

12 Massachusetts MCAS Grade 8 Math Practice Tests

The Complete Coached Test Prep with Tips & Detailed Answer Keys

Dr. A. Nazari

Copyright © 2026 Dr. A. Nazari

Published by View Math Education

ViewMath.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

The information in this book is distributed on an “as is” basis, without warranty. While every precaution has been taken in the preparation of this work, neither the author nor the publisher shall have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the information contained in this book.

Copyright © 2026



12 Practice Tests

Welcome!

*This book contains **12 full-length practice tests** — the ultimate preparation program for your Grade 8 math assessment. Each test covers all six major topics:*

📖 *Irrational Numbers* 📖 *Powers & Scientific Notation*

📖 *Linear Equations* 📖 *Functions*

📖 *Geometry* 📖 *Data & Relationships*

Twelve tests give you unmatched depth and repetition. By the time you finish, there won't be any surprises on test day.

Champions aren't born — they're prepared.



How to Use This Book

Your complete 12-test championship program

What's Inside

- **12 Full-Length Practice Tests** — each covers all 6 chapters of Grade 8 math: irrational numbers, exponents & scientific notation, linear equations, functions, geometry, and data analysis.
- **Detailed Answer Explanations** — every question includes a step-by-step solution so you learn from every mistake.
- **Formula Reference Sheet** — all the key Grade 8 formulas you need, organized and ready for quick review.
- **Test Tracker** — log your scores across all 12 tests and monitor your progress from start to finish.

Your 12-Test Championship Plan

★ **PHASE 1: Foundation (Tests 1–3)**

Untimed. Learn the format, discover your strengths and weak spots. Focus on understanding, not speed.

★★ **PHASE 2: Building (Tests 4–6)**

Soft-timed. Practice showing full solutions, and study the topics you missed between each test.

★★★ **PHASE 3: Sharpening (Tests 7–9)**

Timed (70 minutes). Build pacing and accuracy under real-time constraints. Review every mistake.

PHASE 4: Championship (Tests 10–12)

Full test conditions: strict timing, quiet space, no notes. These are your final dress rehearsals.

Schedule: Take one test every 3–4 days. Use study days between tests to review and improve.

 Types of Questions

• **Multiple Choice:** Four options — work the problem first, then match. Eliminate obviously wrong answers to narrow your choices.

 **Short Answer & Constructed Response:** Show every step: equations, substitutions, simplifications. Partial credit rewards correct reasoning even if the final answer is off.

 **Graphing & Data Analysis:** Plot points, draw lines, interpret graphs. Label axes clearly.



Tip: Twelve tests is a true championship program. Don't rush — the power is in what you do between tests. Study, review, and master your weak areas before moving on.



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



💡 *Test-Taking Tips* 💡

Your complete test-day toolkit

🕒 *Before the Test*

- *Review your notes from the previous test — focus on your weak topics*
- *Set up a quiet, clean workspace with all your materials ready*
- *Start with a positive mindset: you've prepared for this*

✎ *During the Test*

- *Read each problem fully before calculating anything*
- *Write the formula or set up the equation first, then substitute values*
- *Show all your work — every step, every operation*
- *If stuck for more than 2 minutes, mark it and move on*
- *Use estimation to check if your answers are reasonable*

📖 *After the Test*

- *Read the full explanation for every question you got wrong*
- *Write down which topics gave you trouble (not just question numbers)*
- *Study those topics before taking the next test*
- *Record your score in the Test Tracker*

⚠ Common Mistakes in Grade 8 Math

⚠ Exponents: $(ab)^n = a^n b^n$, but $a^m + a^n \neq a^{m+n}$. Only multiply/divide to combine.

⚠ Slope formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$ — keep the order consistent.

⚠ Systems of equations: The solution must satisfy both equations.

⚠ Transformations: Rotations and reflections change position; dilations change size.

⚠ Volume: Use $\pi \approx 3.14$ or leave as π — match what the question asks.



“ The students who improve the most aren't the ones who take the most tests — they're the ones who carefully review every mistake. Make that your priority. ”



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



 [ViewMath.com](https://www.viewmath.com)



Grade 8 Formula Reference

Keep this page handy — you may use it during your practice tests!

