

3

Massachusetts

MCAS

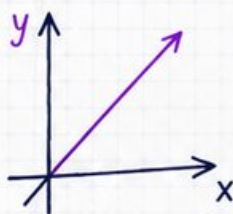
GRADE

7

MATH

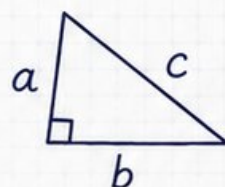
PRACTICE TESTS

- ✓ Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs



$$y = mx + b$$

$$\frac{2}{3}x - \frac{4}{5} = \frac{1}{2}$$



$$3(x - 2) = 2x + 5$$



3 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



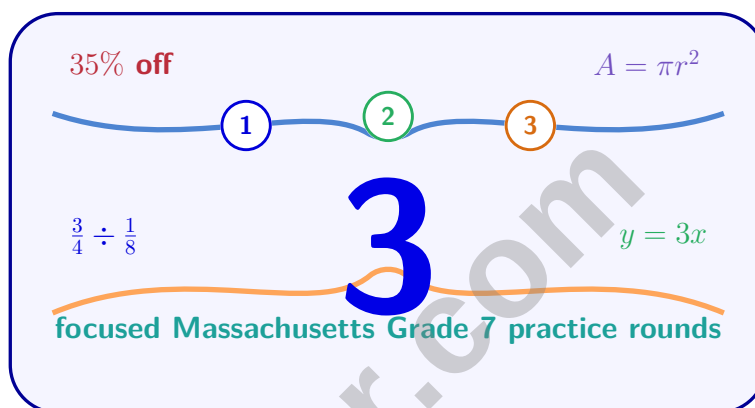
Detailed Answers
& Explanations



Improve Test
Performance

3 Massachusetts MCAS Grade 7 Math Practice Tests

Massachusetts Grade 7 Practice for Reasoning and Review



Three 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!

Three focused rounds for sharper MCAS math thinking

This book gives you three 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 three-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?

Three MCAS tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Test 3	Expressions, equations, inequalities, scale drawings, geometry, data, probability, 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.

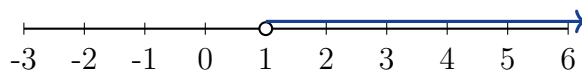


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& answers

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1) Which inequality matches this number line?



☐ A. $x \leq 1$

☐ C. $x > 1$

☐ B. $x \geq 1$

☐ D. $x < 1$

2) A jeweler estimated a necklace to weigh 8.2 grams, but it actually weighs 10 grams. What is the percent error?

☐ A. 15%

☐ C. 22%

☐ B. 82%

☐ D. 18%

3) Expand: $-3(x - 6)$

☐ A. $-3x - 18$

☐ C. $3x - 18$

☐ B. $-3x + 18$

☐ D. $3x + 18$

4) An investment of \$3000 earns \$270 in simple interest over 2 years. What is the annual interest rate?

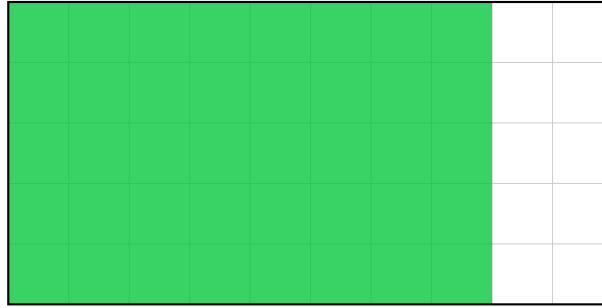
☐ A. 3%

☐ C. 5%

☐ B. 9%

☐ D. 4.5%





5) Percent grid: 40 squares shaded out of 50 total

The grid shows 40 shaded squares. What percent of the total is shaded?

☐ A. 70%

☐ C. 80%

☐ B. 75%

☐ D. 85%

6) A student simplifies $6x + 2x - 4x$ and gets $4x$. Is this correct?

☐ A. Yes, all terms were combined correctly.

☐ C. No, the correct answer is $3x$.

☐ B. No, the correct answer is $12x$.

☐ D. No, the answer cannot be simplified.

7) A park's actual area is 400 square meters. If a scale model has linear dimensions that are $\frac{1}{10}$ the actual, what is the area of the model?

