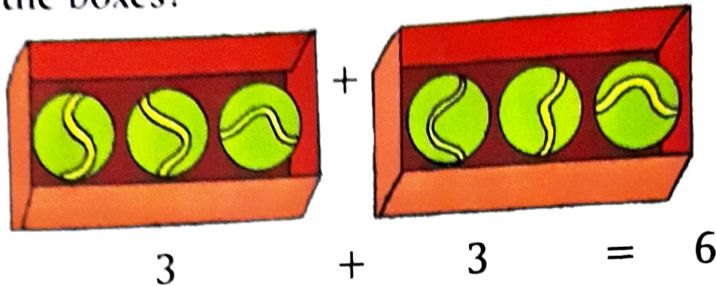




INTRODUCTION TO MULTIPLICATION

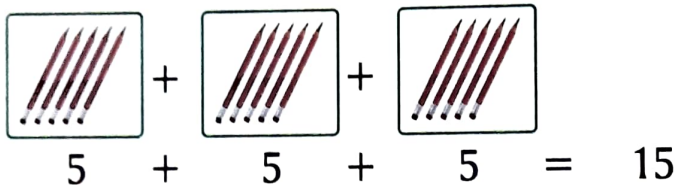
1. Leena has 2 boxes. Each box has 3 balls. What is the total number of balls in the boxes?



So, 2 groups of 3 = 6

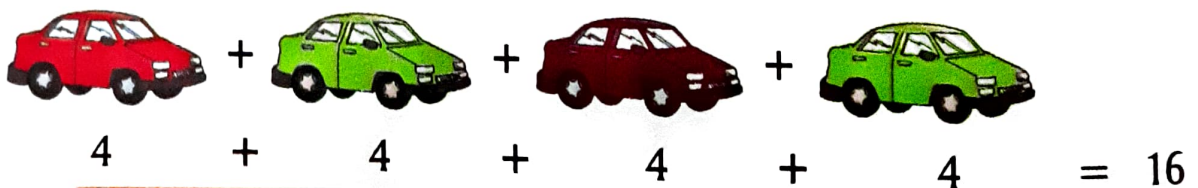


2. Manoj has 3 boxes full of pencils. Each box has 5 pencils. What is the total number of pencils in all the boxes?



So, 3 groups of 5 = 15

3. Tanmay has 4 toy cars. Each car has 4 wheels. What is the total number of wheels in all the cars?

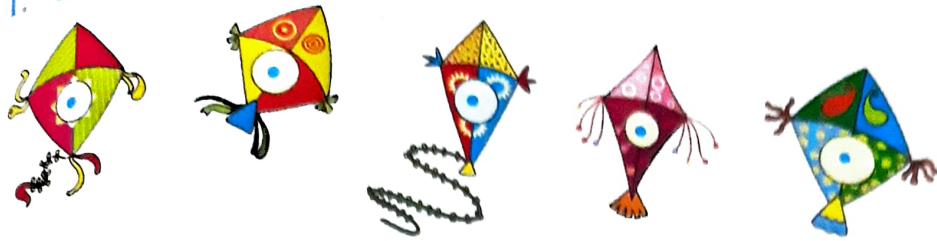


So, 4 groups of 4 = 16

In above examples, we have added the same number again and again. This is repeated addition and we call it **Multiplication**.

Let us look at some more examples.

1. 5 kites with 1 dot each



'x' is the symbol of multiplication.



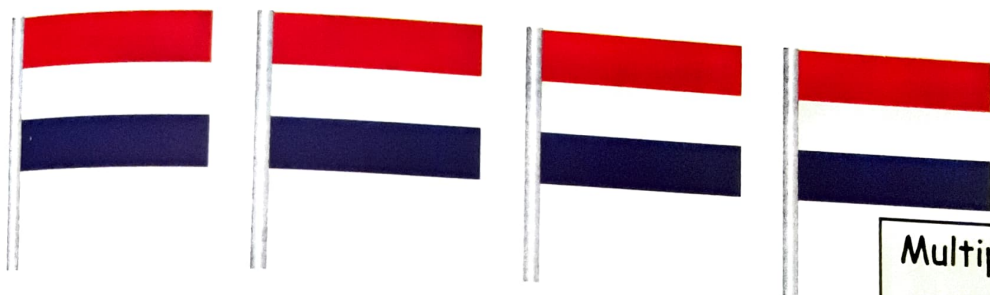
Total number of dots = $1 + 1 + 1 + 1 + 1 = 5$

We write it as $1 \times 5 = 5$

We read it as '5 times 1 is 5.'

