Multiplication

The children made a bunch of flowers to give to Tai on Teachers' Day. Tony, Sonu, Salma, John and Nandu each brought 2 flowers and Sonu tied them together.

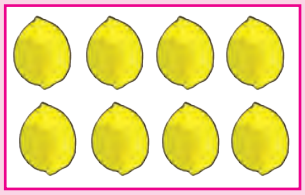
Tai : Lovely ! What a big bunch of flowers ! And so pretty ! How many flowers are there in it altogether ?

Tony : Two flowers from each of the five of us makes a total of ten flowers.

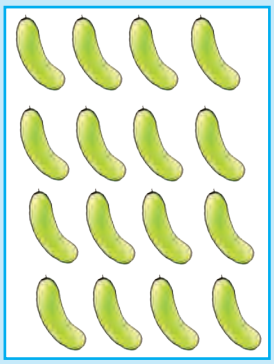
John : 2 flowers each from 5 of us means taking 2, 5 times and adding them together. That is, **2 + 2 + 2 + 2 + 2 = 10.**

Tai : 2 + 2 + 2 + 2 + 2 is written as 2 × 5.
10 is called the product of 2 and 5.
Now, here are some pictures. Let us count the number of fruits in them.

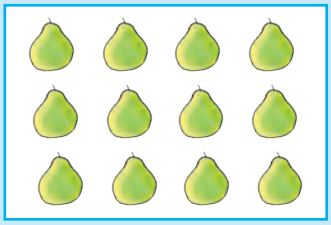
Sonu : 4 lemons in each row and two such rows.
Twice 4 is 8 lemons.
Twice 4 is taking 4, 2 times and adding them.



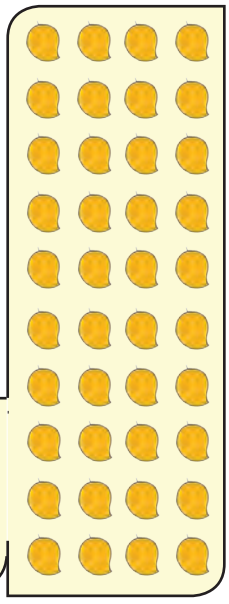
Tony : 4 cucumbers in a row and four such rows.
4 times 4, so, 16 cucumbers.



Salma : 4 guavas in a row and three such rows is 3 times 4 which is 12.



John : 4 mangoes in a row and 10 such rows.
10 times 4, or 40 mangoes.



Multiplication

Tony **Sonu** **Nandu** **Salma**

If each of them has 3 balls, how many balls altogether ?

3 + 3 + 3 + 3 = 12

An addition of 3 taken 4 times, is 4 times 3,

That is, 4 × 3 = 12 (4 threes are 12).

✤ In the same way, fill in the boxes in the example below.

Six mangoes in each basket. How many mangoes in 3 baskets ?

6 + 6 + 6 = means ☐ times 6. In other words, 6 × ☐ = ☐

✤ Children are standing in 7 groups of 3 children each. How many children are there altogether ?

☐ times three, three sevens = ☐ , 3 × ☐ = ☐

✦ Look at the picture and prepare an example like the one given above.

✤ One notebook costs ₹ 5. How much will 9 such notebooks cost ?

An addition of 5 taken 9 times means 5 × 9.

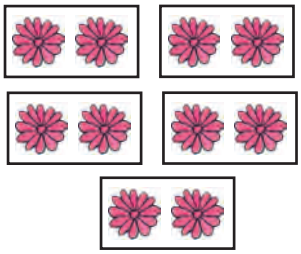
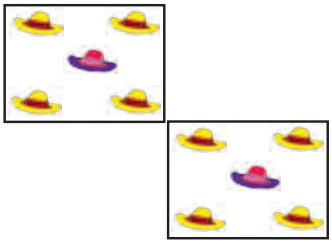
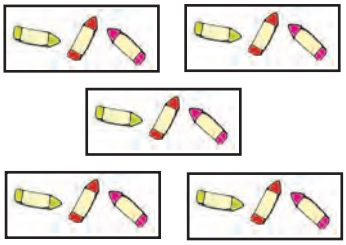
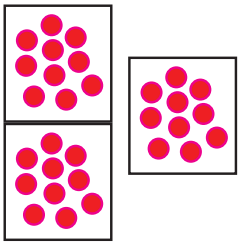
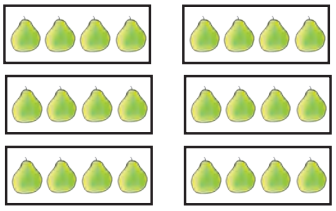
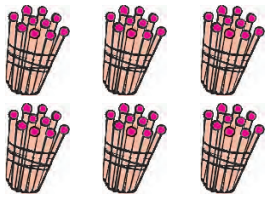
5 × 9 = 45.

