

Massachusetts MCAS Grade 6 Math Quizzes

Quick Topic Assessments with Answer Key

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QUICK QUIZZES FOR EVERY TOPIC

Grade 6 Math Quizzes

Topic Quizzes • Chapter Reviews • Answer Key

Quick, focused quizzes are one of the best ways to find out what you really know — and what you still need to work on.

This book has a short quiz for every Grade 6 math topic. Each one takes about 10–15 minutes and covers the most important skills for that section. Take a quiz, score it, and see exactly where you stand.

Use it after studying a topic, the night before a test, or anytime you want a fast check-in on your math skills.



Take the Quiz

*10–15 minutes
per quiz*



Score It

*Check every answer
in the key*



Review & Retry

*Study what you missed
then quiz again*

How to Use This Book

1 *Pick a topic you've been studying*

Look through the table of contents and find the quiz that matches the topic you just covered in class or in your study guide.

2 *Set a timer for 10–15 minutes*

Give yourself a reasonable time limit. Working with a timer helps you build speed and stay focused — just like a real test.

3 *Answer every question*

Try each problem. If you get stuck, skip it and come back at the end. Don't leave any question blank — a good guess is better than no answer.

4 *Check your answers*

Use the answer key in the back. Mark each question right or wrong. Write your score on the quiz page and track your progress over time.

5 *Review what you missed*

Go back to the problems you got wrong. Read the topic explanation, study the method, then try the quiz again in a few days. Your score should improve every time.

Track Your Scores

Every quiz in this book has a **Name / Date / Score** bar at the top. After you finish a quiz, check your answers using the answer key in the back, then write your score on that bar.

★ How to Track Your Progress

- 1 Write your score on the quiz page right after you grade it.
- 2 Circle any quiz where you scored below 70 %.
- 3 Review the topic, then retake the quiz in a few days.
- 4 Compare your scores — you'll see improvement every time!

💡 *Tip: Your score should go up every time you retake a quiz. That's how you know you're learning!*

✎ Use the score bar on each quiz page to record your results.

Formula Reference Sheet

Area Formulas

Rectangle $A = l \times w$

Parallelogram $A = b \times h$

Triangle $A = \frac{1}{2} \times b \times h$

Trapezoid $A = \frac{1}{2}(b_1 + b_2) \times h$

Volume

Rectangular $V = l \times w \times h$

Prism

Surface Area

Find the area of each face, then add them all up.

Rectangular Prism:

$$SA = 2lw + 2lh + 2wh$$

Order of Operations

P Parentheses first

E Exponents

M/D Multiply & Divide (left to right)

A/S Add & Subtract (left to right)

Ratios & Percents

Ratio: $a : b$ or $\frac{a}{b}$

Unit rate: amount per 1 unit

Percent: a ratio out of 100

$$\text{Part} = \text{Percent} \times \text{Whole}$$

Integers & Absolute Value

Integers:

$\dots, -3, -2, -1, 0, 1, 2, 3, \dots$

$$|-5| = 5 \quad |5| = 5$$

Absolute value = distance from 0

Expressions & Equations

Exponent: $3^4 = 3 \times 3 \times 3 \times 3 = 81$

Variable: a letter that stands for a number

Equation: two expressions joined by =

Inequality: uses $<$, $>$, \leq , \geq

Coordinate Plane

Ordered pair: (x, y)

x-axis: horizontal **y-axis:** vertical

Origin: $(0, 0)$

Four quadrants (I, II, III, IV)

Statistics

Mean: sum of values \div count

Median: middle value (sorted)

Range: max – min

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-  **Interactive Lessons** — Revisit any concept with online lessons that match each chapter
-  **Progress Tracking** — Watch your mastery grow as you work through the book
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CHAPTER

1

Ratios, Rates, and Percents

★ What's Inside ★

1.1 What Is a Ratio?	2
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★ 1.1 What Is a Ratio? ★

What Is a Ratio?

🎯 Learning Goals

- Understand that a ratio compares two quantities
- Write ratios in three different forms
- Identify and describe ratios in everyday situations

🌍 Ratios Are Everywhere

Imagine you're making a fruit smoothie. The recipe says to use 2 cups of strawberries for every 3 cups of banana. That "2 for every 3" is a **ratio** — and you use ratios all the time, whether you realize it or not!

🎓 What Is a Ratio?

A **ratio** is a comparison of two quantities. It tells you how much of one thing there is compared to another.

For example, if a bag has 5 red marbles and 3 blue marbles, you can compare them with a ratio:

- The ratio of red to blue is 5 to 3.
- The ratio of blue to red is 3 to 5.

Order matters! The ratio 5 to 3 is NOT the same as 3 to 5.