This is a multiplication fact.

2. 4 flags with 3 strips each



Total number of strips = $3 + 3 + 3 + 3 = 12$

We write it as $3 \times 4 = 12$

We read it as '4 times 3 is 12'.

Multiplication is simply repeated addition of the same number.



Activity-1

1. Fill in the blanks to complete the multiplication facts.

(a) 6 plants with 3 leaves each



Total number of leaves = $3 + 3 + 3 + 3 + 3 + 3 =$

18

We write it as $3 \times 6 = 18$

We read it as "6 times 3 is 18".

(b) 3 bunches of 3 flowers each



Total number of flowers = $3 + 3 + 3 = 9$

We write it as $9 \times 3 = 27$

We read it as "...3..... times 9..... is 27.....".

2. Fill in the blanks:



$2 + 2 + 2 = 6$

3 times 2 = 6

$2 \times 3 = 6$



$3 + 3 + 3 + 3 = 12$

4 times 3 = 12

$3 \times 4 = 12$

3. Complete the table:

(a) $3 + 3$	3×2	6
(b) $1 + 1 + 1 + 1$	1×4	4
(c) $7 + 7 + 7 + 7 + 7$	7×5	35
(d) $10 + 10 + 10$	10×3	30

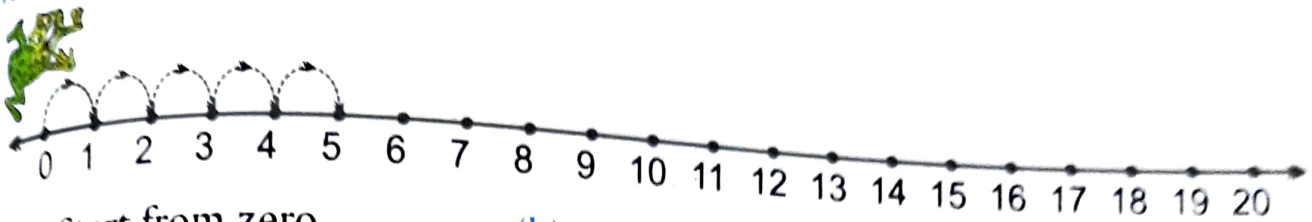
Teacher Tip:

The students need to just understand the concept of multiplication as repeated addition of the same number and the correct way of writing it. Actual multiplication is not required at this stage. Take examples from the classroom to reinforce the concept.

Multiplication on the Number Line

Let us multiply 5 and 1, using number line.

Multiply 1×5

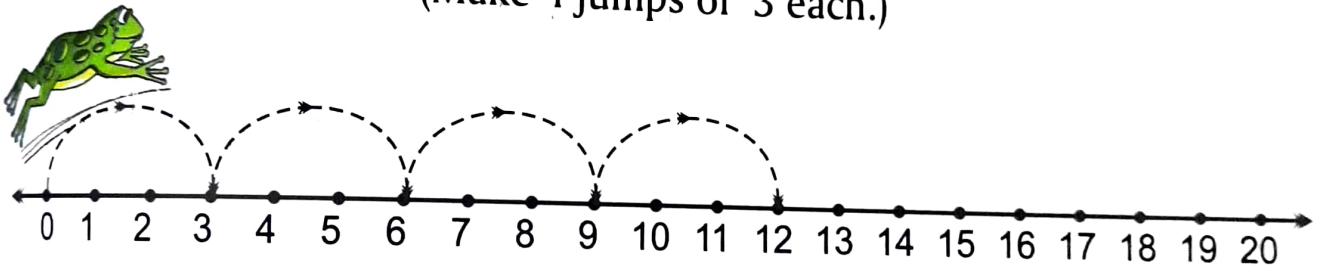


- (a) Start from zero. (b) Make 5 jumps of 1 each.
(c) $1 + 1 + 1 + 1 + 1 = 5$ or $1 \times 5 = 5$

