

Illinois IAR Grade 3 Math All-in-One

Complete Lessons, Examples, Practice & Answer Key

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WELCOME TO

Grade 3 Math Made Easy!



Hi there, math superstar! ★

This book is **your** guide to all the amazing math you'll learn in Grade 3. Inside, you'll discover numbers, multiplication, fractions, shapes, and so much more!

✓ Math can be **fun**!

✓ You **can** do this!

✓ Mistakes help you **learn**!

Are you ready? Let's go! 🚀

“ I'm Owlbert, your math buddy! I'll be here to help you every step of the way! ”



How to Use This Book

Look for these special boxes as you read!

Learning Goals

At the start of every topic, you'll see what you're about to learn. These are your targets!

Concept Boxes

The big idea! This is where you'll learn new math concepts. Read these carefully.

Worked Examples

Watch how problems are solved step by step. Follow along and try them yourself!

Practice Problems

Your turn! Try these problems on your own. Check your answers at the back of the book.



Owlbert Says

Your owl buddy shares tips, tricks, and encouragement. Listen to Owlbert!

Tips & Hints

Helpful shortcuts and tricks to make math easier. Look for these throughout the book!



Fun Facts

Cool things about math in the real world. Math is everywhere around you!



Watch Out!

Common mistakes to avoid. Everyone makes them — but now you won't!

✓ **Answers** to all practice problems are in the **Answer Key** at the back of the book!

PREVIEW



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What Math Topics Will You Learn?

Number Sense

- Place Value
- Comparing & Ordering
- Rounding
- Even & Odd Numbers

Addition & Subtraction

- Adding 3-Digit Numbers
- Subtracting 3-Digit
- Adding 4-Digit Numbers
- Subtracting 4-Digit
- Estimating Sums & Differences

Multiplication

- Understanding Multiplication
- Facts 0–5
- Facts 6–10
- Multiplying by 10 & 100

Division

- Understanding Division
- Division Facts
- Relating $\times$ & $\div$

Fractions

- Understanding Fractions
- Fractions on Number Line
- Comparing Fractions
- Equivalent Fractions

Measurement

- Measuring Length
- Weight & Capacity
- Telling Time
- Elapsed Time

Money

- Counting Money
- Adding & Subtracting Money

Geometry

- 2D Shapes & Attributes
- 3D Shapes
- Perimeter
- Area

Data & Graphs

- Picture Graphs
- Bar Graphs
- Line Plots

Patterns & Problem Solving

- Number Patterns
- Word Problems

X¹ Math Symbols You Should Know X¹

You'll see these symbols throughout this book!

Symbol	Name	What It Means	
+	Plus (Add)	Put numbers together.	$3 + 5 = 8$
-	Minus (Subtract)	Take away from a number.	$9 - 4 = 5$
×	Times (Multiply)	Add equal groups.	$4 \times 3 = 12$
÷	Divide	Split into equal groups.	$12 \div 3 = 4$
=	Equals	Both sides are the same.	$2 + 3 = 5$
>	Greater Than	The left number is bigger.	$7 > 3$
<	Less Than	The left number is smaller.	$2 < 9$
$\frac{1}{2}$	Fraction Bar	Part of a whole. $\frac{1}{2}$ means 1 out of 2 equal parts	

“ Remember the Alligator! ”



The **greater than** (>) and **less than** (<) symbols are like an alligator's mouth. The alligator always wants to eat the **bigger** number!

$$8 > 3$$

8 is greater than 3

$$2 < 9$$

2 is less than 9



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 Key Math Words for Grade 3

- **Sum** — the answer when you add
- **Difference** — the answer when you subtract
- **Product** — the answer when you multiply
- **Quotient** — the answer when you divide
- **Factor** — a number you multiply
- **Array** — objects in rows and columns
- **Fraction** — a part of a whole
- **Numerator** — the top number in a fraction
- **Denominator** — the bottom number
- **Equation** — a math sentence with =
- **Estimate** — a smart guess, close to the real answer
- **Perimeter** — the distance around a shape
- **Area** — the space inside a shape
- **Rounding** — making a number simpler by going to the nearest ten or hundred



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PREVIEW

CHAPTER

1

Number Sense & Place Value

★ *What's Inside* ★

1.1 <i>Place Value: Ones, Tens, Hundreds</i>	2
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★ 1.1 Place Value: Ones, Tens, Hundreds ★

🎯 In this lesson you will learn:

- Understand that digits have different values based on their position
- Identify the ones, tens, and hundreds places
- Write numbers in expanded form

What does the digit 3 mean in the number 345?



Owl

It means 3!



You

Not quite! It means 300 because it's in the **hundreds** place!



Owl

🎓 What Is Place Value?

Place value tells us how much a digit is worth based on where it sits in a number. The same digit can mean different things!

Look at the number 527:

H	T	O
5	2	7



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- The **5** is in the **hundreds** place. It means 500.
- The **2** is in the **tens** place. It means 20.
- The **7** is in the **ones** place. It means 7.

So $527 = 500 + 20 + 7$.

