

6

MASSACHUSETTS

MCAS

GRADE

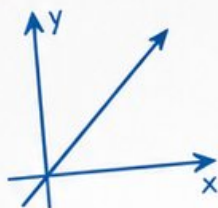
7

MATH

PRACTICE TESTS

Standards Aligned
Problem Solving For
Comprehensive
Assessment Programs

$$y = mx + b$$



$$2(x - 3) = 4x + 6$$



6 PRINTED TESTS



2 ONLINE TESTS



USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**
FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



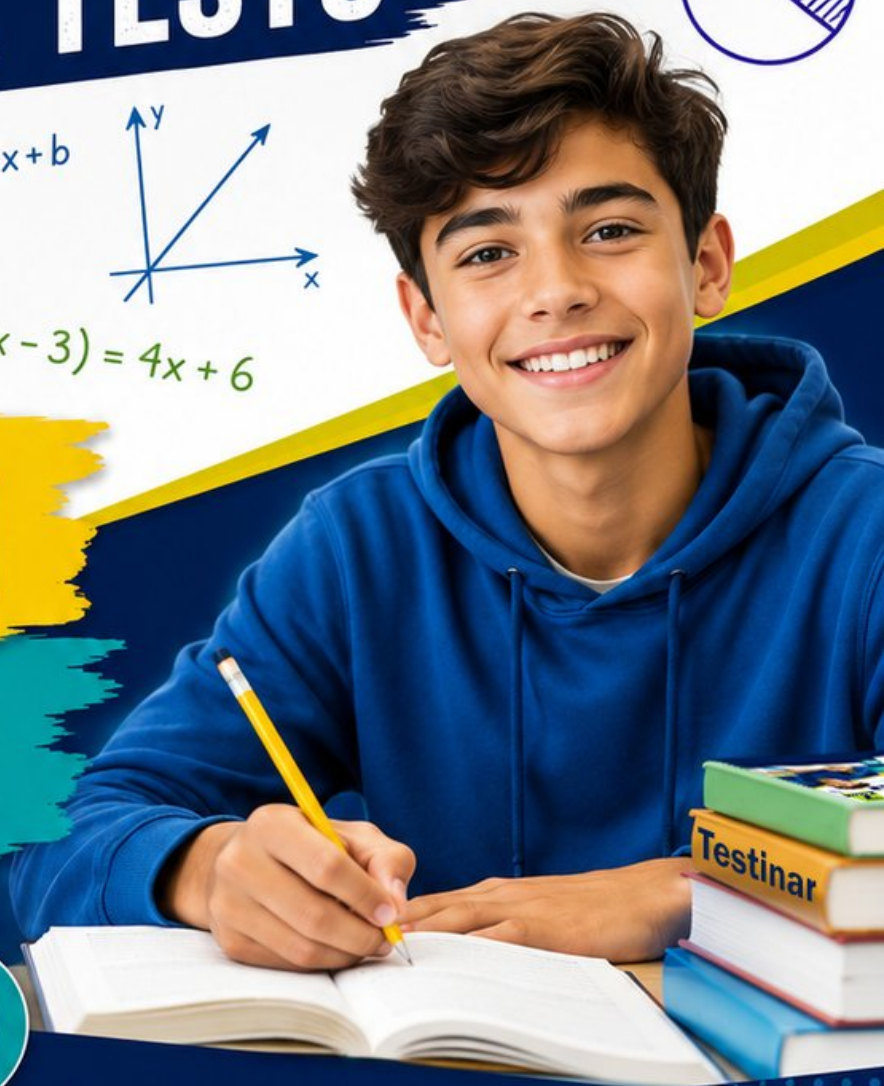
Strengthen
Math Skills



Detailed Answers
& Explanations

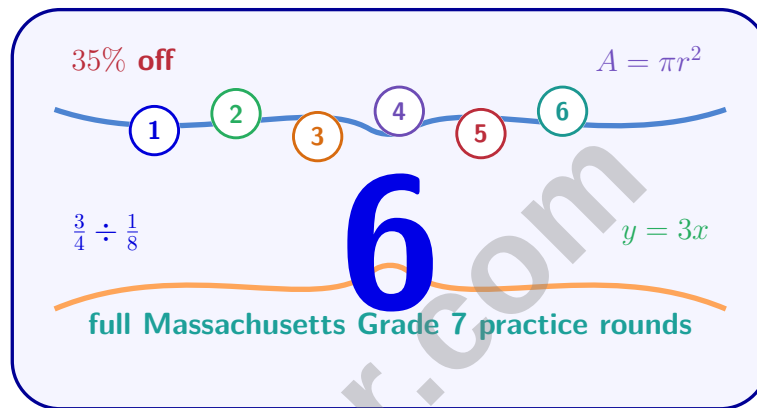


Improve Test
Performance



6 Massachusetts MCAS Grade 7 Math Practice Tests

Standards-Aligned Practice with Review, Answer Keys, and Explanations



Six 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!

Six focused rounds for sharper MCAS math thinking

This book gives you six 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 six-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?

Six MCAS tests, 240 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.
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

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- 1) A babysitter charges hourly. The table shows total earnings for different hours worked.

Hours	Earnings (\$)
2	18
4	36
7	63

What is the hourly rate (constant of proportionality)?

- ☐ A. \$12 per hour ☐ C. \$8 per hour
☐ B. \$10 per hour ☐ D. \$9 per hour
- 2) A rectangle has width w meters. The length is $3w - 2$. If the perimeter is 28 meters, what is the width? (Hint: perimeter = $2(\text{length}) + 2(\text{width})$)
- ☐ A. $w = 2$ ☐ C. $w = 4$
☐ B. $w = 3$ ☐ D. $w = 5$
- 3) A pair of jeans originally costs \$50. The store raises the price to \$60. What is the percent increase?
