

7 Massachusetts MCAS

Grade 7 Math Practice Tests



7 PRINTED TESTS + 2 ONLINE TESTS

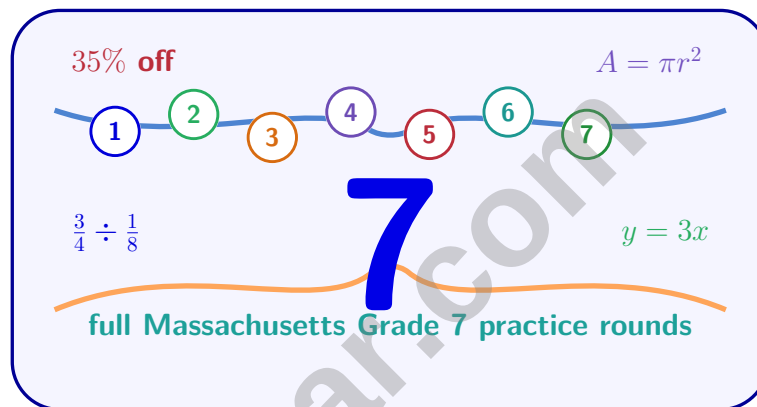


**Standards Aligned Problem Solving
For Comprehensive Assessment Programs**



8 Massachusetts MCAS Grade 7 Math Practice Tests

A polished review across Massachusetts Grade 7 ratios, percents, rational numbers, algebraic models, geometry, and statistics



Eight 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.

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Welcome, Massachusetts Grade 7 Problem Solver!

Eight focused rounds for sharper MCAS math thinking

This book gives you seven 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

An eight-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?

Eight MCAS tests, 280 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 7–8	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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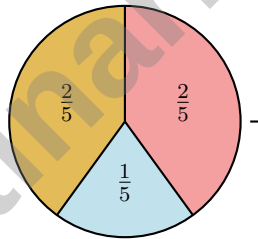
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- 1) A histogram displays the age distribution of members at two gyms. Gym Alpha: ages 20–35 have the most members. Gym Beta: ages evenly distributed across 18–65. Which gym best serves a targeted demographic?

- ☐ A. Gym Alpha (serves a specific younger demographic) ☐ C. Both gyms serve identical demographics
- ☐ B. Gym Beta (more diverse membership) ☐ D. Gym Beta (younger members on average)

- 2) The difference between two integers is -9 . If one integer is 4, what is the other integer? (Hint: difference means subtract.)



3)

A spinner has three unequal sections with probabilities $\frac{2}{5}$, $\frac{2}{5}$, and $\frac{1}{5}$. If it is spun 250 times, approximately how many times would you expect to land on a section with probability $\frac{2}{5}$?

- ☐ A. 50 times ☐ C. 125 times
- ☐ B. 100 times ☐ D. 200 times



4) What is $-\frac{1}{2} \times 10$?

☐ A. -20

☐ C. 5

☐ B. -5

☐ D. 20

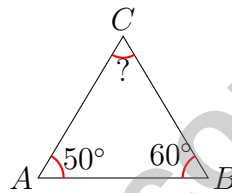
5) A rental car company charges \$40 per day plus a 15% insurance premium. If a customer rents for 5 days, what is the total rental cost?

☐ A. \$200

☐ C. \$250

☐ B. \$280

☐ D. \$230



6)

Two angles of a triangle are 50° and 60° . What is the third angle?

☐ A. 70°

☐ C. 30°

☐ B. 110°

☐ D. 180°

7) What is the opposite of 0?

☐ A. -1

☐ C. 0

☐ B. 1

☐ D. Undefined

8) What is the coefficient of y in the simplified form of $-8y + 12y - 3y$?

☐ A. -8

☐ C. 1

☐ B. y

☐ D. 12



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9) Find the GCF of $8b$ and $20b$.

☐ A. $4b$

☐ C. $20b$

☐ B. $8b$

☐ D. $2b$

10) A sports equipment store mistakenly labels a pair of shoes at \$72 after applying what they thought was a 20% discount to a \$90 cost. What discount rate was actually applied to reach \$72?