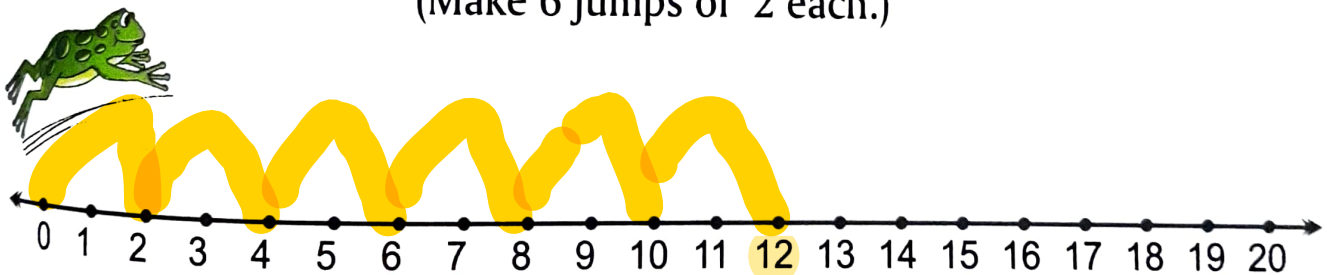
Activity-2

Multiply using the number line.

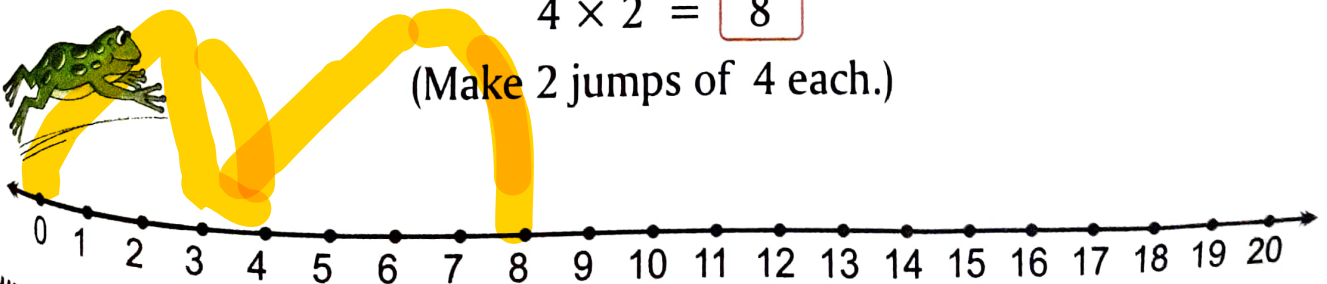
1. $3 \times 4 = 12$ (4 times 3 = 12)
(Make 4 jumps of 3 each.)



2. $2 \times 6 = 12$
(Make 6 jumps of 2 each.)



3. $4 \times 2 = 8$
(Make 2 jumps of 4 each.)



Skip Counting

Count and Colour

Activity-3

1. Count the numbers given below and colour every second box yellow.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

