

# Massachusetts MCAS Grade 3 Math Step by Step

*A Beginner Friendly Guide to Learning Math*

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STEP BY STEP

# Grade 3 Math Made Easy!

Hi there, math superstar! ★

This book teaches you Grade 3 math **one step at a time**.

Every topic shows you a clear set of steps, then you practice using those steps until they feel easy!

- ✓ Follow the **steps** — they're your recipe!
- ✓ Try the **examples** along the way!
- ✓ Mistakes help you **learn**!

Ready to take it step by step? Let's go! 🚀

“I'm Owlbert! I'll guide you through every step. Just follow along!”



# How to Use This Book

*Every topic follows the same pattern. Here's what to look for!*

## Step Goal

*Every topic starts with what you'll learn. These are your targets — read them first!*

## Words to Know

*New math words explained in simple language. Learn these before reading the steps!*

## The Steps

*The heart of every topic! A numbered list of steps — your **recipe** for solving the problem. Read all the steps before moving on.*

## Worked Examples

*Watch each step in action! Every example shows the steps applied to a real problem.*

## Your Turn

*Try filling in the blanks! This guided practice helps you use the steps on your own.*

## Practice

*Now do it yourself! Use the steps you learned. Check your answers at the back of the book.*

**Owlbert's Tips**

*Your owl buddy shares tricks and encouragement. Owlbert knows the best shortcuts!*

**⚠ 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!



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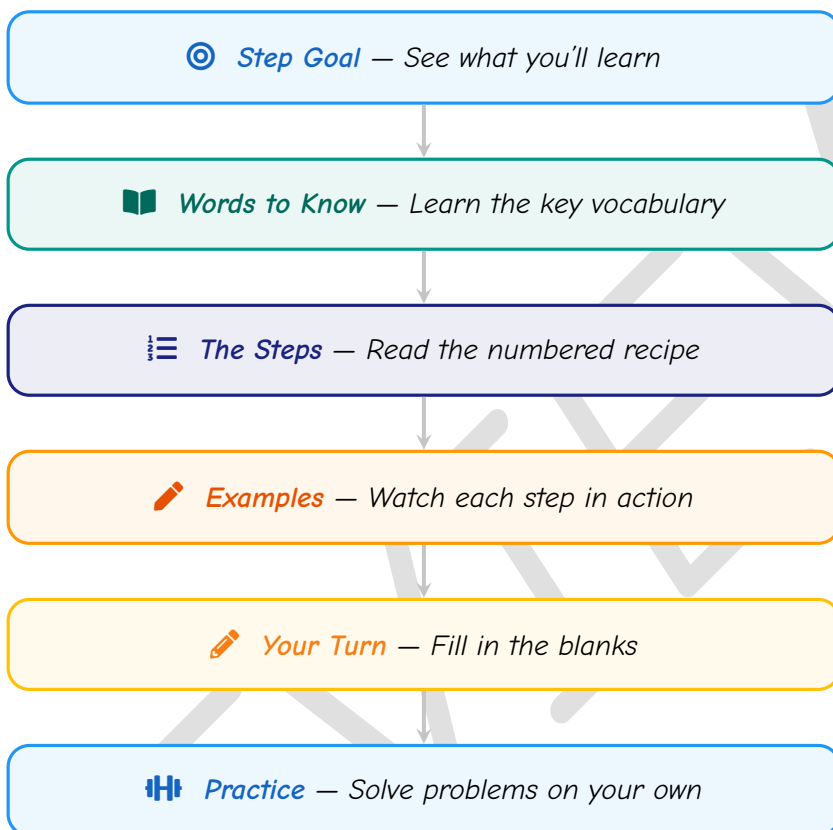


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# 🧑🏫 How Every Topic Works 🧑🏫

*Each topic follows the same easy pattern!*



## ★ Tips for Students

- Read **all** the steps before trying examples
- Cover the answer and try each example first
- Go back to the steps if you get stuck
- It's okay to look at the steps while you practice
- Check your answers at the back!

