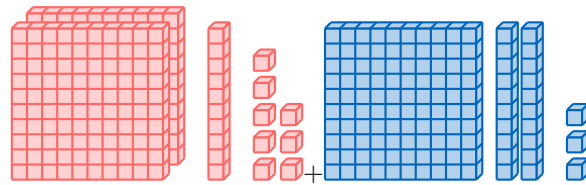


ADDITION

A WHAT IS ADDITION?

Discover: Louis has two boxes of cubes. One contains 218 cubes, and the other contains 123 cubes.

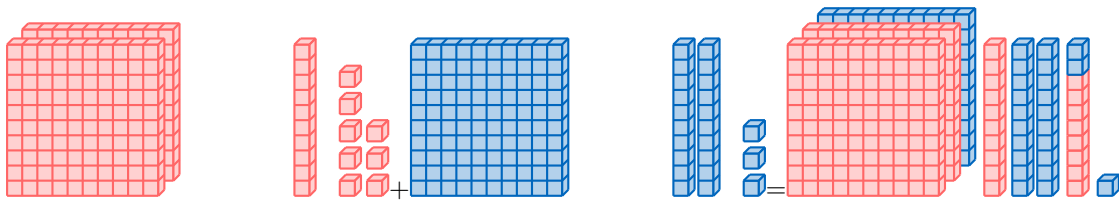


How can we find out how many cubes Louis has altogether?

Answer: To find the total, we need to add the two amounts together:

$$218 + 123$$

If we combine all the blocks, we can see the total sum.



The total is 341 cubes.

Counting all those blocks would take a long time. A faster and more organized way to add bigger numbers is to use **column addition**.

$$\begin{array}{r} 1 \\ 218 \\ + 123 \\ \hline 341 \end{array}$$

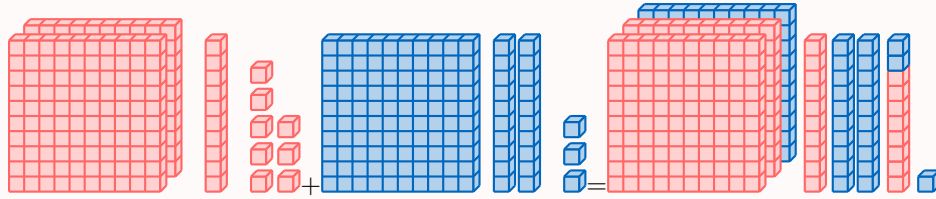
Definition Addition

Addition is joining groups together to find the total, or **sum**. The **plus sign (+)** tells us to add. We can show "two hundred eighteen plus one hundred twenty-three equals three hundred forty-one" in many ways:

- With numbers:

$$218 + 123 = 341$$

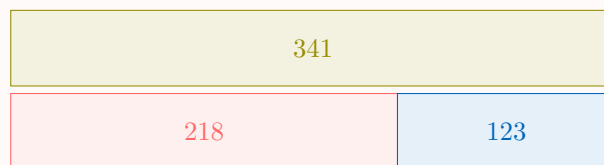
- With cubes:



- With a column addition:

$$\begin{array}{r} 1 \\ 218 \\ + 123 \\ \hline 341 \end{array}$$

- With a part-whole model:



B ADDING IN COLUMNS

Method Column Addition with Regrouping

Let's calculate:

$$288 + 545$$

- **Step 1: Line up the numbers by place value.**

Write the numbers one on top of the other. Make sure the ones, tens, and hundreds are in straight columns.

$$\begin{array}{r} 288 \\ + 545 \\ \hline \end{array}$$

- **Step 2: Add the ones.**

$$8 \text{ ones} + 5 \text{ ones} = 13 \text{ ones}$$

13 ones is the same as 1 ten and 3 ones. We write the 3 in the ones place and **carry** the 1 ten over to the tens column.

$$\begin{array}{r} 1 \\ 288 \\ + 545 \\ \hline 3 \end{array}$$

- **Step 3: Add the tens.**

$$1 \text{ ten (carried)} + 8 \text{ tens} + 4 \text{ tens} = 13 \text{ tens}$$

13 tens is the same as 1 hundred and 3 tens. We write the 3 in the tens place and **carry** the 1 hundred over.

$$\begin{array}{r}
 1 \ 1 \\
 2 \ 8 \ 8 \\
 + 5 \ 4 \ 5 \\
 \hline
 3 \ 3
 \end{array}$$

- **Step 4: Add the hundreds.**

1 hundred (carried) + 2 hundreds + 5 hundreds = 8 hundreds

Write the 8 in the hundreds place.

$$\begin{array}{r}
 1 \ 1 \\
 2 \ 8 \ 8 \\
 + 5 \ 4 \ 5 \\
 \hline
 8 \ 3 \ 3
 \end{array}$$

- **The Result:**

$$288 + 545 = 833$$