☐ A. 40 square meters

☐ C. 3.6 square meters

☐ B. 0.4 square meters

☐ D. 4 square meters

8) A store marks up a product by \$5 on a cost of \$25. What is the selling price?

☐ A. \$35

☐ C. \$20

☐ B. \$45

☐ D. \$30



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9) Evaluate $-5 + 9 + (-4)$.

☐ A. 0

☐ C. 18

☐ B. -18

☐ D. -2

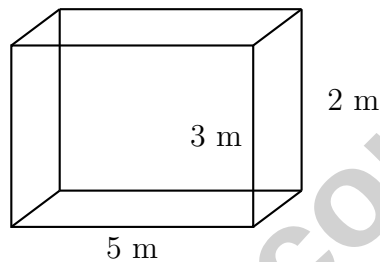
10) Factor: $4c - 12d$

☐ A. $4(c - 3d)$

☐ C. $12(c - d)$

☐ B. $2(2c - 6d)$

☐ D. $c(4 - 12d)$



11)

A rectangular prism with dimensions $5\text{ m} \times 3\text{ m} \times 2\text{ m}$ is shown above. Calculate its surface area.

☐ A. 30 m^2

☐ C. 84 m^2

☐ B. 62 m^2

☐ D. 120 m^2

12) A simulation of rolling two dice uses two spinners, each with 6 equal sections numbered 1–6. If the simulation is performed 120 times, approximately how many times would you expect to see a sum of 7?

☐ A. 10 times

☐ C. 20 times

☐ B. 15 times

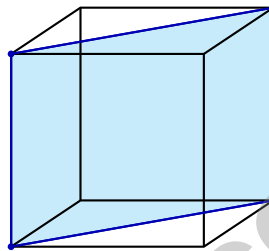
☐ D. 25 times



1) An online store applies a 20% markup to all wholesale costs. If the wholesale cost is w , the selling price is $1.2w$. Which real-world scenario best uses this expression?

- ☐ A. Finding the sale price after a 20% off promotion ☐ C. Finding the original price if the marked-up price is known
☐ B. Finding the price after a 20% surcharge is added ☐ D. Finding the tax owed on the wholesale cost

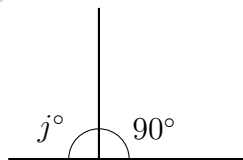
rectangular cross-section



2)

A plane cuts diagonally through the cube as shown. What is the shape of the resulting cross-section?

- ☐ A. Rectangle ☐ C. Parallelogram
☐ B. Square ☐ D. Isosceles trapezoid



3)

A perpendicular line meets a horizontal line at a point. One angle is 90° . On the opposite side, angle j is formed. What is the measure of angle j ?

- ☐ A. 45° ☐ C. 135°
☐ B. 90° ☐ D. 180°

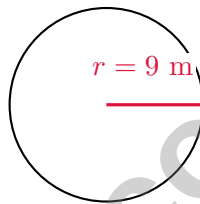


- 4) A model of a building is made with a scale of $1 \text{ cm} = 2 \text{ m}$. If the model is 12 cm tall, how tall is the actual building?

☐ A. 6 m
☐ B. 12 m
☐ C. 24 m
☐ D. 36 m

- 5) What is the formula for the circumference of a circle given its radius r ?

☐ A. $C = \pi r^2$
☐ B. $C = 2\pi r$
☐ C. $C = \frac{\pi r}{2}$
☐ D. $C = 4\pi r$



6)

What is the area of this circle? Use $\pi \approx 3.14$.

☐ A. 56.52 m^2
☐ B. 113.04 m^2
☐ C. 254.34 m^2
☐ D. 508.68 m^2

- 7) A cylindrical pipe with radius 3.5 inches has a volume of 269.23 cubic inches. What is the height of the pipe? Use $\pi \approx 3.14$.

☐ A. 5.5 inches
☐ B. 7 inches
☐ C. 8.5 inches
☐ D. 9 inches



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- 1) A person selects a main color (Red, Blue) and a secondary color (Yellow, Green, Purple). How many color combinations are possible?

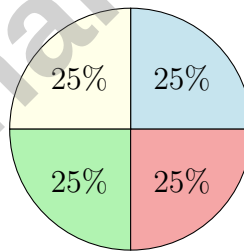
☐ A. 5 ☐ C. 7
☐ B. 6 ☐ D. 8

- 2) A spinner has 10 equal sections. Three are labeled W , four are labeled X , two are labeled Y , and one is labeled Z . Find $P(W \text{ or } X)$.