Place Value Words

Digit — A single number symbol: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

Place Value — The value of a digit based on its position in a number.

Expanded Form — A way to write a number showing the value of each digit.



“ Think of place value like a house! Ones live on the first floor; tens on the second floor; and hundreds on the top floor. The higher the floor, the bigger the value! ”

Show 364 with Base-Ten Blocks

Let's break apart 364:



1. 3 hundreds = 300 (the big flat squares)
2. 6 tens = 60 (the long rods)
3. 4 ones = 4 (the tiny cubes)

✓ **Answer:** $364 = 300 + 60 + 4$



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Expanded Form of 892



Let's expand it:

1. The 8 is in the hundreds place: 800
2. The 9 is in the tens place: 90
3. The 2 is in the ones place: 2

✓ **Answer:** $892 = 800 + 90 + 2$

👉 **Your Turn!** Write 476 in expanded form: _____

Math in Real Life!

When you see a price tag that says \$2.49, place value helps you understand it means 2 dollars, 4 dimes, and 9 pennies!

Let's Explore!

Digit Detective Look at the number **753**. Answer these questions:

- Which digit is in the hundreds place? _____
- Which digit is in the tens place? _____
- Which digit is in the ones place? _____
- What is the value of the digit 5? _____

Now try the number **308**:



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- What does the 0 mean? _____
- Write 308 in expanded form: _____

**TIP**

A 0 in a number is a placeholder. In 308, the 0 means there are zero tens. We write:
 $308 = 300 + 0 + 8$.



Oops! Find the Mistake!

What Went Wrong? Maria says the value of the digit 6 in **461** is 6.

Is Maria correct? _____

The 6 is in the _____ place, so its value is _____.



What We Learned

- Every digit in a number has a **place value**.
- The three places are: **hundreds, tens, and ones**.
- **Expanded form** shows the value of each digit: $547 = 500 + 40 + 7$.
- A 0 means there are none of that place value, but it holds the spot!



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 Place Value Practice **What Is the Value?**

Write the value of the underlined digit.

1. $\underline{3}$ 82 _____

4. $\underline{9}$ 15 _____

2. 561 _____

5. 247 _____

3. 704 _____

6. 638 _____

Write in Expanded Form

7. $259 =$ _____

8. $730 =$ _____

9. $406 =$ _____

10. $815 =$ _____

Write the Number

Write the standard form.

11. $600 + 30 + 9 =$ _____

12. $200 + 50 + 1 =$ _____

13. $400 + 0 + 7 =$ _____

14. $100 + 80 + 0 =$ _____

True or False?

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15. In 347, the digit 4 has a value of 40.

True ☐ False ☐

16. In 902, the digit 0 has a value of 0.

True ☐ False ☐

17. In 618, the digit 6 is in the tens place.

True ☐ False ☐

18. $500 + 70 + 3 = 573$

True ☐ False ☐

Word Problems

19. Lily has 3 hundred-dollar bills, 5 ten-dollar bills, and 2 one-dollar bills. How much money does Lily have?

Answer: _____ dollars

20. A school has 648 students. What is the value of the digit 4 in 648?

Answer: _____



Challenge!



21. I am a 3-digit number. My hundreds digit is 7. My tens digit is 2 more than my ones digit. My ones digit is 3. What number am I? _____

22. Use the digits 4, 8, and 1 to make the largest possible 3-digit number: _____

Now make the smallest possible 3-digit number: _____



★ **Awesome work! You now know that every digit has a special place and value!** ★



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CHAPTER

2

Multiplication & Division

★ *What's Inside* ★

2.1 Understanding Multiplication	9
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★ 2.1 Understanding Multiplication ★

🎯 In this lesson you will learn:

- Understand multiplication as equal groups
- Read and write multiplication sentences
- Use pictures and arrays to show multiplication

📖 The Cookie Trays

Emma is setting up for a party. She puts 4 cookies on each tray. She fills 3 trays. How many cookies does she have?

You could count: $4 + 4 + 4 = 12$.

But there's a faster way — **multiplication!**

Multiplication = Counting Equal Groups!

🎓 What Is Multiplication?

Multiplication is a quick way to add **equal groups**.

3×4 means "3 groups of 4"



$$3 \times 4 = 12$$



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Instead of adding $4 + 4 + 4$, we multiply!

Math Words

Factor — The numbers you multiply. In $3 \times 4 = 12$, the factors are 3 and 4.

Product — The answer when you multiply. In $3 \times 4 = 12$, the product is 12.

Equal Groups — Groups that all have the same number of items.



“ Think about it this way: 5×7 means “5 groups of 7.” The first number tells you HOW MANY groups. The second tells you HOW MANY in each group! ”

Reading a Multiplication Sentence

$$\underbrace{5}_{\text{groups}} \times \underbrace{7}_{\text{in each}} = \underbrace{35}_{\text{total}}$$

We say: “Five **times** seven equals thirty-five.”

Or: “Five **groups of** seven.”