☐ A. 15%

☐ C. 20%

☐ B. 18%

☐ D. 25%

11) What is $-7 + 0$?

☐ A. 0

☐ C. 7

☐ B. -70

☐ D. -7

12) A rectangular prism has base dimensions $9\text{ cm} \times 7\text{ cm}$ and height 2 cm . A student forgets to include one of the two side faces with dimensions $9 \times 2\text{ cm}$. If the correct surface area is SA_{correct} , what percentage of the correct surface area is their incorrect answer?

☐ A. 25%

☐ C. 75%

☐ B. 50%

☐ D. 91%

13) A survey asks 400 people about their favorite food. If 28% prefer pizza, how many prefer pizza?

☐ A. 28

☐ C. 112

☐ B. 72

☐ D. 288



- 1) Two batches of cookies are weighed (in grams):

Batch A	Batch B
47, 48, 49, 50, 51	44, 48, 50, 52, 56

Which statement is true?

- ☐ A. Both batches have the same mean and median
- ☐ B. Batch A is more uniform in weight
- ☐ C. Batch B is always heavier
- ☐ D. Cannot compare without MAD
- 2) A bicycle costs \$140 before tax. If the sales tax is 9%, and then a 15% discount coupon is applied to the pre-tax price, what is the final cost?

- 3) A platform is designed as two congruent trapezoids joined at their parallel sides. Each trapezoid has parallel sides of 6 m and 4 m with height 3 m. What is the total platform area?

- ☐ A. 15 m²
- ☐ B. 30 m²
- ☐ C. 45 m²
- ☐ D. 60 m²



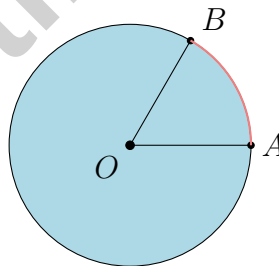
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- 4) A teacher records test scores and displays them in a stem-and-leaf plot. If the plot shows:

Stem	Leaves
6	5, 7, 9
7	2, 2, 4, 8
8	1, 3, 6
9	0, 4

How many students scored between 72 and 86 (inclusive)?

- ☐ A. 4 ☐ C. 7
☐ B. 6 ☐ D. 8
- 5) A rectangular prism with a square base has a base perimeter of 20 cm and a height of 8 cm. What is the volume? (Hint: find the side length of the square first.)
- ☐ A. 100 cm^3 ☐ C. 200 cm^3
☐ B. 160 cm^3 ☐ D. 400 cm^3
- 6) In the circle below, which region is a sector?



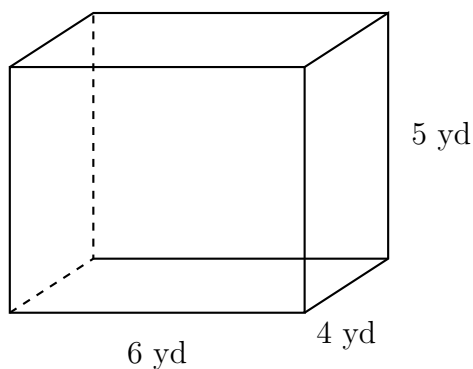
- ☐ A. The arc AB ☐ C. The chord AB
☐ B. The region bounded by OA , arc AB , and OB ☐ D. The center O



- 1) A student evaluates $2x + 3y$ when $x = -4$ and $y = 2$, and writes: " $2(-4) + 3(2) = -8 + 6 = -2$." Is this correct?
- ☐ A. No, the error is in the multiplication of $2x$ ☐ C. No, negative times positive is positive
- ☐ B. No, the error is in the addition step ☐ D. Yes, the answer is -2
- 2) A basketball player made 18 out of 24 free throws. Use a proportion to find the percent made, then identify which step comes next.
- ☐ A. Multiply 18×24 and divide by 100 ☐ D. Set up $\frac{18}{24} = \frac{p}{100}$ and solve using $p = \frac{18 \times 100}{24}$
- ☐ B. Set up $\frac{24}{18} = \frac{100}{p}$ and cross-multiply
- ☐ C. Calculate $18 + 24 = 42$ and divide by 2
- 3) If a credit card has an annual interest rate (APR) of 18% and you carry a balance of \$500, how much interest will you pay in one year if you make no payments?
- ☐ A. \$50 ☐ C. \$90
- ☐ B. \$75 ☐ D. \$100
- 4) An investment grew from \$1,000 to \$1,210. What is the percent increase?
- ☐ A. 17.4% ☐ C. 21%
- ☐ B. 18.2% ☐ D. 121%