☐ A. $\frac{3}{10}$ ☐ C. $\frac{7}{10}$
☐ B. $\frac{4}{10}$ ☐ D. $\frac{1}{2}$

- 3) A restaurant charges a 2.5% service fee in addition to the bill. If a diner's meal costs \$80, what is the service fee?

☐ A. \$20.00 ☐ C. \$8.00
☐ B. \$2.50 ☐ D. \$2.00



- 4) Housing Food Savings Entertainment

Marcus has a monthly budget of \$2 000 divided equally among four categories. How much is budgeted for food?

☐ A. \$400 ☐ C. \$600
☐ B. \$800 ☐ D. \$500



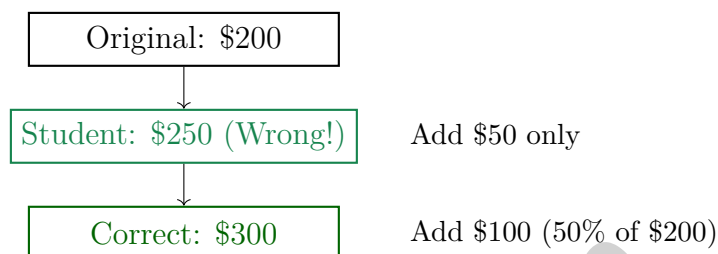
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5) A bank account starts with \$750 and earns 9% annual compound interest. After how many complete years does the balance exceed \$1,000?

- ☐ A. 2 years
☐ B. 3 years

- ☐ C. 4 years
☐ D. 5 years

6)



A student made an error. She claimed that a \$200 item with a 50% increase costs \$250. What is her mistake?

- | | |
|--|---|
| <p>☐ A. She forgot to calculate 50% of the original price correctly.</p> <p>☐ B. The answer is actually correct.</p> | <p>☐ C. She used the new price as the base for the percent, not the original.</p> <p>☐ D. She computed 50% of \$200 as \$50 instead of \$100.</p> |
|--|---|