## 👨🏫 Tips for Parents

- Let your child follow the steps at their own pace
- Encourage them to say each step out loud
- Review mistakes together using the steps
- 15–20 minutes per session is perfect
- Use alongside the Study Guide for deeper understanding!

# X<sup>1</sup> Math Symbols You Should Know X<sup>1</sup>

*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.                                    | $9 - 4 = 5$       |
| $\times$      | Times (Multiply) | Add equal groups.                                           | $4 \times 3 = 12$ |
| $\div$        | 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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# *Contents*





|          |                                                    |          |
|----------|----------------------------------------------------|----------|
| <b>1</b> | <b><i>Number Sense &amp; Place Value</i></b> ..... | <b>1</b> |
| 1.1      | <i>Place Value: Ones, Tens, Hundreds</i> .....     | 2        |
| <b>2</b> | <b><i>Multiplication &amp; Division</i></b> .....  | <b>6</b> |
| 2.1      | <i>Understanding Multiplication</i> .....          | 7        |



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PREVIEW

CHAPTER

1

## *Number Sense & Place Value*

### ★ *What's Inside* ★

|                                                           |          |
|-----------------------------------------------------------|----------|
| <b>1.1</b> <i>Place Value: Ones, Tens, Hundreds</i> ..... | <b>2</b> |
|-----------------------------------------------------------|----------|

## ★ 1.1 Place Value: Ones, Tens, Hundreds ★

### What You'll Learn

- Find the **ones**, **tens**, and **hundreds** place in any 3-digit number
- Tell the **value** of each digit
- Write numbers in **expanded form**

### 📖 Words to Know

- ▶ **Place Value** — How much a digit is worth based on where it sits in a number.
- ▶ **Digit** — A single number symbol: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.
- ▶ **Expanded Form** — Writing a number as the sum of each digit's value, like  $527 = 500 + 20 + 7$ .

### How to find the value of each digit and write a number in expanded form

- 1 Find each digit's **place**: hundreds (left), tens (middle), ones (right).
- 2 Find each digit's **value**: hundreds  $\times 100$ , tens  $\times 10$ , ones  $\times 1$ .
- 3 Write in **expanded form**: add up the values with  $+$  signs.



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*Example: Write 527 in expanded form.*

**Step 1** Find each digit's place:

5 is on the left  $\Rightarrow$  **hundreds**      2 is in the middle  $\Rightarrow$  **tens**      7 is on the right  $\Rightarrow$  **ones**

**Step 2** Find each digit's value:

$5 \times 100 = 500$        $2 \times 10 = 20$        $7 \times 1 = 7$

**Step 3** Write with + signs:

✓  $527 = 500 + 20 + 7$

*Example: Write 406 in expanded form.*

**Step 1** 4  $\Rightarrow$  **hundreds**      0  $\Rightarrow$  **tens**      6  $\Rightarrow$  **ones**

**Step 2**  $4 \times 100 = 400$        $0 \times 10 = 0$        $6 \times 1 = 6$

**Step 3** Write with + signs:

✓  $406 = 400 + 0 + 6$

**⚠ Watch Out!** The digit 3 in 364 is NOT worth 3. It's in the hundreds place, so it's worth 300!



A 0 in a number is a placeholder. In 308, the 0 means zero tens.



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 **Your Turn:** Write 815 in expanded form.

**Step 1** What place is each digit in?

8  $\Rightarrow$  \_\_\_\_\_ 1  $\Rightarrow$  \_\_\_\_\_ 5  $\Rightarrow$  \_\_\_\_\_

**Step 2** Find each value:

8  $\times$  \_\_\_\_\_ = \_\_\_\_\_ 1  $\times$  \_\_\_\_\_ = \_\_\_\_\_ 5  $\times$  \_\_\_\_\_ = \_\_\_\_\_

**Step 3** Write the expanded form:

815 = \_\_\_\_\_

**Remember:** The **same digit** means different things in different places! The 5 in 512 means 500, but the 5 in 152 means 50.