2. Count the numbers given below and colour every third box pink.

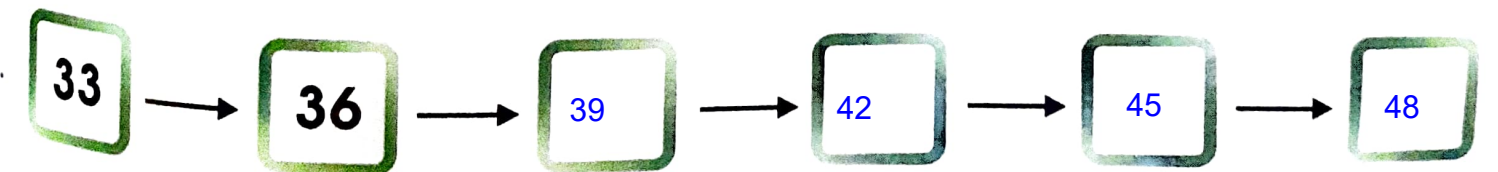
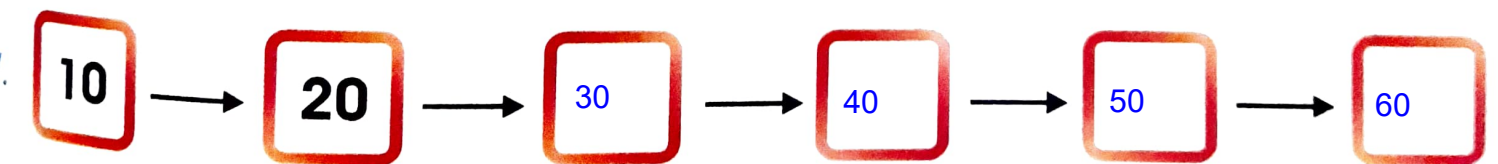
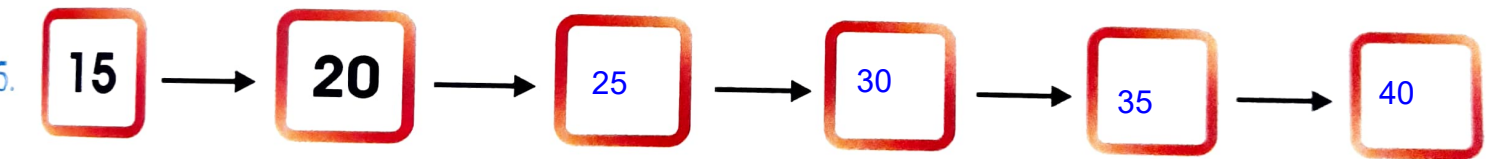
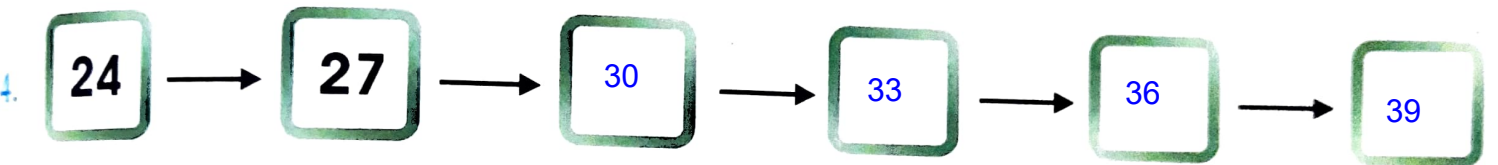
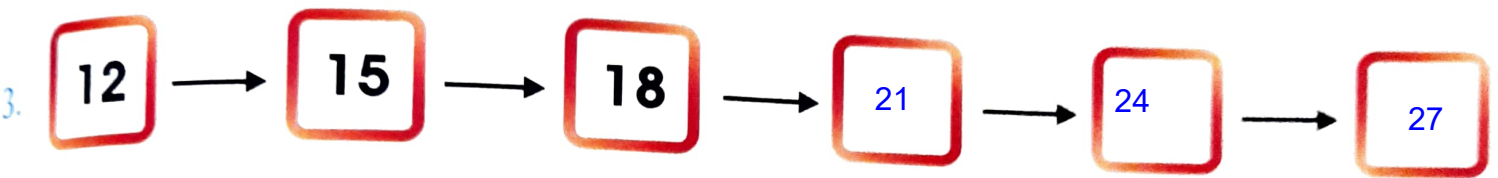
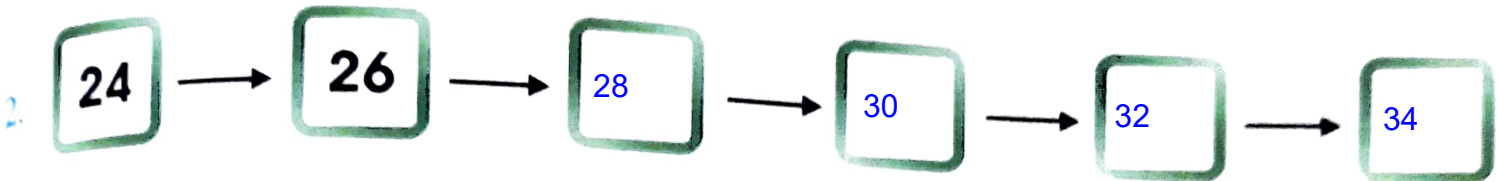
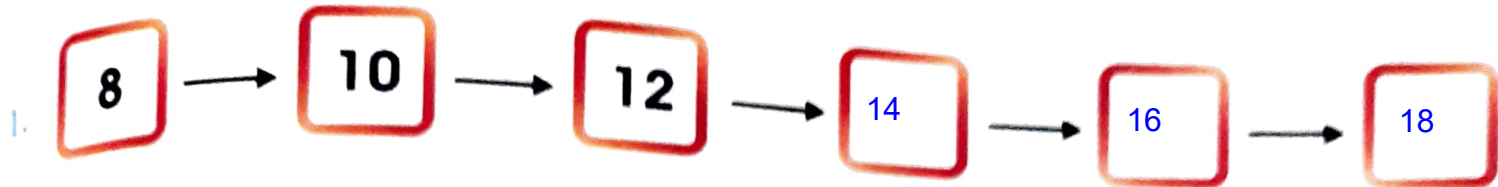
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