Exponent Rules

$$a^m \cdot a^n = a^{m+n} \quad (a^m)^n = a^{mn} \quad (ab)^n = a^n \cdot b^n$$
$$\frac{a^m}{a^n} = a^{m-n} \quad a^0 = 1 \quad (a \neq 0) \quad a^{-n} = \frac{1}{a^n}$$

Lines & Linear Equations

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{rise}}{\text{run}}$

m = slope b = y -intercept

Slope-intercept: $y = mx + b$

Parallel lines: same slope

Proportional: $y = mx$

Proportional: passes through origin

Scientific Notation

$a \times 10^n$ where $1 \leq |a| < 10$

Multiply: add exponents

Divide: subtract exponents

Roots & Number Sense

Perfect squares: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144

Perfect cubes: 1, 8, 27, 64, 125 $\sqrt{2} \approx 1.414$ $\sqrt{3} \approx 1.732$ $\pi \approx 3.14159$

Pythagorean Theorem & Distance

$a^2 + b^2 = c^2$ c = hypotenuse (longest side of a right triangle) **Distance:** $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Volume Formulas

Cylinder $V = \pi r^2 h$ **Cone** $V = \frac{1}{3} \pi r^2 h$ **Sphere** $V = \frac{4}{3} \pi r^3$

Angle Relationships

Triangle angle sum: 180°

Exterior angle = sum of two remote interior angles

Parallel lines + transversal: Alternate interior angles are equal • Co-interior angles sum to 180°

Functions

Each input $\rightarrow$ exactly one output **Vertical line test:** if any vertical line hits graph more than once $\Rightarrow$ not a function

Linear: constant rate of change ($y = mx + b$)

Nonlinear: rate of change varies

Transformations

Translation: slide

Reflection: flip

Rotation: turn

Dilation: resize

Congruent = same shape & size

Similar = same shape, proportional size



Tip: Bookmark this page! Review it before each test so these formulas become second nature.



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



PRACTICE TEST

1

Practice Test 1

 10 Questions

Before You Start

- ✓ *Read each question carefully before choosing your answer.*
- ✓ *Show your work on scratch paper when you need to.*
- ✓ *Skip hard questions and come back to them later.*
- ✓ *Check your answers when you're done.*
- ✓ *Take your time — there's no rush!*

★ *You've Got This!* ★

Do your best and show what you know!



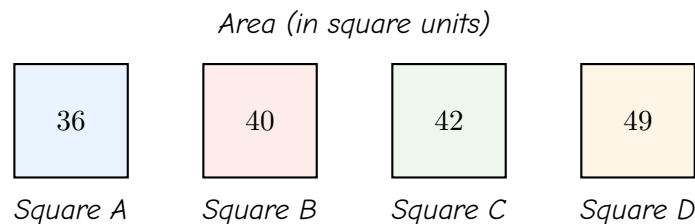
1. Which best explains why $\sqrt{\frac{1}{9}}$ is a rational number?

- (A) Because the fraction $\frac{1}{9}$ is less than 1
- (B) Because $\sqrt{\frac{1}{9}} = \frac{1}{3}$, which is a ratio of two integers
- (C) Because the square root of any fraction is always rational
- (D) Because 9 is a single-digit number

2. What is $0.\overline{3}$ written as a fraction?

- (A) $\frac{3}{10}$
- (B) $\frac{3}{99}$
- (C) $\frac{1}{3}$
- (D) $\frac{3}{100}$

3. The diagram shows four squares with their areas labeled. Which square has a side length closest to 6.5?



- (A) Square A (area 36)
- (B) Square B (area 40)
- (C) Square C (area 42)
- (D) Square D (area 49)

4. What is the exact value of $(\sqrt{3})^2$?

- (A) 1.73
- (B) 3
- (C) 9
- (D) $\sqrt{9}$



Get Online



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)

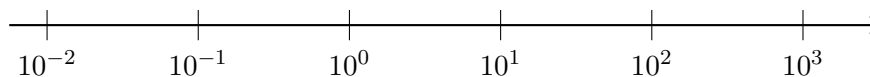


 **ViewMath.com**

5. Evaluate $\sqrt[3]{-64}$.

- (A) -4 (B) 4
(C) -8 (D) *Not a real number*

6. The number line below shows powers of 10. Where does 5×10^1 fall on this number line?



- (A) *Between 10^{-1} and 10^0* (B) *Between 10^0 and 10^1*
(C) *Between 10^1 and 10^2* (D) *Between 10^2 and 10^3*