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“ Think of a ratio like a recipe — the order of the ingredients matters! “2 cups flour to 1 cup sugar” is very different from “1 cup flour to 2 cups sugar.” ”

Three Ways to Write a Ratio

You can write the same ratio in three different forms:

Words	Colon	Fraction
5 to 3	5 : 3	$\frac{5}{3}$

All three mean the same thing: for every 5 of the first quantity, there are 3 of the second.



TIP

When you write a ratio as a fraction, it does NOT mean “5 divided by 3.” It’s still a comparison. The context tells you it’s a ratio, not a division problem.

Writing Ratios from a Picture

A parking lot has 4 trucks and 7 cars.

Write the ratio of trucks to cars in three ways.

Solution:

1. Identify the two quantities: trucks = 4, cars = 7.
2. Write the ratio in order — trucks first, cars second.

Words	Colon	Fraction
4 to 7	4 : 7	$\frac{4}{7}$



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What about the ratio of cars to trucks?

✓ **Answer:** 7 to 4, 7 : 4, $\frac{7}{4}$

Part-to-Part vs. Part-to-Whole

A classroom has 12 boys and 18 girls.

Part-to-Part:

- Boys to girls: 12 : 18
- Girls to boys: 18 : 12

Part-to-Whole:

- Total students: $12 + 18 = 30$
- Boys to total: 12 : 30
- Girls to total: 18 : 30

Part-to-part ratios compare one part of a group to another part.

Part-to-whole ratios compare one part to the entire group.

Always read the problem carefully to know which type is being asked for!

The same situation can give you many different ratios depending on what you're comparing.

Identifying Ratios in Real Life

A pizza shop sells 3 cheese pizzas for every 2 pepperoni pizzas. On Saturday they sold 15 cheese pizzas. How many pepperoni pizzas did they sell?



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Solution:

1. The ratio of cheese to pepperoni is 3 : 2.
2. They sold 15 cheese pizzas. That's $15 \div 3 = 5$ groups of 3.
3. So there must be 5 groups of 2 pepperoni pizzas: $5 \times 2 = 10$.

✔ **Answer:** They sold 10 pepperoni pizzas.

⚠ Watch the Order!

If a problem says "the ratio of cats to dogs is 3 : 5," that means:

- Cats = 3, Dogs = 5 ✓
- Dogs = 3, Cats = 5 **WRONG!**

Always match the first number to the first thing named, and the second number to the second thing named.



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 **What Is a Ratio? – Practice** **Write the Ratio**

A bag contains 6 apples and 10 oranges. Write each ratio in all three forms (words, colon, fraction).

1. The ratio of apples to oranges.
2. The ratio of oranges to apples.
3. The ratio of apples to total fruit.

Read and Write Ratios

4. A recipe uses 3 eggs and 5 cups of flour. What is the ratio of eggs to flour?
5. In a class, there are 14 students who walk to school and 8 who ride the bus. Write the ratio of bus riders to walkers as a fraction.
6. A team won 9 games and lost 6 games. Write the ratio of wins to total games played.

Apply It

7. A store sells phones and tablets in a ratio of 5 : 2. If the store sold 20 phones, how many tablets did it sell?
8. At a concert, the ratio of adults to children is 7 : 3. If there are 21 adults, how many children are there?



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*You just learned ratios — one of
the most useful ideas in all of math!*

PREVIEW



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CHAPTER

2

Expressions and Equations

★ What's Inside ★

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★ 2.1 Exponents and Order of Operations ★

🎯 Learning Goals

- Write repeated multiplication using exponents
- Evaluate expressions with whole-number exponents
- Apply the order of operations (PEMDAS)

🎓 Exponents

An **exponent** tells you how many times to multiply the base by itself.

$$3^4 = 3 \times 3 \times 3 \times 3 = 81$$

- 3 is the **base** — the number being multiplied.
- 4 is the **exponent** — how many times.
- We say “3 to the fourth power.”

Any number to the power of 1 is itself: $7^1 = 7$. Any number to the power of 0 is 1: $5^0 = 1$.

🔪 Order of Operations (PEMDAS)

Evaluate: $5 + 2 \times 3^2$

Solution:

1. Exponents first: $3^2 = 9$.



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2. *Multiply:* $2 \times 9 = 18$.

3. *Add:* $5 + 18 = 23$.

✔ **Answer:** 23

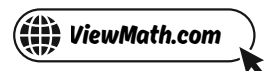


“PEMDAS: *P*arentheses, *E*xponents, *M*ultiply/*D*ivide (left to right), *A*dd/*S*ubtract (left to right).”

