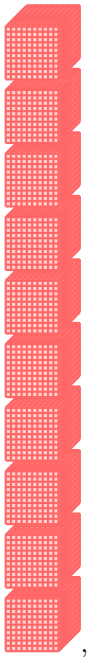
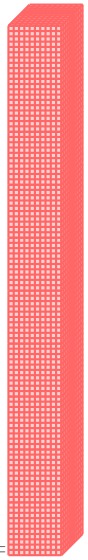
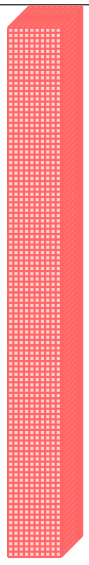
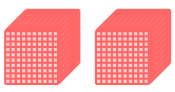
WHOLE NUMBERS

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**:

3 ten-thousands +	2 thousands +	3 hundreds +	5 tens +	4 ones
30 000+	2 000+	300+	50+	4
$3 \times 10\,000+$	$2 \times 1\,000+$	$3 \times 100+$	$5 \times 10+$	4×1

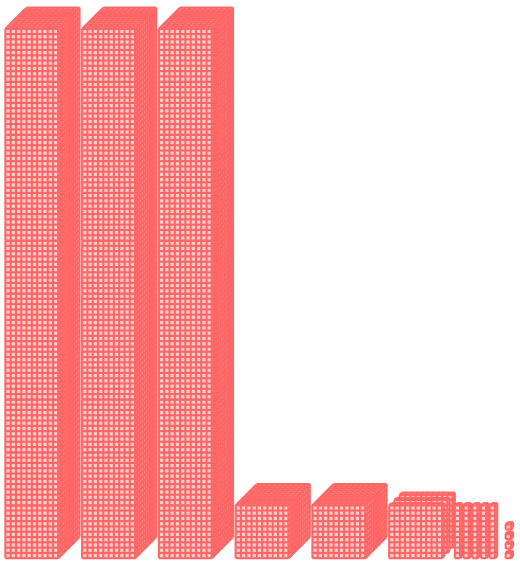
- **With words**:

thirty-two thousand three hundred fifty-four

- **In a table**:

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

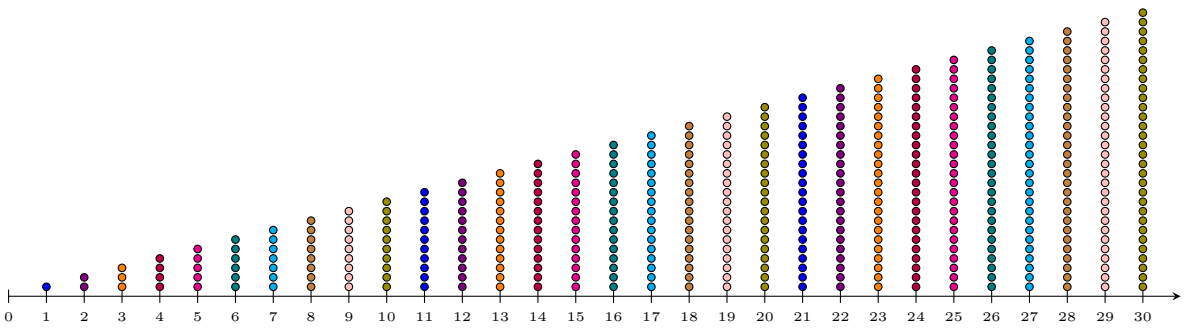
- **With cubes**:



B ON THE NUMBER LINE

Discover:

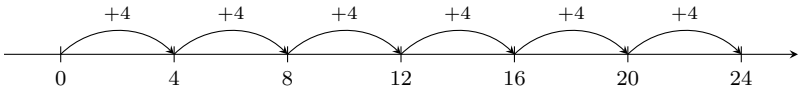
- A number line shows numbers like 0, 1, 2, 3, and so on in order.



- 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