Hence, the cost of 9 notebooks is ₹ 45.

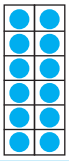
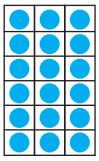
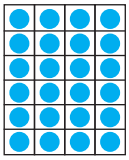
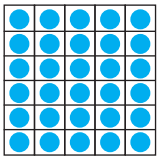
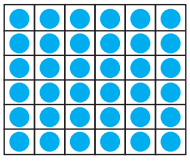
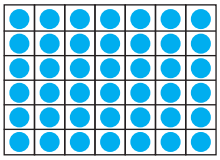
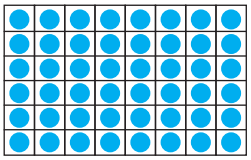
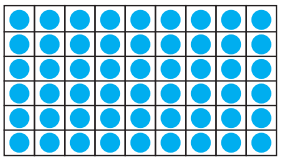
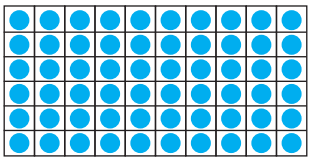
Tai : Tables are nothing but series of multiplications. Later on, we shall use tables to carry out multiplications of large numbers.

Let us recite the 2, 3, 4, 5 and 10 times tables.

Multiplication

In the form of objects	As an addition	How many times	As a multi-plication	Total number of objects
	2 + 2 + 2 + 2 + 2	2, five times	5 × 2	10
	5 + 5	... , twice	... × ...	
	... + ... + ... + ... + ...	..., five times	... × ...	
	.....	ten, three times	... × ...	.....
	.....	four, six times	... × ...	.....
	.....	.....	... × ...	.....

6 times table

	6, once	6 × 1 = 6 6 ones are 6
	6, twice	6 × 2 = 12 6 twos are 12
	6, thrice	6 × 3 = 18 6 threes are 18
	6, four times	6 × 4 = 24 6 fours are 24
	6, five times	6 × 5 = 30 6 fives are 30
	6, six times	6 × 6 = 36 6 sixes are 36
	6, seven times	6 × 7 = 42 6 sevens are 42
	6, eight times	6 × 8 = 48 6 eights are 48
	6, nine times	6 × 9 = 54 6 nines are 54
	6, ten times	6 × 10 = 60 6 tens are 60

Multiplication tables of 7, 8 and 9

Let us make the 7, 8 and 9 times tables like the 6 times table.

7 × 1 =	7
7 × 2 =	14
7 × 3 =	21
7 × 4 =	28
7 × 5 =	35
7 × 6 =	42
7 × 7 =	49
7 × 8 =	56
7 × 9 =	63
7 × 10 =	70

8 × 1 =	8
8 × 2 =	16
8 × 3 =	24
8 × 4 =	32
8 × 5 =	40
8 × 6 =	48
8 × 7 =	56
8 × 8 =	64
8 × 9 =	72
8 × 10 =	80

9 × 1 =	9
9 × 2 =	18
9 × 3 =	27
9 × 4 =	36
9 × 5 =	45
9 × 6 =	54
9 × 7 =	63
9 × 8 =	72
9 × 9 =	81
9 × 10 =	90

Making a multiplication table with the help of addition

Tai : To make the 6 times table, we take 6 in two parts. As, 6 = 4 + 2. Now we take the 4 and 2 times tables and add them to get the 6 times table.