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5)

A rectangular prism has dimensions $6 \text{ yd} \times 5 \text{ yd} \times 4 \text{ yd}$. Find the surface area.

☐ A. 120 yd^2

☐ C. 180 yd^2

☐ B. 148 yd^2

☐ D. 240 yd^2

6) A runner can run at most 15 miles in 2 hours. What is the maximum speed (in mph)?

☐ A. $2s \leq 15$

☐ C. $s \geq 15$

☐ B. $s \leq 7.5$

☐ D. $2s > 15$



Massachusetts Comprehensive Assessment System 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 Comprehensive Assessment System practice test.



Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (7.SP.3) Gym Alpha's concentration at 20–35 shows it serves a targeted young adult demographic well. Gym Beta's even distribution shows it serves all age groups without targeting a specific age.
- 2) **The correct answer is 13.** (7.NS.1-7.NS.3) If the difference is $4 - x = -9$, then $x = 4 - (-9) = 4 + 9 = 13$. Check: $4 - 13 = -9$ ✓.
- 3) **Choice B is correct.** (7.SP.5-7.SP.8) Expected frequency for one section with probability $\frac{2}{5}$: $\frac{2}{5} \times 250 = 100$ times.
- 4) **Choice B is correct.** (7.NS.2) $-\frac{1}{2} \times 10 = \frac{-10}{2} = -5$. Negative times positive is negative.
- 5) **Choice D is correct.** (7.RP.3) Daily cost = $40 \times 5 = \$200$. Insurance premium = $0.15 \times 200 = \$30$. Total = $200 + 30 = \$230$.
- 6) **Choice A is correct.** (7.G.1-7.G.5) The sum of angles in a triangle is 180° . Third angle = $180^\circ - 50^\circ - 60^\circ = 70^\circ$.
- 7) **Choice C is correct.** (7.NS.1-7.NS.3) Zero is its own opposite. The opposite of 0 is 0, since $0 = -0$.
- 8) **Choice C is correct.** (7.EE.1) Simplify: $(-8 + 12 - 3)y = 1y = y$. The coefficient of y is 1.
- 9) **Choice A is correct.** (7.EE.1-7.EE.2) Find GCF of 8 and 20: it is 4. Since both terms have b , the GCF is $4b$.
- 10) **Choice C is correct.** (7.RP.3) If original is \$90 and sale price is \$72, then discount = $(90 - 72)/90 = 18/90 = 0.20 = 20\%$.
- 11) **Choice D is correct.** (7.NS.1b) Adding zero to any number leaves it unchanged (additive identity). $-7 + 0 = -7$.
- 12) **Choice D is correct.** (7.G.4-7.G.6) Correct $SA = 2(63 + 18 + 14) = 190 \text{ cm}^2$. Missing one $9 \times 2 = 18 \text{ cm}^2$ face: incorrect $SA = 190 - 18 = 172 \text{ cm}^2$. Ratio: $\frac{172}{190} \approx 0.905 = 90.5\% \approx 91\%$.
- 13) **Choice C is correct.** (7.RP.3) Using the proportion $\frac{28}{100} = \frac{x}{400}$, cross-multiply: $x = 112$ people prefer pizza.
- 14) **Choice C is correct.** (7.NS.1-7.NS.3) Common denominator 6: $-\frac{4}{6} - \frac{5}{6} = -\frac{9}{6} = -\frac{3}{2} = -1\frac{1}{2}$.
- 15) **The correct answer is 1.5.** (7.RP.1-7.RP.3) The unit rate is $6 \div 4 = 1.5$.
- 16) **Choice C is correct.** (7.NS.1-7.NS.3) $(-360) \div 4 = -90$ indicates each person's debt (or share) is \$90 (or -\$90 in ledger terms).
- 17) **Choice A is correct.** (7.NS.1-7.NS.3) Total change: $-3.20 \times 5 = -16$ dollars.
- 18) **Choice C is correct.** (7.EE.1-7.EE.2) Product of 5 and n is $5n$. Decreased by 7 means subtract 7: $5n - 7$.