Show 2×6

2×6 means 2 groups of 6:



$$2 \times 6 = 6 + 6 = 12$$

✓ **Answer:** $2 \times 6 = 12$

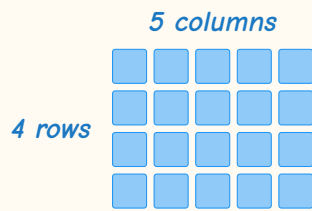


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Show 4×5 with an Array

An **array** shows multiplication as rows and columns:



4 rows with 5 in each row.

✔ **Answer:** $4 \times 5 = 20$

Equal Groups

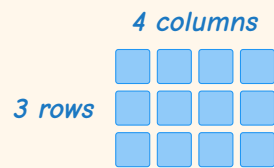


3 groups of 4

Groups are circles of dots.

$$3 \times 4 = 12$$

Arrays



3 rows, 4 columns

Dots are lined up in a grid.

$$3 \times 4 = 12$$

 **Your Turn!** Draw 5 groups of 3 dots. What is 5×3 ? _____

Multiplication = Repeated Addition

Every multiplication can be written as addition:



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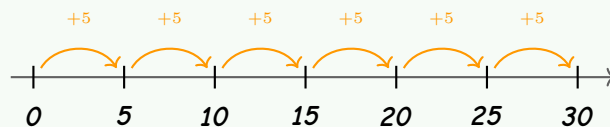


$$\begin{array}{rcl}
 3 \times 5 & = & 5 + 5 + 5 = 15 \\
 4 \times 2 & = & 2 + 2 + 2 + 2 = 8 \\
 6 \times 3 & = & 3 + 3 + 3 + 3 + 3 + 3 = 18
 \end{array}$$

But multiplication is much faster!

Let's Explore!

Skip Counting and Multiplication Skip counting is multiplication in disguise!



Counting by 5s: 5, 10, 15, 20, 25, 30

The 6th number is 30. That means $6 \times 5 = 30$!

Now skip count by 3s to find 4×3 :

3, _____, _____, _____

So $4 \times 3 =$ _____

TIP

*You can use skip counting to multiply! To find 7×2 , count by 2s seven times:
2, 4, 6, 8, 10, 12, 14*

Math in Real Life!

Multiplication is everywhere!

- 6 eggs in each row, 2 rows in a carton: $2 \times 6 = 12$ eggs
- 4 wheels on each car, 5 cars: $5 \times 4 = 20$ wheels
- 3 scoops per cone, 7 cones: $7 \times 3 = 21$ scoops



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**Oops! Find the Mistake!**

Jake says $3 \times 5 = 8$.

What did Jake do wrong? _____

Hint: Did Jake add or multiply?

The correct answer is: _____

**What We Learned**

- **Multiplication** means counting **equal groups**.
- $a \times b$ means “ a groups of b .”
- The numbers being multiplied are **factors**. The answer is the **product**.
- You can show multiplication with **equal groups**, **arrays**, **skip counting**, or **repeated addition**.



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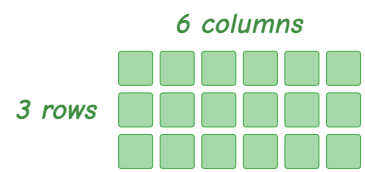
✎ Multiplication Practice ✎

Write the Multiplication Sentence

Look at the groups and write a multiplication sentence.

1.  $\underline{\quad} \times \underline{\quad} = \underline{\quad}$

2.  $\underline{\quad} \times \underline{\quad} = \underline{\quad}$

3.  $\underline{\quad} \times \underline{\quad} = \underline{\quad}$

Write as Repeated Addition AND Multiplication

4. $4 + 4 + 4 = \underline{\quad}$ $\rightarrow \underline{\quad} \times \underline{\quad} = \underline{\quad}$

5. $7 + 7 = \underline{\quad}$ $\rightarrow \underline{\quad} \times \underline{\quad} = \underline{\quad}$

6. $6 + 6 + 6 + 6 + 6 = \underline{\quad}$ $\rightarrow \underline{\quad} \times \underline{\quad} = \underline{\quad}$

Multiply

7. $2 \times 4 = \underline{\quad}$

10. $4 \times 5 = \underline{\quad}$

8. $3 \times 3 = \underline{\quad}$

11. $1 \times 8 = \underline{\quad}$

9. $5 \times 2 = \underline{\quad}$

12. $6 \times 2 = \underline{\quad}$

Word Problems



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13. There are 5 bags with 4 apples in each bag. How many apples are there in all?

Answer: _____ apples

14. A parking lot has 3 rows of cars. Each row has 6 cars. How many cars are in the lot?

Answer: _____ cars

15. Ms. Lee gives each of her 7 students 2 stickers. How many stickers does she give out?

Answer: _____ stickers

Hands-On Activity!

Build Arrays! Use small objects (coins, blocks, or cereal pieces).

1. Build an array with 3 rows and 5 columns. How many total? _____
2. Build an array with 4 rows and 4 columns. How many total? _____
3. Can you build TWO different arrays that both have 12 objects? Draw them!

★ You just learned one of the most powerful
tools in math — multiplication! Way to go! ★



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THANK YOU

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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*

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