3. Count the numbers given below and colour every fourth box green.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40











Activity-4

Complete the boxes by skip counting.



Multiplication tables

Multiplication table of 1

	1 time 1	$1 \times 1 = 1$
	2 times 1	$1 \times 2 = 2$
	3 times 1	$1 \times 3 = 3$
	4 times 1	$1 \times 4 = 4$
	5 times 1	$1 \times 5 = 5$
	6 times 1	$1 \times 6 = 6$
	7 times 1	$1 \times 7 = 7$
	8 times 1	$1 \times 8 = 8$
	9 times 1	$1 \times 9 = 9$
	10 times 1	$1 \times 10 = 10$



When a number is multiplied by 1, the answer is the number itself.

Fill in the blanks:











1. $\overset{1}{\dots\dots\dots} \times 5 = 5$

2. $1 \times \overset{9}{\dots\dots\dots} = 9$

3. $1 \times 4 = \overset{4}{\dots\dots\dots}$

4. $\overset{1}{\dots\dots\dots} \times 1 = 1$

Multiplication table of 2

	1 time 2	$2 \times 1 = 2$
	2 times 2	$2 \times 2 = 4$
	3 times 2	$2 \times 3 = 6$
	4 times 2	$2 \times 4 = 8$
	5 times 2	$2 \times 5 = 10$
	6 times 2	$2 \times 6 = 12$
	7 times 2	$2 \times 7 = 14$
	8 times 2	$2 \times 8 = 16$
	9 times 2	$2 \times 9 = 18$
	10 times 2	$2 \times 10 = 20$

When a number is multiplied by 2, the answer has 0, 2, 4, 6 or 8 in the ones place. These numbers are called **even numbers**.

Fill in the blanks:

1. $2 \times \dots 4 \dots = 8$

3. $2 \times 3 = \dots 6 \dots$


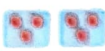








2. $2 \times \dots 5 \dots = 10$

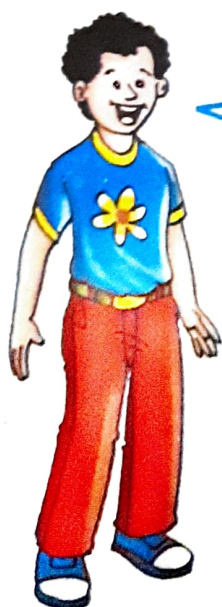
4. $2 \times \dots 9 \dots = 18$

Teacher Tip

The concept of even and odd numbers can be given here using pairing. Numbers which form pair will be even while others will be odd.