- 19) **Choice B is correct.** (7.EE.4b) Subtract 5: $2x \geq 8$. Divide by 2: $x \geq 4$.
- 20) **Choice A is correct.** (7.G.1-7.G.5) Blueprint 1 at scale 1:4 ft: actual hallway is $2.5 \times 4 = 10$ ft and $8 \times 4 = 32$ ft. Blueprint 2 shows the same hallway (10 ft $\times$ 32 ft) as 5×16 in. Scale of B: $10 \text{ ft} \div 5 \text{ in} = 2 \text{ ft per inch}$, or 1 in : 2 ft. Ratio check: scale B (2 ft/in) is half scale A (4 ft/in), so drawing B should be $4 \div 2 = 2 \times$ larger: B is 5×16 in vs A is 2.5×8 in. Correct!
- 21) **Choice A is correct.** (7.G.4-7.G.6) $C = 2\pi r = 2 \times 3.14 \times 5 = 31.4$ m. The circle with circumference 31.4 m has radius 5 m (A).
- 22) **The correct answer is A,B.** (7.RP.1-7.RP.3) A and B. Each point satisfies $y/x = 3$, so the table is proportional with constant ratio 3 (A) and is modeled by $y = 3x$ (B). C is false: the constant of proportionality is 3, not $\frac{1}{3}$. D is false: $y = 3x - 1$ would give $y = 2$ at $x = 1$, not 3.
- 23) **Choice C is correct.** (7.SP.1-7.SP.4) Random selection from a complete population list ensures every member has equal chance of selection, minimizing bias.
- 24) **The correct answer is 1350.** (7.RP.1-7.RP.3) New dimensions: $20 \times 1.5 = 30$ inches and $30 \times 1.5 = 45$ inches. New area = $30 \times 45 = 1350$ sq in.
- 25) **Choice A is correct.** (7.SP.5-7.SP.8) Face cards: 12 (4 suits $\times$ 3 types). $P(\text{face card}) = \frac{12}{52} = \frac{3}{13}$.
- 26) **Choice C is correct.** (7.SP.5-7.SP.8) Letters: 4 (M, A, T, H); numbers: 5 (1 to 5). By the counting principle: $4 \times 5 = 20$ outcomes.
- 27) **Choice A is correct.** (7.NS.2d) Both $0.8 = \frac{8}{10} = \frac{4}{5}$ (in simplest form). The answer is A, the fully simplified fraction.
- 28) **Choice B is correct.** (7.NS.1-7.NS.3) Perimeter = $4s = 32$, so $s = 8$ cm. Area = $s^2 = 8^2 = 64 \text{ cm}^2$.
- 29) **Choice C is correct.** (7.NS.1-7.NS.3) The large positive exponent 19 indicates an astronomical distance far beyond our solar system.



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Hi, Detail Champion!

◇ In Grade 7, small details can change an entire answer: a negative sign, a decimal place, a unit, an exponent, or an inequality symbol. ◇

★ **Remember this:** You practiced noticing those details. That is a serious test skill, and it gets better with every careful review. This version gave you 7 opportunities to rehearse test-day habits. ★

Detail Checks

- **Signs:** Circle negatives before simplifying.
- **Symbols:** Read inequality signs carefully.
- **Decimals:** Line up place values.
- **Units:** Match the unit the question asks for.

Grade 7 test-day tip: Use the final minute on each section for a detail scan, not a full redo.

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

Jay Daie

Your Detail-Check Coach

Practice Today. Succeed Tomorrow!

This book includes **7** 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:

7 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!



PRACTICE
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY



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