7) Simplify: $3xy + 5xy - 2xy$

- ☐ A. $6xy$
☐ B. $10xy$

- ☐ C. $8xy$
☐ D. 0



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 C is correct.** (7.EE.4b) An open circle at 1 with a right-pointing arrow means $x > 1$ (strictly greater than 1).
- 2) **Choice D is correct.** (7.RP.3) Percent error = $\frac{|8.2-10|}{10} \times 100\% = \frac{1.8}{10} \times 100\% = 18\%$.
- 3) **Choice B is correct.** (7.EE.1-7.EE.2) Distribute -3 : $-3(x) - 3(-6) = -3x + 18$. Negative times negative is positive.
- 4) **Choice D is correct.** (7.RP.3) $270 = 3000 \times r \times 2 \Rightarrow 270 = 6000r \Rightarrow r = 0.045 = 4.5\%$.
- 5) **Choice C is correct.** (7.RP.3) $\frac{40}{50} = \frac{4}{5} = 0.80 = 80\%$.
- 6) **Choice A is correct.** (7.EE.1) $(6 + 2 - 4)x = 4x$ is correct. Combining all coefficients: $6 + 2 - 4 = 4$, so the answer is $4x$.
- 7) **Choice D is correct.** (7.RP.1-7.RP.3) Linear scale of $\frac{1}{10}$ means area scales by $(\frac{1}{10})^2 = \frac{1}{100}$. Model area = $400 \div 100 = 4 \text{ m}^2$.
- 8) **Choice D is correct.** (7.RP.3) Selling price = cost + markup = $25 + 5 = \$30$. (The markup represents $\$5/\$25 = 20\%$ of the cost.)
- 9) **Choice A is correct.** (7.NS.1b) Combine step-by-step: $-5 + 9 = 4$, then $4 + (-4) = 0$. The negatives and positives cancel out.
- 10) **Choice A is correct.** (7.EE.1-7.EE.2) The GCF of 4 and 12 is 4. Factor out: $4c - 12d = 4(c - 3d)$.
- 11) **Choice B is correct.** (7.G.4-7.G.6) $SA = 2(5 \cdot 3 + 5 \cdot 2 + 3 \cdot 2) = 2(15 + 10 + 6) = 2(31) = 62 \text{ m}^2$.
- 12) **Choice C is correct.** (7.SP.5-7.SP.8) Outcomes that sum to 7: (1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1) — that's 6 out of 36 equally likely outcomes. Probability = $\frac{6}{36} = \frac{1}{6}$. Expected frequency = $\frac{1}{6} \times 120 = 20$.
- 13) **The correct answer is 15.** (7.NS.1-7.NS.3) The temperature drop is $3 - (-12) = 3 + 12 = 15$ degrees.
- 14) **Choice D is correct.** (7.RP.1-7.RP.3) The unit rate is the y -value when $x = 1$. Because (2, 30) is on the line through the origin, $k = 30/2 = 15$, so earning rate is \$15 per hour.
- 15) **Choice B is correct.** (7.NS.1-7.NS.3) $-5 + 12 = 7^\circ\text{C}$.
- 16) **Choice B is correct.** (7.NS.1-7.NS.3) Change: $0 - (-5) = 0 + 5 = 5^\circ\text{C}$ (an increase of 5 degrees).
- 17) **Choice A is correct.** (7.EE.1-7.EE.2) Substitute: $2(1) + 4(2) - 3(-1) = 2 + 8 + 3 = 13$.
- 18) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute the negative: $6n + 4 - 3n + 2 = (6n - 3n) + (4 + 2) = 3n + 6$.
- 19) **Choice A is correct.** (7.EE.4b) Multiply by 3: $2x - 1 \leq 15$. Add 1: $2x \leq 16$. Divide by 2: $x \leq 8$.
- 20) **Choice B is correct.** (7.G.1-7.G.5) Halving the real scale (10 km to 5 km) doubles the drawing: $5 \times 2 = 10 \text{ cm}$ and $8 \times 2 = 16 \text{ cm}$.
- 21) **The correct answer is A,B.** (7.SP.1-7.SP.4) Smartphones (45%) is the largest, so A is correct. Tablets (20%) plus smart watches (5%) make 25%, so B is correct. Laptops (30%) is not more than 50%, and smart watches (5%) are not more than 10%.
- 22) **Choice B is correct.** (7.G.1-7.G.5) The center of Rectangle A is (2.5, 3). Under a 180° rotation, it maps to $(-2.5, -3)$, which is the center of Rectangle B.
- 23) **Choice C is correct.** (7.SP.1-7.SP.4) Only people motivated to respond (those with strong opinions) participate, making the sample non-representative of all customers.
- 24) **The correct answer is \$3.** (7.RP.1-7.RP.3) Store A costs $2 \div \frac{2}{5} = 5$ dollars per pound. Store B costs $2.25 \div \frac{3}{4} = 3$ dollars per pound, so the lower price is \$3.
- 25) **Choice C is correct.** (7.SP.5-7.SP.8) Blue faces: 4 out of 6. $P(\text{blue}) = \frac{4}{6} = \frac{2}{3}$.
- 26) **Choice D is correct.** (7.RP.1-7.RP.3) A proportional relationship has the form $y = kx$ and passes through (0, 0). The equation $y = 0.5x + 3$ includes the added constant +3, so it has a y -intercept of 3 and is linear but not proportional.
- 27) **Choice C is correct.** (7.RP.3) Multiply 2 by 1.5: $2 \times 1.5 = 3$ cups. Alternatively, using a proportion: $\frac{150}{100} = \frac{x}{2}$, so $x = 3$.
- 28) **The correct answer is 10.** (7.RP.1-7.RP.3) Juice to ginger ale is 2 : 3. Total ratio parts: $2 + 3 = 5$. Juice: $\frac{2}{5} \times 25 = 10$ liters.
- 29) **Choice D is correct.** (7.RP.3) Account 1: $\$1,500 \times 0.04 = \60 . Account 2: $\$1,500 \times 0.06 = \90 . A higher interest rate (6% vs. 4%) always yields more interest on the same principal over the same time period, illustrating the investment trade-off: higher rates = higher returns.



Hi, Confident Learner!

◇ This short, concentrated book gave you three focused 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 **3** 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:

- 3** 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.

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Practice regularly to feel prepared and test-ready.



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- ✓ Data Analysis
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- ✓ And More!



2 ONLINE TESTS

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