

# CHAPTER 3: Place Value

## Introduction

In this chapter, teachers explore what young children learn about place value up to three digits in the early grades. Teachers are encouraged to complete the mini-modules in order to build a strong understanding of how to teach topics in place value.

### Mini-Modules in This Chapter

- A) Group ones and tens
- B) Understand the digits of numbers
- C) Compare two- and three-digit numbers

### Goals of the Chapter

This chapter aims to help teachers:

- Identify and describe how children develop an understanding of place value.
- Identify how some common manipulatives are used to teach place value.
- Develop new teaching practices.

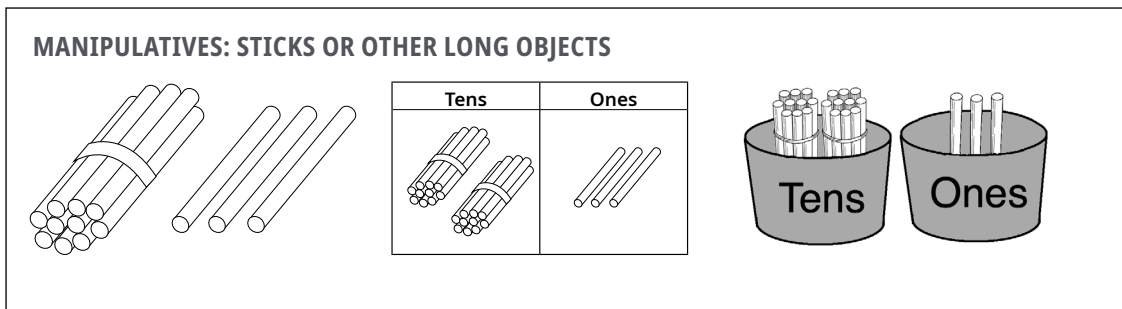
### Key terms

<b>Base 10 blocks</b>	A manipulative for place value with blocks (or paper) that children can connect to make sticks of 10 and squares of 100
<b>Compose</b>	To put a number together using its parts (e.g., 2 tens and 4 ones makes 24)
<b>Decompose</b>	To break a number down into its parts (e.g., 35 can be decomposed into 3 tens and 5 ones)
<b>Digits</b>	The numerals 0 to 9 that are part of a number
<b>Expanded form</b>	To compose a number using addition based on place value (e.g., $623 = 600 + 20 + 3$ )
<b>Manipulatives</b>	Real objects that can be held and moved around
<b>Place value</b>	The value that a digit has based on its position in a number
<b>Place value chart</b>	A diagram with a column representing each place value (hundreds, tens, ones, etc.)

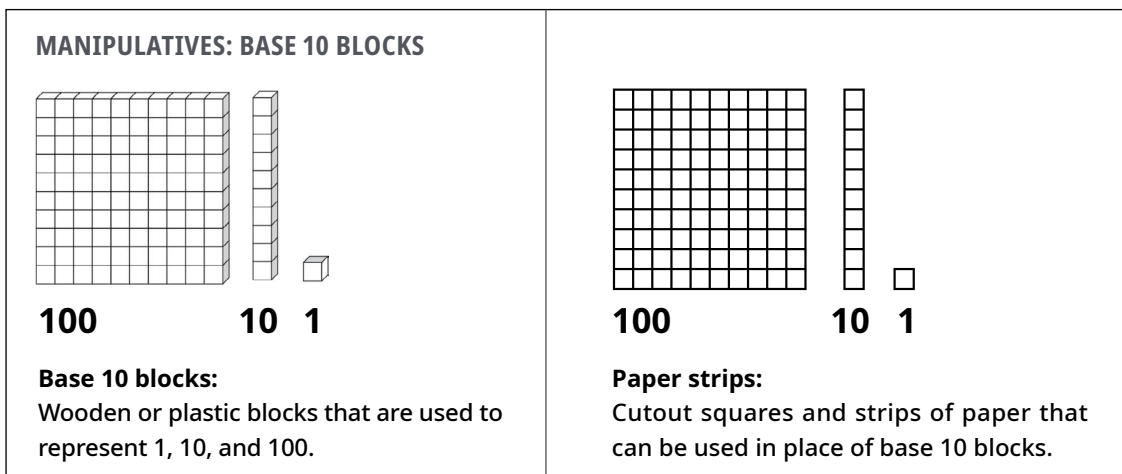
## Using Place Value Materials

Children should first develop an understanding of place value by working with manipulatives that represent the value of ones (1s) and tens (10s). Later on, they may be introduced to manipulatives for hundreds (100s). These manipulatives can take different forms, but children should be able to hold, count, and group them. Manipulatives can be selected and prepared based on the materials that are available locally.

Sticks or other long objects can be used to introduce place value. Each stick represents one unit, and sticks can be bundled together in groups of ten to represent tens.



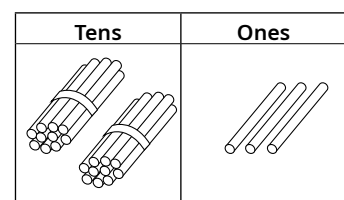
**Base 10 blocks** are similar manipulatives for teaching place value, and they are useful for understanding hundreds. Base 10 blocks are physical blocks in the shape of a cube that children can connect to make sticks of 10 and squares of 100. Pictures or paper squares may be used to represent base 10 blocks. These can be arranged by children on their desks and in place value tables to form numbers.



Both sticks and base 10 blocks can be used for similar activities. Children may be asked to count and group the manipulatives to form numbers, or name the number shown by a set of manipulatives. Children first practice forming numbers with the manipulatives without a place value chart.

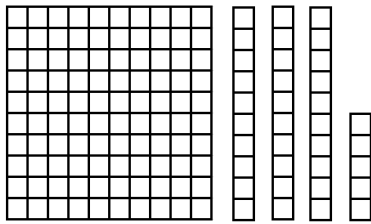
Children should start working with **place value charts** with manipulatives first, before writing digits in them. Children usually begin learning two-digit numbers in a chart with only two columns (tens and ones), and later move on to three columns (including hundreds).

After they have a good understanding of place value from using manipulatives, children will be able to read and write numbers well and write numbers in a place value chart.

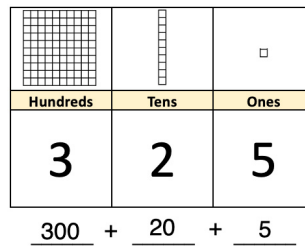


## SOME WAYS OF SHOWING NUMBERS USING PLACE VALUE

Place value can be shown and understood using different types of manipulatives and place value charts.



**135**



**325**

Hundreds	Tens	Ones

**103**

	Hundreds	Tens	Ones
42 =		4	2
6 =			6
135 =	1	3	5

**42, 6, 135**

## Connections with Other Mathematical Concepts

### NUMBER AND QUANTITY

Place value is an important component to understanding all numbers and quantities. For example, children must know how to read and write the number symbols (digits) and connect them with the quantity represented by these symbols.

### OPERATIONS: ADDITION, SUBTRACTION, MULTIPLICATION, AND DIVISION

Children must have a good understanding of place value to do operations accurately. For example, they can add and subtract two-digit numbers well only if they understand the value of each digit.



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