

# Illinois IAR Grade 6 Math Summer Review

*8-Week Core Review with Practice & Quizzes*

**Dr. A. Nazari**

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# Welcome to Summer Math Review!



*This 8-week plan reviews the Grade 6 math students already learned this year.*

## *How each week works*

-  *Monday through Thursday are short review days.*
-  *Each day starts with a Lesson Review.*
-  *Each practice day has 6 problems.*
-  *Friday is a 10-question quiz.*
-  *Answers explain the thinking, not just the final number.*

*Try your best first. Then use the answer key like a teacher.*

# Your 8-Week Summer Review Plan

Use this book four days a week, then take the quiz on Friday.

## Weekly Schedule

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	Day 1	Day 2	Day 3	Day 4	Quiz 1
2	Day 5	Day 6	Day 7	Day 8	Quiz 2
3	Day 9	Day 10	Day 11	Day 12	Quiz 3
4	Day 13	Day 14	Day 15	Day 16	Quiz 4
5	Day 17	Day 18	Day 19	Day 20	Quiz 5
6	Day 21	Day 22	Day 23	Day 24	Quiz 6
7	Day 25	Day 26	Day 27	Day 28	Quiz 7
8	Day 29	Day 30	Mixed Review	Final Review	Final Quiz

### For students

Read the Lesson Review first. Try all 6 problems before checking answers. If you miss one, read the explanation and fix your work.

### For parents and teachers

The daily pages are meant to be short. If a student struggles, use the answer explanation as the teaching step, then have the student correct the problem.

### Goal

By the end of 8 weeks, students will have completed 192 daily practice problems and 80 quiz questions, with review across the full Grade 6 math year.

# ✔ Summer Progress Tracker

Check off each day as you finish it.

Week	Mon	Tue	Wed	Thu	Fri Quiz
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Small practice adds up.**

Four short days and one quiz each week is enough to keep Grade 6 math fresh all summer.

# Formula Reference Sheet

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## 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 Prism**  $V = l \times w \times h$

**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



# ★ *Table of Contents* ★

*Your 8-week summer review plan*

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*A little review each day 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.**



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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	$\frac{4}{7}$

What about the ratio of cars to trucks?



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✓ **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?

#### **Solution:**

1. The ratio of cheese to pepperoni is 3 : 2.



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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?

*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:** *Parent*heses, *Ex*ponents, *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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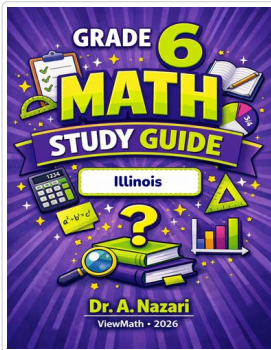
## ★ *Check Your Answers!* ★

*Try each problem first, then look here to check your work.  
It's OK to make mistakes — that's how we learn ★*



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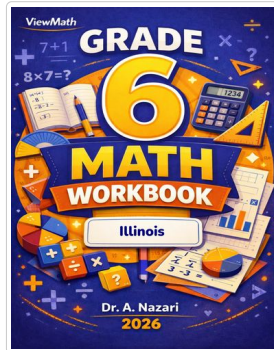
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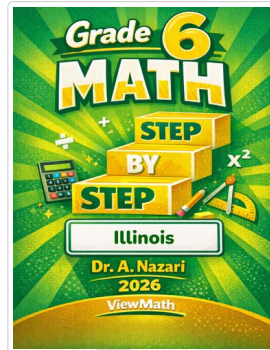
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Workbook



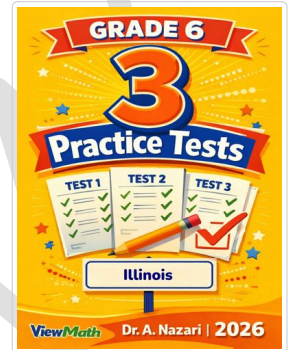
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Step-by-Step



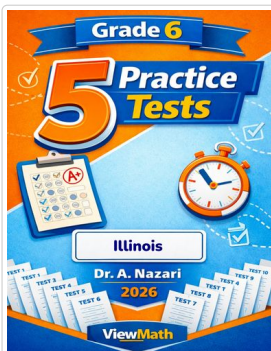
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3 Practice Tests



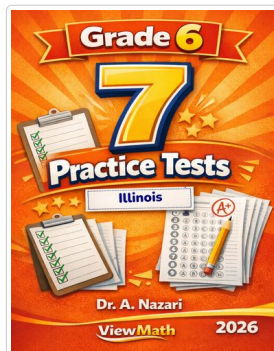
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5 Practice Tests



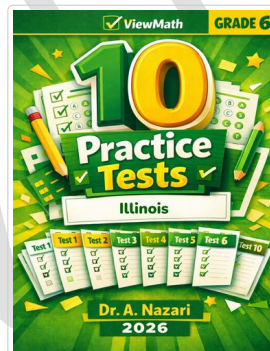
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7 Practice Tests



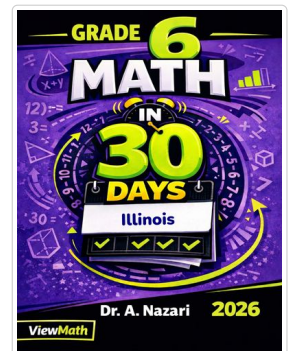
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10 Practice Tests



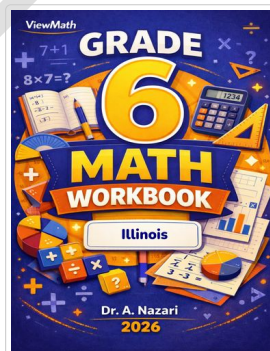
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