Multiplication table of 3

	1 time 3	$3 \times 1 = 3$
	2 times 3	$3 \times 2 = 6$
	3 times 3	$3 \times 3 = 9$
	4 times 3	$3 \times 4 = 12$
	5 times 3	$3 \times 5 = 15$
	6 times 3	$3 \times 6 = 18$
	7 times 3	$3 \times 7 = 21$
	8 times 3	$3 \times 8 = 24$
	9 times 3	$3 \times 9 = 27$
	10 times 3	$3 \times 10 = 30$



When we multiply a number by 3, the answer is odd, even, odd and so on. **Odd numbers** are those that have 1, 3, 5, 7 or 9 in the ones place.

Fill in the blanks:











1. $3 \times \underline{4} \dots = 12$

2. $3 \times \underline{5} \dots = 15$

3. $3 \times 2 = \overset{6}{\dots}$

4. $\underset{9}{3} \times \underline{9} \dots = 27$

Multiplication table of 4

	1 time 4	$4 \times 1 = 4$
	2 times 4	$4 \times 2 = 8$
	3 times 4	$4 \times 3 = 12$
	4 times 4	$4 \times 4 = 16$
	5 times 4	$4 \times 5 = 20$
	6 times 4	$4 \times 6 = 24$
	7 times 4	$4 \times 7 = 28$
	8 times 4	$4 \times 8 = 32$
	9 times 4	$4 \times 9 = 36$
	10 times 4	$4 \times 10 = 40$



When a number is multiplied by 4, the answer has 0, 2, 4, 6 and 8 in ones place.

Fill in the blanks :











1. $\dots 4 \dots \times 3 = 12$

2. $4 \times \dots 5 \dots = 20$

3. $4 \times 2 = \dots 8 \dots$

4. $4 \times \dots 9 \dots = 36$

Multiplication table of 5

	1 time 5	$5 \times 1 = 5$
	2 times 5	$5 \times 2 = 10$
	3 times 5	$5 \times 3 = 15$
	4 times 5	$5 \times 4 = 20$
	5 times 5	$5 \times 5 = 25$
	6 times 5	$5 \times 6 = 30$
	7 times 5	$5 \times 7 = 35$
	8 times 5	$5 \times 8 = 40$
	9 times 5	$5 \times 9 = 45$
	10 times 5	$5 \times 10 = 50$



When we multiply a number by 5, the answer has 0 or 5 in the ones place.

Fill in the blanks :

1. $5 \times 6 = \dots 30 \dots$

3. $5 \times \dots 2 \dots = 10$

2. $5 \times \dots 9 \dots = 45$

4. $5 \times 3 = \dots 15 \dots$

Multiplication table of 10

	1 time 10	$10 \times 1 = 10$
	2 times 10	$10 \times 2 = 20$
	3 times 10	$10 \times 3 = 30$
	4 times 10	$10 \times 4 = 40$
	5 times 10	$10 \times 5 = 50$
	6 times 10	$10 \times 6 = 60$
	7 times 10	$10 \times 7 = 70$
	8 times 10	$10 \times 8 = 80$
	9 times 10	$10 \times 9 = 90$
	10 times 10	$10 \times 10 = 100$

When we multiply a number by 10, the answer always has zero in the ones place.

Complete the pattern :

1. 50, 60, $\overset{70}{\dots\dots\dots}$, $\overset{80}{\dots\dots\dots}$, $\overset{90}{\dots\dots\dots}$, 100.

2. 10, 20, $\overset{30}{\dots\dots\dots}$, $\overset{40}{\dots\dots\dots}$, $\overset{50}{\dots\dots\dots}$, 60, $\overset{70}{\dots\dots\dots}$, 80



Activity-5

Fill in the blanks using the numbers given :

20

60

10

5

14

40

18

12

27

10

80

9

8

16

3

4

6

25

21

30

9

$3 \times 2 =$

6

$3 \times 9 =$

27

$4 \times 5 =$

20

$3 \times 6 =$

18

$5 \times 8 =$

40

$5 \times 2 =$

10

$1 \times 5 =$

5

$3 \times 1 =$

3

$3 \times 7 =$

21

$3 \times 3 =$

9

$2 \times 7 =$

14

$1 \times 9 =$

9

$10 \times 8 =$

80

$4 \times 3 =$

12

$2 \times 2 =$

4

$10 \times 1 =$

10

$10 \times 6 =$

60

$5 \times 5 =$

25

$4 \times 4 =$

16

$4 \times 2 =$

8

$3 \times 10 =$

30

Multiplying Vertically

Multiplication is also done vertically.