- ☐ A. 10% ☐ C. 20%
☐ B. 16.7% ☐ D. 30%
- 4) A spinner with 5 equal sections is used to simulate an event. After 100 spins, the results show that one section appears 12 times, another appears 18 times, another appears 22 times, another appears 26 times, and the last appears 22 times. Which section's result deviates most from its theoretical probability?
- ☐ A. The section appearing 12 times ☐ C. The section appearing 22 times
☐ B. The section appearing 18 times ☐ D. The section appearing 26 times



5) A square pyramid has base side 9 m and slant height 12 m. What is the total surface area?

☐ A. 81 m^2

☐ C. 297 m^2

☐ B. 216 m^2

☐ D. 378 m^2

6) A survey asks: "Don't you agree that our school lunch program provides terrible food?" What sampling problem does this question have?

☐ A. Convenience sample

☐ C. Voluntary response bias

☐ B. Leading question

☐ D. Insufficient sample size

7) Two similar rectangles have a scale factor of 2.5. The smaller rectangle has a perimeter of 16 inches. What is the perimeter of the larger rectangle?



8) A bag contains 35 marbles. The probability of drawing a specific color is $\frac{5}{7}$. How many marbles of that color are in the bag?

☐ A. 5

☐ C. 25

☐ B. 15

☐ D. 30

9) A number from 1 to 4 is selected, and then a letter from A to C is selected. How many favorable outcomes result in an even number and a vowel (A)?

☐ A. 1

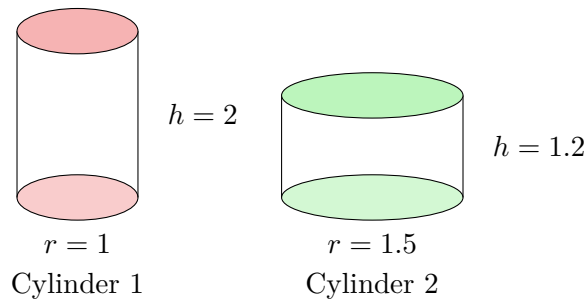
☐ C. 3

☐ B. 2

☐ D. 6



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10)

Which cylinder has the greater volume?

- ☐ A. Cylinder 1 ☐ C. They are equal
☐ B. Cylinder 2 ☐ D. Cannot be determined

11) What does MAD (Mean Absolute Deviation) measure?