7. A farm produces 4.5×10^6 kilograms of wheat. Each bag holds 5×10^1 kilograms. How many bags can be filled?

- (A) 9×10^5 (B) 9×10^4
(C) 9×10^7 (D) 0.9×10^5

8. A table for a proportional relationship is shown below. What is the constant of proportionality?

x	5	10	15
y	17.5	35	52.5

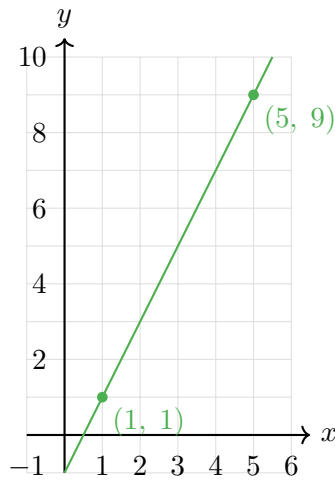
Your Answer:



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



9. The graph below shows a line passing through two labeled points. Find the slope.



Your Answer:

10. Solve $\frac{x}{2} - 3 = \frac{x}{5} + 3$.

- (A) $x = 6$ (B) $x = 10$
(C) $x = 15$ (D) $x = 20$



Find more at
ViewMath.com/Grade8



★ End of Practice Test 1 ★

Great job finishing the test!

My Score

I got _____ out of 10 questions right.

*Check your answers in the **Answer Key** at the back of the book.*

 *Review any questions you missed. That's how we learn!*

Answer Key & Explanations



Answer Key

First try each test on your own, then check your work here.

Practice Test 1 — Answer Key

1 B

2 C

3 C

4 B

5 A

6 C

7 B

8 3.5

9 2

10 D

Time to Learn!

Review the explanations below, *especially for the questions you missed*.

Understanding why each answer is correct builds stronger problem-solving skills.

Tip: Circle any questions you got wrong, then read their explanation carefully.

Practice Test 1 — Detailed Explanations

1 $\sqrt{\frac{1}{9}} = \frac{\sqrt{1}}{\sqrt{9}} = \frac{1}{3}$, which can be written as a fraction of integers. Choice C is false: $\sqrt{\frac{1}{2}}$ is irrational.

2 Let $x = 0.333\dots$. Then $10x = 3.333\dots$. Subtracting: $9x = 3$, so $x = \frac{3}{9} = \frac{1}{3}$.



Get Online



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



3 Side lengths: $\sqrt{36} = 6$, $\sqrt{40} \approx 6.32$, $\sqrt{42} \approx 6.48$, $\sqrt{49} = 7$. Since 6.48 is closest to 6.5, Square C is the answer.

4 By definition, $(\sqrt{3})^2 = 3$ exactly. Squaring a square root undoes the operation.

5 $(-4)^3 = (-4)(-4)(-4) = -64$, so $\sqrt[3]{-64} = -4$. Cube roots of negative numbers are real and negative.

6 $5 \times 10^1 = 50$. Since $10^1 = 10$ and $10^2 = 100$, the value 50 falls between 10^1 and 10^2 .

7 To divide in scientific notation, divide the coefficients and subtract the exponents. $\frac{4.5}{5} = 0.9$ and $10^{6-1} = 10^5$. Then adjust: $0.9 \times 10^5 = 9 \times 10^4 = 90,000$ bags.

8 The constant of proportionality is $k = \frac{y}{x}$. Using the first pair: $k = \frac{17.5}{5} = 3.5$. The other ratios $\frac{35}{10} = 3.5$ and $\frac{52.5}{15} = 3.5$ confirm this.

9 Use the slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$. From the labeled points: $m = \frac{9-1}{5-1} = \frac{8}{4} = 2$.

10 To clear fractions, multiply every term by the LCD (10): $5x - 30 = 2x + 30$. Collect variable terms: $3x = 60$, so $x = 20$.



Well done checking your answers!

Keep practicing to strengthen your skills.



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



THANK YOU

Enjoyed This Preview?

Get the Full Book!

This preview shows just a small sample of what's inside.

The complete book includes:

- ✓ *All chapters and topics*
- ✓ *Hundreds of practice problems*
- ✓ *Complete answer key with explanations*
- ✓ *Colorful visuals and step-by-step examples*
- ✓ *Reference sheets and progress trackers*

 Visit us at [ViewMath.com](https://www.viewmath.com) for free resources and more books!