Tony : Just as we can make the 6 times table using the tables of 4 and 2, we can make it using the tables of 5 and 1, too.

Tai : That's right. We can make a new table using two tables that we already know.

Tony : So we can make the 7 times table with the help of the 4 and 3 times tables.

4 times table	2 times table	Addition	6 times table
4	2	4 + 2 = 6	6 × 1 = 6
8	4	8 + 4 = 12	6 × 2 = 12
12	6	12 + 6 = 18	6 × 3 = 18
16	8	16 + 8 = 24	6 × 4 = 24
20	10	20 + 10 = 30	6 × 5 = 30
24	12	24 + 12 = 36	6 × 6 = 36
28	14	28 + 14 = 42	6 × 7 = 42
32	16	32 + 16 = 48	6 × 8 = 48
36	18	36 + 18 = 54	6 × 9 = 54
40	20	40 + 20 = 60	6 × 10 = 60

✍ **For teachers :** Have the children make the 8 and 9 times tables with the help of two other tables. Point out that tables can also be made by subtracting one table from the other.

It's special - the 9 times table !

09
18
27
36
45
54
63
72
81
90

Tai : Come, I'll tell you something about the 9 times table.
Write the numbers in reverse order – 9, 8, 7 ... up to 0 in the units place. Now, in the tens place before them, write 0, 1, 2, ... 9 in serial order. And look, we have the 9 times table all ready !
Isn't that wonderful ?

Sonu : Wow ! I can see something else. If we add the digits in the units and tens places in each number, we always get nine ! Now, that's interesting, too.

✦ **The multiplication 5 × 3 = 15 has been shown in the table below. Fill in the right numbers in the empty boxes.**

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10					
3	3	6	9							
4	4	8		16						
5	5	10	15	20	25					
6						36				
7							49			
8								64		
9									81	
10	10									100

✍ **For teachers :** Get each child to prepare his/her own table of the numbers 1 to 100. Ask each child to choose one multiplication table between 2 and 10, then colour the numbers which appear in that table, and observe the pattern that is formed.

✦ **Carry out the following multiplications.**

$\times \begin{matrix}3\\6\end{matrix}$	$\times \begin{matrix}5\\3\end{matrix}$	$\times \begin{matrix}7\\5\end{matrix}$	$\times \begin{matrix}8\\3\end{matrix}$	$\times \begin{matrix}6\\4\end{matrix}$	$\times \begin{matrix}7\\8\end{matrix}$
☐	☐	☐	☐	☐	☐

✦ From the pictures given below, make examples of multiplication and solve them.

✤ The example made from the following picture :

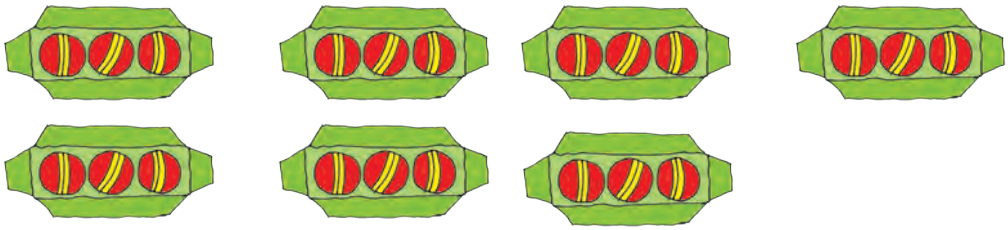
There are 6 flowers in each row.
How many flowers in 4 such rows ?

☐ Flowers in one row

× ☐ Number of rows

☐ Total number of flowers

✤



☐ balls in one box. Then in ☐ boxes, ☐ balls in all.

✤

✤

✍ **For teachers :** Get the children to prepare new examples using 2 one-digit numbers and to solve them.

Using tables for multiplication

✤ On his birthday, Chintu bought 6 pens at ₹ 5 per pen. How much must he pay the shopkeeper for them ?

⟶ To find out the total cost, we must say the 5 times table up to 5 sixes.