- ☐ A. The average distance of data points from the mean ☐ C. The most frequently occurring value
☐ B. The middle value in an ordered dataset ☐ D. The difference between max and min

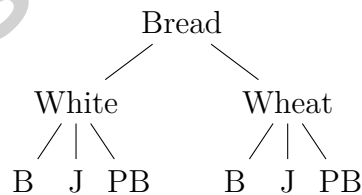
12) The circumference of a circle is 50.24 meters. Using $\pi \approx 3.14$, find the diameter.

13) A histogram shows the weights (in pounds) of 50 dogs. The intervals are 10–20 lbs, 20–30 lbs, 30–40 lbs, and 40–50 lbs, with frequencies 8, 15, 20, and 7. Which interval contains the mode?

- ☐ A. 10–20 lbs ☐ C. 30–40 lbs
☐ B. 20–30 lbs ☐ D. 40–50 lbs



- 1) Between which two consecutive integers does $\sqrt{99}$ lie?
- ☐ A. between 7 and 8 ☐ C. between 9 and 10
☐ B. between 8 and 9 ☐ D. between 10 and 11
- 2) Point $P(4, -3)$ is reflected over the x -axis. What are the coordinates of the image P' ?
- ☐ A. $(-4, -3)$ ☐ C. $(4, 3)$
☐ B. $(-4, 3)$ ☐ D. $(4, -3)$
- 3) Which statement correctly compares the purposes of checking and savings accounts?
- ☐ A. Checking is for saving money; savings is for daily transactions
☐ B. Savings accounts allow check writing but checking does not
☐ C. Checking earns higher interest than savings
☐ D. Checking is for daily payments and bills; savings is for long-term growth with interest
- 4) A student creates a tree diagram to show all outcomes for a bread choice (White or Wheat) and a spread choice (Butter, Jam, or Peanut Butter). At which level does the tree branch split into more paths?



- ☐ A. At the bread level (2 branches)
☐ B. At the spread level (3 branches per bread)
☐ C. The branches are equal at both levels
☐ D. The tree has only 1 level



- 5) A student rolls a die twice. The first roll is a 2. What is the probability that the second roll is even?

☐ A. $\frac{1}{6}$
☐ B. $\frac{1}{3}$

☐ C. $\frac{1}{2}$
☐ D. $\frac{2}{3}$

- 6) A quality control test found that out of 750 items produced, 12 were defective. What is the experimental probability that an item is defective?

☐ A. $\frac{12}{750}$
☐ B. $\frac{3}{125}$

☐ C. 0.12
☐ D. $\frac{1}{12}$

- 7) **Tree Height Measurements (Feet)**

Tree	Estimate	Actual
Oak	45	50

What is the percent error for the oak tree height?

☐ A. 90%
☐ B. 5%

☐ C. 11.1%
☐ D. 10%

- 8) Expand: $9(w - 4)$

☐ A. $9w - 36$
☐ B. $9w - 4$

☐ C. $w - 36$
☐ D. $9w + 36$

- 9)

Scenario	Principal	Annual Rate	Years
Account 1	\$1000	6%	2
Account 2	\$1200	4%	2

Which account earns more interest, and by how much?

☐ A. Account 1 by \$20
☐ B. Account 2 by \$20

☐ C. Account 1 by \$24
☐ D. Both earn the same



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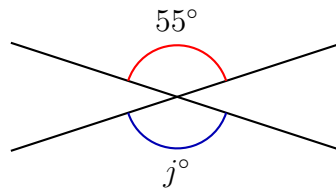
1) A scale drawing has a scale of 1 cm : 5 cm. What is the scale factor?

☐ A. 1

☐ C. 5

☐ B. 2

☐ D. 10



2)

Two intersecting lines form vertical angles. One angle is marked as 55° . What is the measure of angle j vertically opposite to it?

☐ A. 35°

☐ C. 125°

☐ B. 55°

☐ D. 235°

3) Two similar triangles have corresponding sides of 12 cm and 18 cm. If the smaller triangle has an area of 40 square cm, what is the area of the larger triangle?