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## Place Value Practice

### Identify the Place

Write which place the underlined digit is in.

1. 473 \_\_\_\_\_

2. 581 \_\_\_\_\_

### Find the Value

3. Value of 3 in 382: \_\_\_\_\_

4. Value of 6 in 561: \_\_\_\_\_

### Write in Expanded Form

5.  $259 =$  \_\_\_\_\_

6.  $406 =$  \_\_\_\_\_

### Put It All Together

7.  $600 + 30 + 9 =$  \_\_\_\_\_

8.  $400 + 0 + 7 =$  \_\_\_\_\_

### Challenge!

9. 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? \_\_\_\_\_



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CHAPTER

2

## *Multiplication & Division*

### ★ *What's Inside* ★

|                                        |   |
|----------------------------------------|---|
| 2.1 Understanding Multiplication ..... | 7 |
|----------------------------------------|---|





## ★ 2.1 Understanding Multiplication ★

### What You'll Learn

- Understand multiplication as counting **equal groups**
- Write a **multiplication sentence** from a picture or story
- Show multiplication with **groups, arrays, and repeated addition**

### Words to Know

- ▶ **Factor** — A number 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.
- ▶ **Array** — Objects arranged in equal rows and columns.

### How to write a multiplication sentence from equal groups

- 1 Count the number of **groups** (this is the first factor).
- 2 Count how many are **in each group** (this is the second factor).
- 3 **Multiply** the two factors to find the product (or use repeated addition).



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*Example: Emma puts 4 cookies on each tray. She fills 3 trays. How many cookies?*

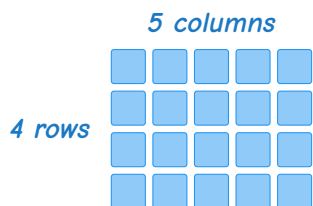
**Step 1** Count the groups: 3 trays  $\Rightarrow$  3 groups

**Step 2** Count how many in each group: 4 cookies per tray  $\Rightarrow$  4 in each

**Step 3** Multiply:  $3 \times 4 = 12$  (or add:  $4 + 4 + 4 = 12$ )

✓  $3 \times 4 = 12$  cookies

*Example: Write the multiplication sentence for this array.*



**Step 1** Count the rows: 4 rows

**Step 2** Count items in each row: 5 in each row

**Step 3** Multiply:  $4 \times 5 = 20$

✓  $4 \times 5 = 20$



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**Example:** Write  $5 \times 3$  as repeated addition and find the product.

**Step 1** How many groups? **5**

**Step 2** How many in each group? **3**

**Step 3** Add:  $3 + 3 + 3 + 3 + 3 = 15$

✓  $5 \times 3 = 15$

**⚠ Watch Out!**  $3 \times 5$  means "3 groups of 5" — NOT " $3 + 5$ ." Don't add the factors; multiply them!



💡 The first factor tells you **HOW MANY** groups. The second tells you **HOW MANY** in each group.

$5 \times 7 = 5$  groups of 7!

**✏ Your Turn:** There are 6 bags with 3 apples in each bag. How many apples?

**Step 1** How many groups (bags)? \_\_\_\_\_

**Step 2** How many in each group? \_\_\_\_\_

**Step 3** Write the multiplication sentence:

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_



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## Multiplication Practice

### Count the Groups

1.  How many groups? \_\_\_\_\_

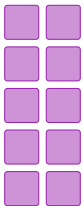
2.  How many groups? \_\_\_\_\_

### Write the Multiplication Sentence

3.  \_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

2 columns

5 rows

4.  \_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

### Multiply

5.  $4 \times 5 =$  \_\_\_\_\_

7.  $6 \times 3 =$  \_\_\_\_\_

6.  $2 \times 8 =$  \_\_\_\_\_

### Challenge!

8. Jake has 7 packs of stickers with 4 stickers in each pack. How many stickers does Jake have?

\_\_\_\_\_



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