 5$
- ☐ B. $x = 3$
☐ D. $x = 6$
- 8) Solve: $\frac{2}{3}x + 4 = 10$ and verify using the reciprocal property.
- ☐ A. $x = 3$
☐ C. $x = 9$
- ☐ B. $x = 6$
☐ D. $x = 12$



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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 D is correct.** (7.RP.3) Needs + Wants = $50\% + 30\% = 80\%$ of \$600 = \$480. Remaining for savings and other = $100\% - 80\% = 20\%$ of \$600 = \$120.
- 2) **The correct answer is 10.67.** (7.G.4-7.G.6) $V = \pi r^2 h \Rightarrow 301.44 = 3.14 \times 9 \times h \Rightarrow 301.44 = 28.26h \Rightarrow h \approx 10.67$ inches.
- 3) **Choice B is correct.** (7.NS.1-7.NS.3) $4^2 = 16$ and $5^2 = 25$. Since $16 < 21 < 25$, we have $4 < \sqrt{21} < 5$.
- 4) **Choice B is correct.** (7.EE.4a) Distribute: $-3x - 12 = 24$. Add 12: $-3x = 36$. Divide by -3 : $x = -8$.
- 5) **Choice B is correct.** (7.SP.5-7.SP.8) $\frac{16}{40} = \frac{2}{5}$ is correct. GCD(16,40)=8, so $\frac{16}{40} = \frac{2}{5}$.
- 6) **Choice B is correct.** (7.SP.5-7.SP.8) Tails: 1 outcome. Numbers less than 3 from {1, 2, 3}: {1, 2} = 2 outcomes. Favorable: T1, T2 = 2 outcomes.
- 7) **Choice A is correct.** (7.SP.1-7.SP.4) Ages 20–40 include: $18 + 24 = 42$ people out of 60. Percentage = $\frac{42}{60} = 0.70 = 70\%$.
- 8) **The correct answer is 0.38 or 38%.** (7.SP.1-7.SP.4) Calculate the sample proportion: $\frac{76}{200} = 0.38 = 38\%$. Since the sample was randomly selected, this sample statistic (0.38) is used as the estimate for the true proportion of all households in the city with at least two pets.
- 9) **The correct answer is 5.** (7.SP.1-7.SP.4) Compute $40 \div 8 = 5$.
- 10) **Choice C is correct.** (7.SP.5-7.SP.8) For independent events: $P(A \text{ or } B) = P(A) + P(B) - P(A) \cdot P(B) = \frac{1}{2} + \frac{1}{3} - \frac{1}{6} = \frac{5}{6}$.
- 11) **Choice B is correct.** (7.SP.6) Experimental probability = $\frac{45}{300} = 0.15$. Expected draws in 600: $0.15 \times 600 = 90$.
- 12) **Choice A is correct.** (7.SP.5-7.SP.8) Total marbles = $8 + 12 = 20$. Probability = $\frac{\text{red}}{\text{total}} = \frac{8}{20}$.
- 13) **Choice D is correct.** (7.RP.3) Percent error = $\frac{|850 - 1000|}{1000} \times 100\% = \frac{150}{1000} \times 100\% = 15\%$.
- 14) **Choice A is correct.** (7.EE.1-7.EE.2) Expand: $2(3) + 2(4y) - 5 = 6 + 8y - 5 = 8y + 1$.
- 15) **Choice D is correct.** (7.RP.3) The line is linear; from year 0 to year 1, balance goes from \$2000 to \$2500 (gain of \$500).
- 16) **Choice D is correct.** (7.NS.1-7.NS.3) $8 - (-1) = 8 + 1 = 9$.
- 17) **Choice C is correct.** (7.RP.1-7.RP.3) Divide actual dimensions by scale: $15 \div 5 = 3$ inches; $10 \div 5 = 2$ inches.
- 18) **Choice C is correct.** (7.RP.3) 75% of 20 is $0.75 \times 20 = 15$ games.
- 19) **Choice A is correct.** (7.NS.1b) When adding two negative numbers, add their absolute values and keep the negative sign: $|-6| + |-4| = 10$, so $-6 + (-4) = -10$.
- 20) **Choice B is correct.** (7.EE.1) Convert to common denominator: $\frac{2}{3}m = \frac{4}{6}m$. Then $\frac{4}{6}m + \frac{1}{6}m = \frac{5}{6}m$.
- 21) **The correct answer is A, D.** (7.G.4-7.G.6) A is correct because $V = Bh$, so $h = V/B$. D is correct because volume is measured in cubic units. B is false because $2 \times 3 \times 5 = 30 \text{ m}^3$, not 10 m^3 . C is false because the base shape affects the base area.
- 22) **Choice A is correct.** (7.EE.1-7.EE.2) Factor out -5 : $-5a - 20b = -5(a + 4b)$.
- 23) **Choice C is correct.** (7.SP.1-7.SP.4) 19% of 1200 = $0.19 \times 1200 = 228$ items.
- 24) **Choice B is correct.** (7.SP.5-7.SP.8) Sample space: $3 \times 3 = 9$ equally likely outcomes. Successful outcomes (first $\neq$ second): exclude 1–1, 2–2, 3–3 (three outcomes where they match). Remaining: $9 - 3 = 6$ outcomes where they differ. Probability = $\frac{6}{9} = \frac{2}{3}$.
- 25) **Choice A is correct.** (7.EE.4b) When dividing by a negative number, always flip the inequality sign. Here: $-5x \geq 20 \Rightarrow x \leq -4$.
- 26) **The correct answer is 46.5.** (7.SP.1-7.SP.4) The ordered values are 31, 34, 37, 42, 45, 48, 49, 50, 53, 56. With 10 values, the median is the average of the 5th and 6th values: $(45 + 48) \div 2 = 46.5$.
- 27) **Choice C is correct.** (7.RP.1-7.RP.3) With unit rate $k = 2.5$, the equation is $y = 2.5x$. When $x = 6$, $y = 2.5 \times 6 = 15$.
- 28) **Choice D is correct.** (7.NS.1-7.NS.3) $\frac{1}{4} - \frac{3}{4} = -\frac{2}{4} = -\frac{1}{2}$.
- 29) **Choice B is correct.** (7.NS.1-7.NS.3) $\frac{1}{5} \div \frac{1}{3} = \frac{1}{5} \times \frac{3}{1} = \frac{3}{5}$.



Hi, Math Hero!

◇ This full-length book gave you ten complete Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. You showed up for Grade 7 practice again and again. That is what real growth looks like: steady effort, honest review, and a willingness to try. ◇

★ **Remember this:** A math hero is not someone who never misses a question. A math hero learns from the miss and comes back stronger. ★

Hero Habits

- **Courage:** You try problems that are not automatic.
- **Honesty:** You review what needs work.
- **Patience:** You let skills grow over time.
- **Pride:** You recognize the effort you gave.

Grade 7 test-day tip: Save one solved problem you are proud of. Looking back at progress helps motivation stay strong.

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

Jay Daie

Your Math Hero Guide

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes 10 full-length Math practice tests and 2 extra 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:

10 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
- ✓ Fractions & Decimals
- ✓ Percents
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ And More!



2 EXTRA 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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