☐ A. 60 square cm

☐ C. 120 square cm

☐ B. 90 square cm

☐ D. 180 square cm

4) A semicircle has an area of 25.12 square feet. What is the area of the full circle? Use $\pi \approx 3.14$.

☐ A. 12.56 ft^2

☐ C. 50.24 ft^2

☐ B. 25.12 ft^2

☐ D. 100.48 ft^2



- 5) A cylindrical storage tank at a farm has a radius of 5 feet. It can store 471 cubic feet of water. What is the height of the tank? Use $\pi \approx 3.14$.
- ☐ A. 3 feet ☐ C. 9 feet
☐ B. 6 feet ☐ D. 12 feet
- 6) Two datasets: Dataset 1: 10, 15, 20, 25, 30 Dataset 2: 15, 18, 20, 22, 25 Both have a median of 20. Which has lower variability?
- ☐ A. Dataset 1 (larger range) ☐ C. Both have equal variability
☐ B. Dataset 2 (more compact) ☐ D. Cannot compare with medians
- 7) A stem-and-leaf plot shows quiz scores for two students. Student A: Stem 6: Leaves 2, 8 | Stem 7: Leaves 1, 5, 9 | Stem 8: Leaves 3, 6. Student B: Stem 6: Leaves 4 | Stem 7: Leaves 2, 7 | Stem 8: Leaves 0, 4, 8. How many total scores are represented?
- ☐ A. 9 scores ☐ C. 12 scores
☐ B. 11 scores ☐ D. 13 scores
- 8) Two spinners are used to simulate rolling two dice. Each spinner has 6 equal sections numbered 1–6. If each spinner is spun once in a trial, how many different outcomes are in the sample space?



