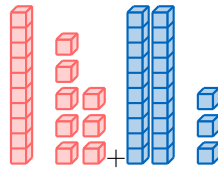


ADDITION WITHIN 100

A DEFINITION

Discover: Su has a collection of cubes in two different colors. She has 18 red cubes and 23 blue cubes.

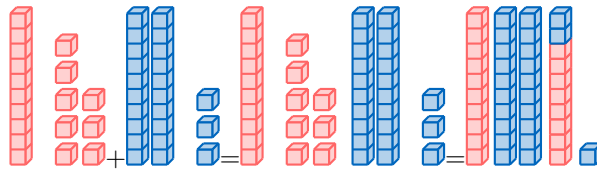


How many cubes does Su have in total?

Answer: To find the total number of cubes Su has, we need to add the red cubes and the blue cubes:

$$18 + 23$$

Using cubes, we can visualize the addition:



This shows a total of $18 + 23 = 41$ cubes.

Counting each cube one by one would be difficult. But don't worry! We will learn faster ways to add numbers like these.

Definition Addition

Addition means putting things together. When we add, we find how many we have in total.

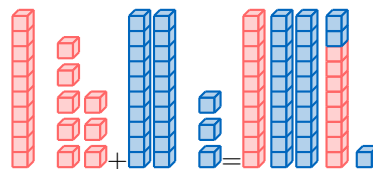
- The $+$ symbol means "add."
- The $=$ symbol shows that the two sides are the same.

We can represent addition as:

- **Numbers:**

$$18 + 23 = 41$$

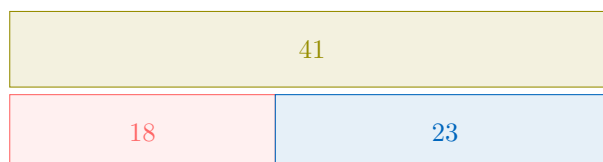
- **Cubes:**



- **Words:**

eighteen plus twenty-three equals forty-one

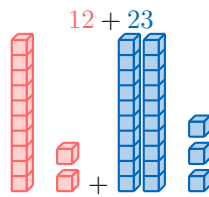
- **Part-whole model:**



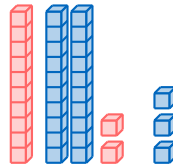
B ADDING ONES THEN ADDING TENS

Method Adding Ones Then Tens Using Cubes

To calculate :



- **Step 1: Group the tens and ones**



- **Step 2: Add the ones**

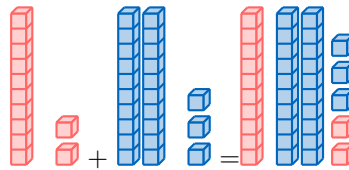
$$2 \text{ ones} + 3 \text{ ones} = 5 \text{ ones}$$

- **Step 3: Add the tens**

$$1 \text{ ten} + 2 \text{ tens} = 3 \text{ tens}$$

- **Result:** There are 3 tens and 5 ones. So,

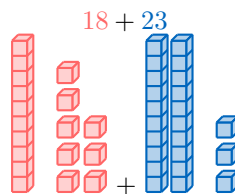
$$12 + 23 = 35$$



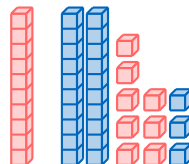
Now, let's calculate $18 + 23$. This time, when we add the ones, we get a number greater than 9. This means we'll need to regroup the ones into a new ten. Let's see how this works.

Method Adding Ones Then Tens with Regrouping

To calculate:

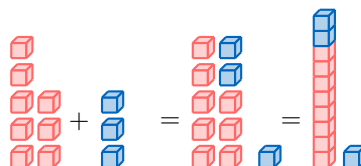


- **Step 1: Group the tens and ones**



- **Step 2: Add the ones**

$$8 \text{ ones} + 3 \text{ ones} = 11 \text{ ones} = 1 \text{ ten} + 1 \text{ one}$$

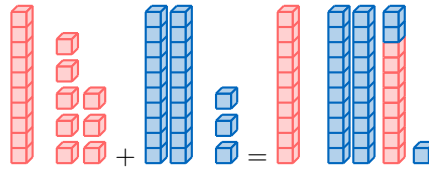


- **Step 3: Add the tens**

$$1 \text{ ten} + 2 \text{ tens} + 1 \text{ ten (regrouped)} = 4 \text{ tens}$$

- **Result:** There are 4 tens and 1 one. So,

$$18 + 23 = 41$$



C ADDING USING COLUMNS

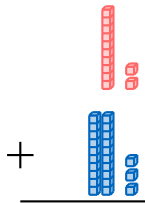
Method Adding in Columns

To calculate:

$$12 + 23$$

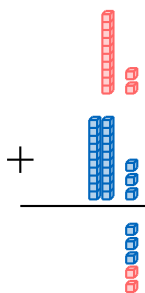
- **Step 1: Set up the addition**

Write the numbers in a vertical column, making sure the digits line up by place value (ones under ones, tens under tens).

Tens	Ones	
1	2	
+ 2	3	+
		

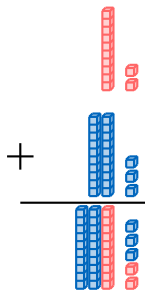
- **Step 2: Add the ones**

$$2 \text{ ones} + 3 \text{ ones} = 5 \text{ ones}$$

Tens	Ones	
1	2	
+ 2	3	+
	5	

- **Step 3: Add the tens**

$$1 \text{ ten} + 2 \text{ tens} = 3 \text{ tens}$$

Tens	Ones	
1	2	
+ 2	3	+
3	5	

- **Result:** There are 3 tens and 5 ones. So,

$$12 + 23 = 35$$

Let's add $18 + 23$ together! This time, when we add the ones, we'll get a number bigger than 9. We'll need to regroup the ones into a new ten. We move (or **carry**) a group of ten to the tens place.

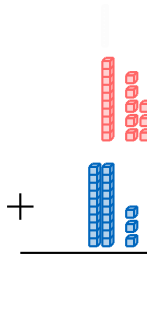
Method Adding in Columns with Carrying

To calculate:

$$18 + 23$$

- **Step 1: Set up the addition**

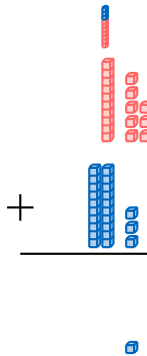
Write the numbers in a vertical column, making sure the digits line up by place value (ones under ones, tens under tens).

Tens	Ones	
1	8	
+ 2	3	+
		

• **Step 2: Add the ones**

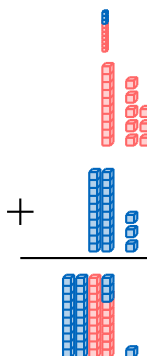
$$8 \text{ ones} + 3 \text{ ones} = 11 \text{ ones} = 1 \text{ ten} + 1 \text{ one}$$

Write the 1 in the ones place and carry the 1 ten to the top of the tens column.

Tens	Ones	
1	8	
+ 2	3	+
		
	1	

• **Step 3: Add the tens**

$$1 \text{ ten} + 2 \text{ tens} + 1 \text{ ten (regrouped)} = 4 \text{ tens}$$

Tens	Ones	
1	8	
+ 2	3	+
		
4	1	

• **Result:**

$$18 + 23 = 41$$