Example 1 : $6 \times 5 = 30$ can also be written as

$$\begin{array}{r} T O \\ 6 \\ \times 5 \\ \hline 30 \end{array}$$

Example 2 : $7 \times 3 = 21$ is also written as

$$\begin{array}{r} T O \\ 7 \\ \times 3 \\ \hline 21 \end{array}$$

Activity-6

Multiply (using tables) :

1.

$$\begin{array}{r} T O \\ 7 \\ \times 2 \end{array}$$

14

2.

$$\begin{array}{r} T O \\ 8 \\ \times 5 \end{array}$$

40

3.

$$\begin{array}{r} T O \\ 9 \\ \times 3 \end{array}$$

27

4.

$$\begin{array}{r} T O \\ 5 \\ \times 4 \end{array}$$

20

5.

$$\begin{array}{r} T O \\ 6 \\ \times 3 \end{array}$$

18

6.

$$\begin{array}{r} T O \\ 4 \\ \times 4 \end{array}$$

16

Oral

1. What are even numbers?
2. When you multiply a number by 10, what does the answer always end with?
3. When you multiply a number with 2, what does the answer end with?

Review Exercise

1. Fill in the blanks :

(a) $9 + 9 + 9 + 9 = 9 \times \dots = \dots$

(b) $1 + 1 + 1 + 1 + 1 = \dots \times 5 = \dots$

2. Complete the pattern by skip counting :

(a) 4, 8,,, 20, 24,

(b), 36, 40,,, 52,

3. Multiply (using tables) :

(a)

T	O
9	
$\times 2$	
<hr/>	
<hr/>	

(b)

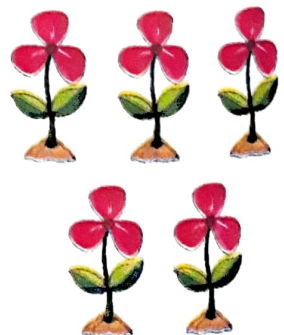
T	O
8	
$\times 3$	
<hr/>	
<hr/>	

(c)

T	O
6	
$\times 5$	
<hr/>	
<hr/>	

4. Reena has 5 flowers. Each flower has 3 petals. How many petals are there in all?

T	O
\times	
<hr/>	
<hr/>	



Maths Lab Activity

Order in multiplication

1. Divide the class into groups of 4-5 students.
2. Distribute a bowl of counters or beads to each group.
3. Also give 10 small boxes/plastic bowls to each group.
4. Prepare some cards (as shown below).

For example :

$$\begin{array}{c} 5 \times 2 \\ 2 \times 5 \end{array}$$

$$\begin{array}{c} 6 \times 4 \\ 4 \times 6 \end{array}$$

$$\begin{array}{c} 3 \times 5 \\ 5 \times 3 \end{array}$$

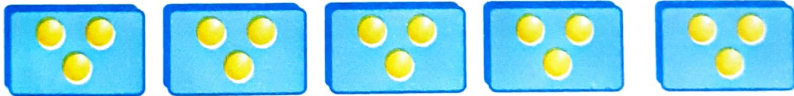
5. The students start this activity by picking up 1 card for each group.


Let the card be

$$\begin{array}{c} 3 \times 5 \\ 5 \times 3 \end{array}$$

The teacher has to ensure that the students are clear about '3 times 5' and '5 times 3' mathematical facts.

6. Using counters / beads, the students show

3×5 as  and the total number of counters as 15.

Similarly, they show 5×3 as 

The total number here is also 15.

7. Thus, the teacher indicates, with the help of the students, that $5 \times 3 = 15$ and $3 \times 5 = 15$. This implies that while multiplying, change in the order of the numbers does not change the answer.

Teacher Tip:

The objective of this activity is to understand that in multiplication, a change in order of the numbers does not change the answer.