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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.1-7.RP.3) $k = 18/2 = 9$ dollars per hour. Verify: $36/4 = 9$ and $63/7 = 9$.
- 2) **Choice C is correct.** (7.EE.3-7.EE.4) Perimeter: $2(3w - 2) + 2w = 28 \Rightarrow 6w - 4 + 2w = 28 \Rightarrow 8w = 32 \Rightarrow w = 4$.
- 3) **Choice C is correct.** (7.RP.3) Percent increase = $\frac{\text{change}}{\text{original}} \times 100\% = \frac{60-50}{50} \times 100\% = 20\%$.
- 4) **Choice A is correct.** (7.SP.5-7.SP.8) Theoretical: $\frac{100}{5} = 20$ for each. Deviation: $|12 - 20| = 8$, $|18 - 20| = 2$, $|22 - 20| = 2$, $|26 - 20| = 6$. Largest deviation is 8.
- 5) **Choice C is correct.** (7.G.4-7.G.6) Base: $9^2 = 81 \text{ m}^2$. Four triangles: $4 \times \frac{1}{2}(9)(12) = 4 \times 54 = 216 \text{ m}^2$. Total: $81 + 216 = 297 \text{ m}^2$.
- 6) **Choice B is correct.** (7.SP.1-7.SP.4) The question is phrased to suggest a particular answer (“terrible food”) rather than remaining neutral, which influences how people respond.
- 7) **The correct answer is 40.** (7.G.1-7.G.5) Perimeter scales linearly by the scale factor. Larger perimeter = $16 \times 2.5 = 40$ inches.
- 8) **Choice C is correct.** (7.SP.5-7.SP.8) $\frac{5}{7} \times 35 = \frac{5 \times 35}{7} = \frac{175}{7} = 25$.
- 9) **Choice B is correct.** (7.SP.5-7.SP.8) Even numbers: 2, 4. Vowel: A. Favorable outcomes: 2A, 4A. That is 2 favorable outcomes.
- 10) **Choice B is correct.** (7.G.4-7.G.6) Cylinder 1: $V = \pi r^2 h = 3.14 \times (1)^2 \times 2 = 3.14 \times 1 \times 2 = 6.28 \text{ units}^3$. Cylinder 2: $V = 3.14 \times (1.5)^2 \times 1.2 = 3.14 \times 2.25 \times 1.2 = 8.478 \text{ units}^3$. Cylinder 2 has greater volume.
- 11) **Choice A is correct.** (7.SP.1-7.SP.4) MAD is the average of the absolute deviations from the mean, measuring typical spread around the center. It is not a measure of center (B, C) or range (D).
- 12) **The correct answer is 16 m.** (7.G.4-7.G.6) $C = \pi d \Rightarrow 50.24 = 3.14d \Rightarrow d = 50.24 \div 3.14 = 16 \text{ m}$.
- 13) **Choice C is correct.** (7.SP.1-7.SP.4) The mode is in the interval with the highest frequency. The 30–40 lbs interval has a frequency of 20, which is the highest among all intervals.
- 14) **Choice C is correct.** (7.SP.5-7.SP.8) Spinning a spinner multiple times produces independent events. The first outcome does not affect future spins.
- 15) **Choice C is correct.** (7.SP.6) Experimental probability of defect = $\frac{15}{500} = 0.03$. Expected defects in 8000: $0.03 \times 8000 = 240$.
- 16) **Choice B is correct.** (7.SP.5-7.SP.8) Probability is always between 0 and 1 (inclusive). Only 0.35 fits.
- 17) **Choice B is correct.** (7.SP.1-7.SP.4) Larger random samples produce more stable and reliable estimates because they reduce the effect of random variability. Increasing sample size is the proper way to improve the reliability of a sample estimate. Options A (biased region), C (leading questions), and D (discarding data) are not valid approaches.
- 18) **Choice D is correct.** (7.RP.3) Percent error = $\frac{|22-20|}{20} \times 100\% = \frac{2}{20} \times 100\% = 10\%$.
- 19) **Choice A is correct.** (7.EE.1-7.EE.2) Expand: $5(2n) - 5(3) - 4 = 10n - 15 - 4 = 10n - 19$.
- 20) **The correct answer is A,B.** (7.G.1-7.G.5) Correct answers: (A) $(1, 0) \rightarrow (1 + 2, 0 + 3) = (3, 3) \rightarrow (-3, 3)$. (B) $(0, 0) \rightarrow (2, 3) \rightarrow (-2, 3)$. Both steps verified. Distractors: (C) True but not a unique property of this transformation (all rigid transformations preserve congruence). (D) False—rigid transformations do not change size.
- 21) **Choice D is correct.** (7.RP.3) In $I = Prt$, with P and t constant, I scales linearly with r . If r doubles, I doubles.
- 22) **Choice D is correct.** (7.RP.1-7.RP.3) Divide actual by scale ratio: $30 \text{ m} \div 3 \text{ m per cm} = 10 \text{ cm}$.
- 23) **The correct answer is 153.86.** (7.G.4-7.G.6) $A = 3.14 \times 7^2 = 3.14 \times 49 = 153.86 \text{ cm}^2$.
- 24) **Choice C is correct.** (7.RP.3) If $18 = 0.20 \times n$, then $n = \frac{18}{0.20} = 90$.
- 25) **Choice D is correct.** (7.NS.1-7.NS.3) $12 - (-3) = 12 + 3 = 15$.
- 26) **Choice B is correct.** (7.EE.1) These have different exponents (x^1 vs. x^2), so they are not like terms.
- 27) **Choice B is correct.** (7.SP.1-7.SP.4) 40% of 80 = $0.40 \times 80 = 32$ households.
- 28) **Choice D is correct.** (7.RP.3) Tax = $0.07 \times 16 = \$1.12$. Total = $16 + 1.12 = \$17.12$.
- 29) **Choice C is correct.** (7.NS.1b) Net change = $12 + (-7) + 6 = 12 - 7 + 6 = 5 + 6 = 11$ boxes. The warehouse has a net gain of 11 boxes.



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Hi, Persistent Problem Solver!

◇ Some Grade 7 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 6 full Grade 7 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 7 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **6** 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:

6 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answers & 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



Build Confidence

Practice regularly to feel prepared and test-ready.



Strengthen Math Skills

Develop key math concepts and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Boost Performance

Apply your knowledge and achieve your best score!

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!

Don't lose it—your extra practice and success start here!



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