5 sixes are thirty, that is $5 \times 6 = 30$

So Chintu must pay ₹ 30 altogether.

6	Pens
× 5	Cost of one pen
30	Total cost

✤ How many trees in 5 rows if there are 8 trees in one row ?

⟶ Rows 5, trees in each row 8

Operation : Multiplication

We shall use the 8 times table.

Eight fives are forty .

Total trees = 40.

5	Rows
× 8	Trees in each row
40	Total number of trees

✤ If 9 laddoos can be put in one box, how many can be put in 7 such boxes ?

Operation : Multiplication

We shall say the 9 times table.

Nine sevens are ____

7	Boxes
× 9	Laddoos in one box
____	Total number of laddoos

✤ 7 days in one week, so how many days in 4 weeks ?

⟶ Say the 7 times table.

Seven fours ____

4	Weeks
× 7	Days in one week
____	Total days

✤ 8 tiles in one row, how many in 3 rows ?

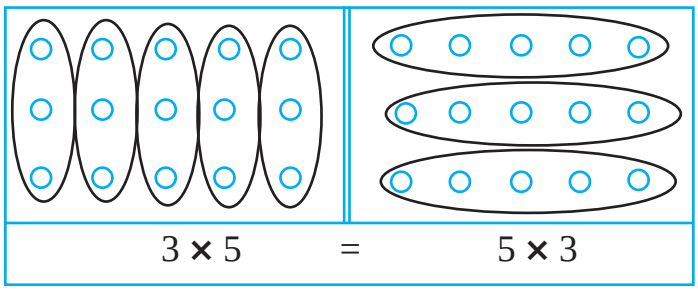
8	Tiles in a row
× 3	Rows
____	Total number of tiles

3	Rows
× 8	Tiles in a row
____	Total number of tiles

✤ One guava costs ₹ 6.
How much money will be needed to buy one guava for each of the four friends Tony, Sonu, Nandu and Salma ?

6	Cost of one guava
× 4	Number of children
____	Rupees in all

Properties of Multiplication



$$\begin{array}{r} 3 \\ \times\ 5 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times\ 3 \\ \hline \end{array}$$

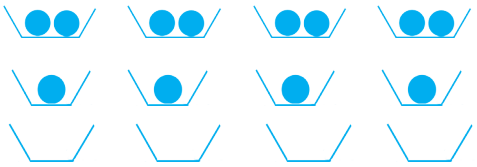
✦ **Carry out the following multiplications and observe.**

6 × 5 = ☐	8 × 3 = ☐	7 × 6 = ☐	9 × 2 = ☐
5 × 6 = ☐	3 × 8 = ☐	6 × 7 = ☐	2 × 9 = ☐

The product of two numbers remains the same even if their order is changed.

For example : **6 × 5 = 5 × 6** ; **8 × 3 = 3 × 8** ; **7 × 6 = 6 × 7** ; **9 × 2 = 2 × 9**

✦ **The multiplicative property of zero**



2 + 2 + 2 + 2 is the same as **2 × 4 = 8**

1 + 1 + 1 + 1 is the same as **1 × 4 = 4**

0 + 0 + 0 + 0 is the same as **0 × 4 = 0**

When we multiply 'zero' by any number or when we multiply any number by 'zero', the product is always 'zero'. 0 × 4 = 4 × 0 = 0

✦ **Carry out the following multiplications.**

2 × 4 = ☐ = 4 × 2	7 × 0 = ☐ = 0 × 7	9 × 8 = ☐ = 8 × 9
7 × 3 = ☐ = 3 × 7	8 × 0 = ☐ = 0 × 8	6 × 3 = ☐ = 3 × 6

■ **Multiplicand, multiplier, product**

6 Multiplicand × 5 Multiplier	5 Multiplicand × 6 Multiplier
30 Product	30 Product

Tai : In the multiplication 6 × 5 we multiply the first number 6. It is the multiplicand. We multiply by the second number, 5. It is the multiplier. The answer is 30. It is known as the product.

Similarly, in the multiplication 5 × 6, 5 is the multiplicand, 6 is the multiplier and 30 is the product.