

WHOLE NUMBERS

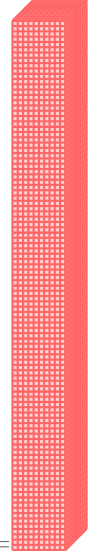
A DEFINITIONS

Discover:

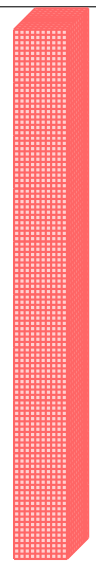
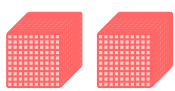
- When we have 10 ones = , we group them into 1 ten = .

- When we have 10 tens = , we group them into 1 hundred = .

- When we have 10 hundreds = , we group them into 1 thousand = .

- When we have 10 thousands = , we group them into 1 ten thousand = .

- To count how many ten thousands, thousands, hundreds, tens, and ones there are, we can make a table:

Ten Thousands	Thousands	Hundreds	Tens	Ones
1	2	1	2	3
				

The table tells us we have **1 ten thousands**, **2 thousands**, **1 hundred**, **2 tens**, and **3 ones**, which we can write in positional notation as 12 123.

Definition Base 10 system

In the base 10 system, the place of a digit in a number determines its value. We can represent the number 32 354 in several ways:

- **With digits:**

32 354

- **In expanded form:**

$$\begin{array}{rcccccc}
 3 \text{ ten-thousands} + & 2 \text{ thousands} + & 3 \text{ hundreds} + & 5 \text{ tens} + & 4 \text{ ones} \\
 30\,000 + & 2\,000 + & 300 + & 50 + & 4 \\
 3 \times 10\,000 + & 2 \times 1\,000 + & 3 \times 100 + & 5 \times 10 + & 4 \times 1
 \end{array}$$

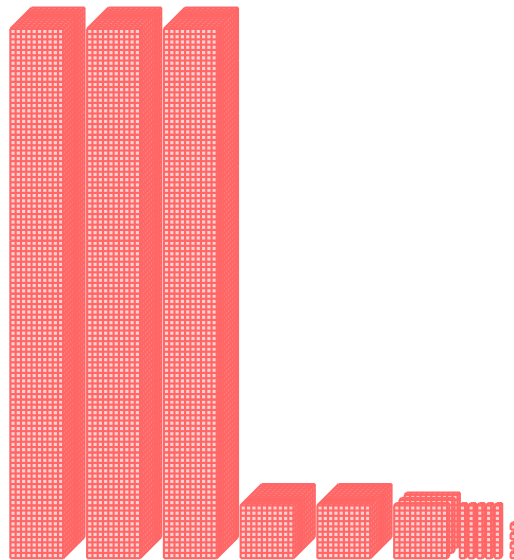
- **With words:**

thirty-two thousand three hundred fifty-four

- **In a table:**

Ten-Thousands	Thousands	Hundreds	Tens	Ones
3	2	3	5	4

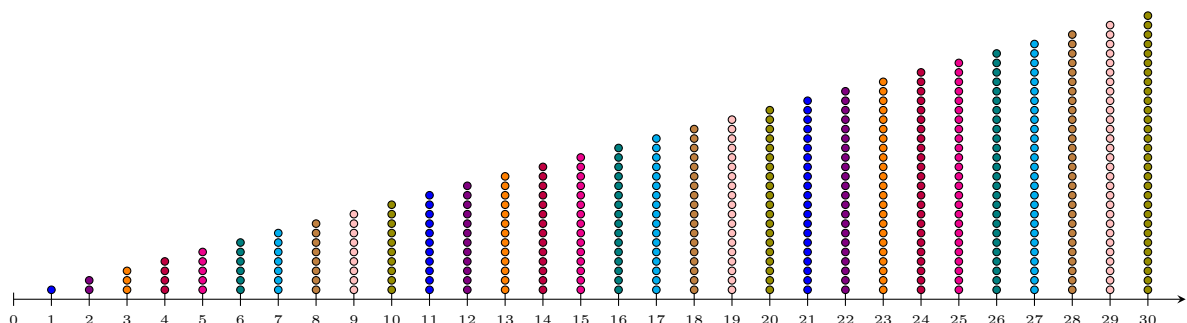
- **With cubes:**



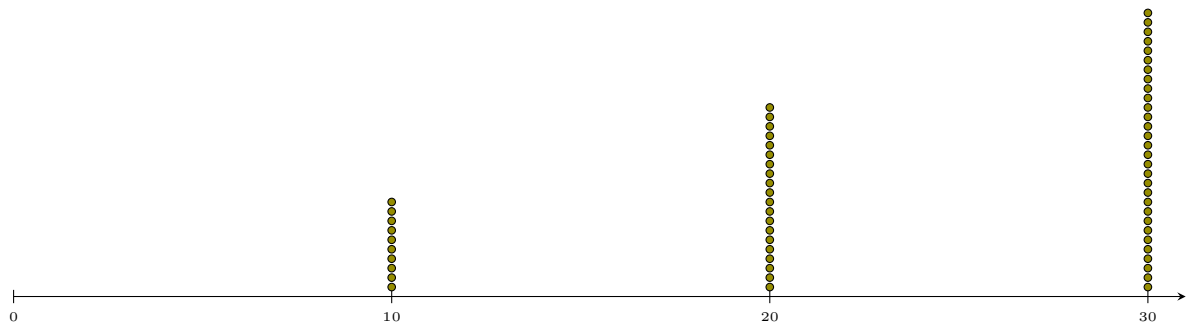
B ON THE NUMBER LINE

Discover:

- A number line shows numbers like 0, 1, 2, 3, and so on in order.

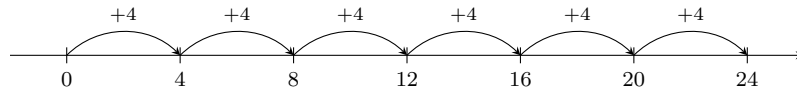


- Let's make counting easier by counting by tens on our number line. Now we jump 10 at a time: 0, 10, 20, 30.



Definition Number Line

A **number line** is a line that shows numbers in order. Moving right adds by same number.



C BIG NUMBERS

Discover: Have you ever wondered how big numbers like millions or billions work? Let's explore together:

- A **million** is 1 000 thousands, or 1 000 000.
- A **billion** is 1 000 millions, or 1 000 000 000.

Here's a fun way to think about these numbers:

- A stack of \$1 000 made of \$1 bills is as tall as a small tree (0.1 meters).
- A stack of \$1 000 000 made of \$1 bills is as tall as a skyscraper (100 meters).
- A stack of \$1 000 000 000 made of \$1 bills is as tall as a hill (0.1 kilometers).
- Elon Musk's fortune, \$340 000 000 000 (340 billion dollars) in \$ 1 bills, could touch space!

Understanding these numbers helps us think about big things like money, populations, or stars in the sky. Let's see how we can use them!

Definition Understanding Place Value

Big numbers are written using the place value system:

- A **thousand** is 1 000 ones, or 1 000.
- A **million** is 1 000 thousands, or 1 000 000.
- A **billion** is 1 000 millions, or 1 000 000 000.

We can write a number in three ways:

- **With digits:**

340 120 000 000

- **With words:**

three hundred forty billion one hundred twenty million

- **In a table:**

billions			millions			thousands			units		
H	T	U	H	T	U	H	T	U	H	T	U
3	4	0	1	2	0	0	0	0	0	0	0