

# Massachusetts MCAS Grade 6 to Grade 7 Math Summer Bridge

*8-Week Review and Grade 7 Readiness with Answer Key*

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# Summer Math Bridge

## Grade 6 to Grade 7 Workbook

**This book is a bridge: it keeps Grade 6 math strong while making the first month of Grade 7 feel familiar.**

Students revisit the Grade 6 ideas that matter most—ratios, rates, percents, rational numbers, expressions, equations, geometry, measurement, statistics, and data—then preview the Grade 7 language connected to proportional relationships, rational-number operations, scale drawings, circles, probability, and inference. Families and teachers get a clear summer plan without needing to build one from scratch.



### **For families and teachers**

Use one page per day, about 15 minutes. Let students try first, then use the answer explanations as quick reteaching after mistakes. Friday quizzes show which skills are ready and which need another short review.

### **For students**

Show your thinking, label units, and fix missed problems. The goal is not to rush through the book; the goal is to start Grade 7 ready to build on what you already know.

# How to Use This Bridge Book



## The page order is the plan.

Move through the book one day at a time. Each week has four focused lesson days and one Friday quiz, so the routine stays predictable even when summer is busy.



**Lesson days** Read the short review, notice the Quick Review, and complete the 6 practice problems.

**Quiz day** Complete the 10-question mixed quiz without rushing. Use it to see what stuck from the week.

**Review answers** Check the answer key, then read the explanation for every missed problem. Correct the work in pencil before moving on.

**Extra support** If a skill is shaky, do one similar problem the next day before starting the new page.



### Keep it short

Aim for about 15 minutes, then stop.



### Show thinking

Use equations, graphs, labels, and units.



### Fix mistakes

Read the explanation and correct missed work.

# ✓ My 8-Week Bridge Tracker

Check off each lesson and write your Friday quiz score.

This bridge book belongs to: \_\_\_\_\_

Week	Focus	Mon	Tue	Wed	Thu	Friday Quiz
1	Ratios and proportional relationships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	____ / 10
2	Percents and real-world rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	____ / 10
3	Rational numbers and the coordinate plane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	____ / 10
4	Expressions, equations, and inequalities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	____ / 10
5	Relationships, rules, and scale drawings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	____ / 10
6	Geometry and measurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	____ / 10
7	Statistics and comparing data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	____ / 10
8	Probability and Grade 7 readiness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	____ / 10

## Reflection Notes

After any Friday quiz, write the question number, what you noticed, and one comment that will help you next time. Use this space for problems you missed, guessed on, or want to remember.

\_\_\_\_\_

**One Grade 6 skill I kept strong:**

\_\_\_\_\_

**One Grade 7 skill I am ready to learn:**

\_\_\_\_\_



# ★ *Table of Contents* ★

*Your 8-week summer bridge plan*

★ <b>Week 1</b>	<b><i>Ratios, Rates, and Percents</i></b> .....	<b>1</b>
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***A little bridge practice keeps math fresh!***



**WEEK**

**1**

## ***Ratios, Rates, and Percents***

 ***This Week's Days*** 

*What Is a Ratio?*



## ★ 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.**



“ 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.” ”



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### 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	$\frac{4}{7}$

What about the ratio of cars to trucks?

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



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### **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?

#### **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.**



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**⚠ 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?

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



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**WEEK**

**2**

## ***Expressions and Equations***

 ***This Week's Days*** 

*Exponents and Order of Operations*



## ★ 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:**  $3^2 = 9$ .
2. **Multiply:**  $2 \times 9 = 18$ .
3. **Add:**  $5 + 18 = 23$ .



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✓ **Answer:** 23



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

PREVIEW

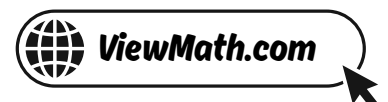


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## Exponents and Order of Operations Practice

### 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

# Answer Key & Explanations

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Use the answers to check your work, then read the explanations to learn the method.

### ✔ **How to review**

First compare your final answer. If it does not match, read the explanation slowly and redo the problem beside it. The goal is to understand the move that gets you from the question to the final answer.

1 6 to 10,  $6 : 10$ ,  $\frac{6}{10}$

2 10 to 6,  $10 : 6$ ,  $\frac{10}{6}$

3 6 to 16,  $6 : 16$ ,  $\frac{6}{16}$

4  $3 : 5$

5  $\frac{8}{14}$

6  $9 : 15$

7 8 tablets

8 9 children

1  $7^3$

2  $2^5$

3 64

4 70

5 20

6 Jake

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- ✓ *Colorful visuals and step-by-step examples*
- ✓ *Reference sheets and progress trackers*

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