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 *Exponents and Order of Operations Practice* *Write Using Exponents*

1. $7 \times 7 \times 7$

2. $2 \times 2 \times 2 \times 2 \times 2$

Evaluate

3. 4^3

4. $10^2 - 6 \times 5$

Apply PEMDAS

5. $(8 + 2)^2 \div 5$

6. *Maria says $3 + 4 \times 2 = 14$. Jake says the answer is 11. Who is correct?*

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Answer Key & Explanations



Answer Key

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

6 to 10, $6 : 10$, $\frac{6}{10}$
 10 to 6, $10 : 6$, $\frac{10}{6}$
 6 to 16, $6 : 16$, $\frac{6}{16}$
 3 : 5
 $\frac{8}{14}$

9 : 15
 8 tablets
 9 children
 7^3
 2^5
 64
 70

20
 Jake

Explanations

- Apples first, then oranges.
- Oranges first, then apples.
- Total = $6 + 10 = 16$. This is a part-to-whole ratio.
- Total games = $9 + 6 = 15$.
- $20 \div 5 = 4$ groups. $4 \times 2 = 8$ tablets.
- $21 \div 7 = 3$ groups. $3 \times 3 = 9$ children.
- The base 7 is multiplied 3 times.
- The base 2 is multiplied 5 times.



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o $4 \times 4 = 16$, then $16 \times 4 = 64$.

o Exponent: $10^2 = 100$. Multiply: $6 \times 5 = 30$. Subtract: $100 - 30 = 70$.

o Parentheses: $8 + 2 = 10$. Exponent: $10^2 = 100$. Divide: $100 \div 5 = 20$.

o Multiply first: $4 \times 2 = 8$. Then add: $3 + 8 = 11$. Maria added before multiplying.

PREVIEW

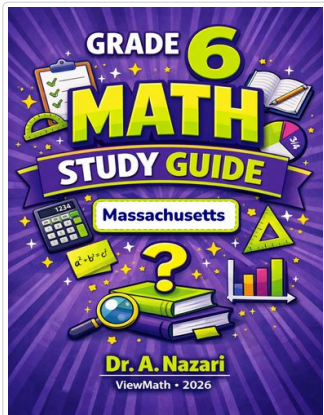


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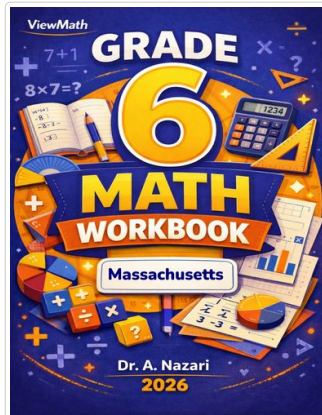
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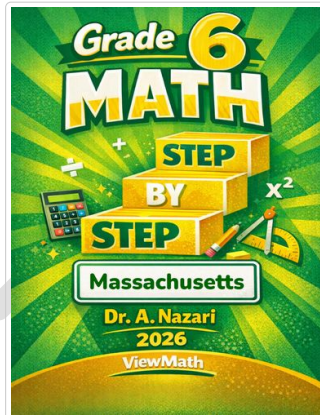
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Workbook



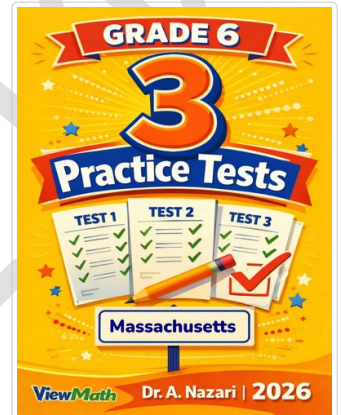
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Step-by-Step



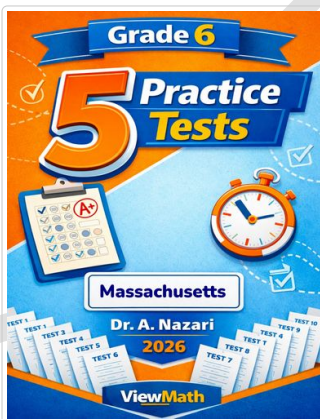
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3 Practice Tests



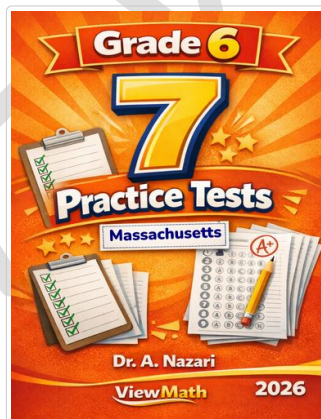
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5 Practice Tests



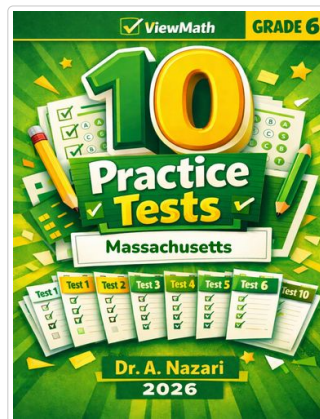
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7 Practice Tests



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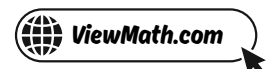
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