Chapter- 6

MULTIPLICATION

STUDY NOTES

LEARNING OBJECTIVE:

- **Revision**
- **Construction of Multiplication Tables**
- **Multiplication Tables**
- **Properties of Multiplication**
- **Multiplication of Two-digit Numbers by One -digit Number(Without carry over)**
- **Multiplication of Two-digit Numbers by One -digit Number(With carry over)**
- **Word Problems**

Revision:

Multiplication is repeated addition.

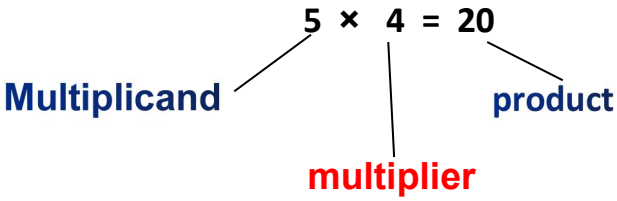
Answer of Multiplication is called product.

The sign of Multiplication is '×'

The number which is being multiplied is called multiplicand.

The number by which the multiplicand is multiplied is called the multiplier.

EXAMPLE:



Construction of Multiplication Tables:

We can construct multiplication tables using different methods.

1.By using repeated addition :

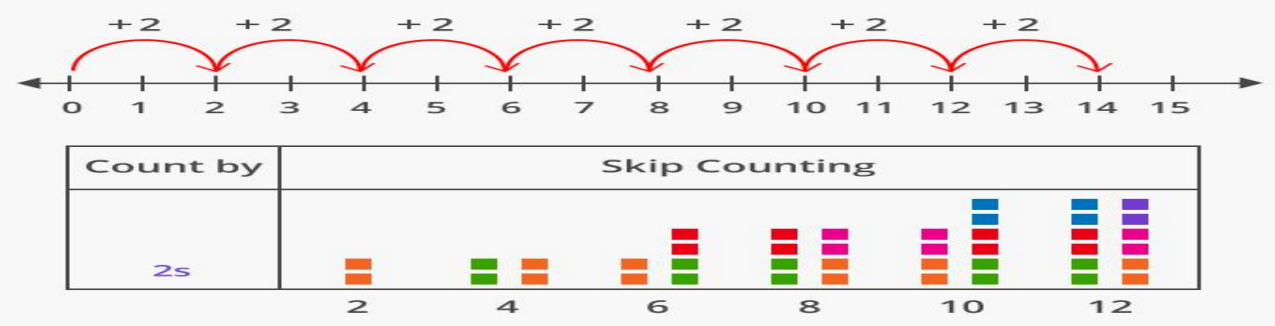
When we add a same number several times, we can express it as a process of multiplication and can construct a table.

Following is the table of 3 using repeated addition method.

3	1 three is 3	3 × 1 = 3
3 + 3	2 threes are 6	3 × 2 = 6
3 + 3 + 3	3 threes are 9	3 × 3 = 9
3 + 3 + 3 + 3	4 threes are 12	3 × 4 = 12
3 + 3 + 3 + 3 + 3	5 threes are 15	3 × 5 = 15
3 + 3 + 3 + 3 + 3 + 3	6 threes are 18	3 × 6 = 18
3 + 3 + 3 + 3 + 3 + 3 + 3	7 threes are 21	3 × 7 = 21
3 + 3 + 3 + 3 + 3 + 3 + 3 + 3	8 threes are 24	3 × 8 = 24
3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3	9 threes are 27	3 × 9 = 27
3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3	10 threes are 30	3 × 10= 30

2.Forming multiplication tables using skip counting

To construct the table of 2, we start counting from 2 and then skip one number while counting other numbers.



Skip Count by

2's	5's	10's
2	5	10
4	10	20
6	15	30
8	20	40
10	25	50
12	30	60
14	35	70
16	40	80
18	45	90
20	50	100

The multiplication table of 5 can be constructed by skipping four numbers forward and multiplication table 10 by skipping nine numbers forward.

3.Construction of multiplication tables using sticks:

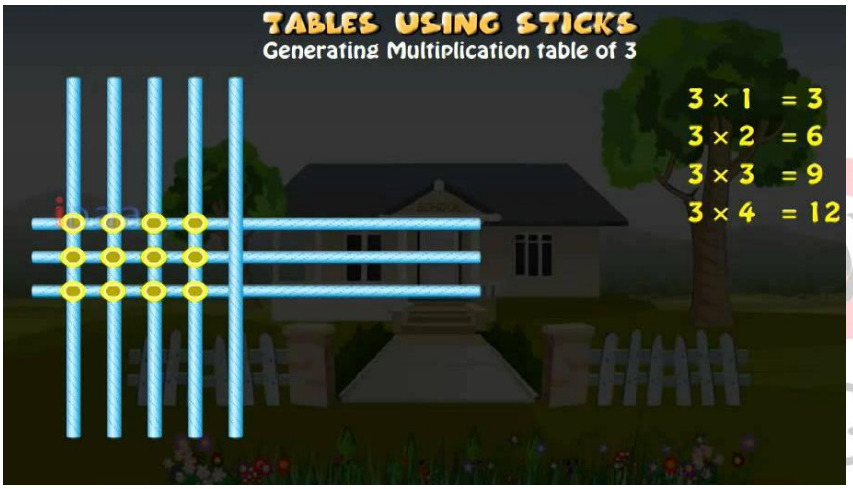
For the construction of multiplication table 3, we proceed as follows :

Take 3 sticks and place them horizontally and put another stick vertically. Mark the points where the vertical stick touches on the other 3 sticks.

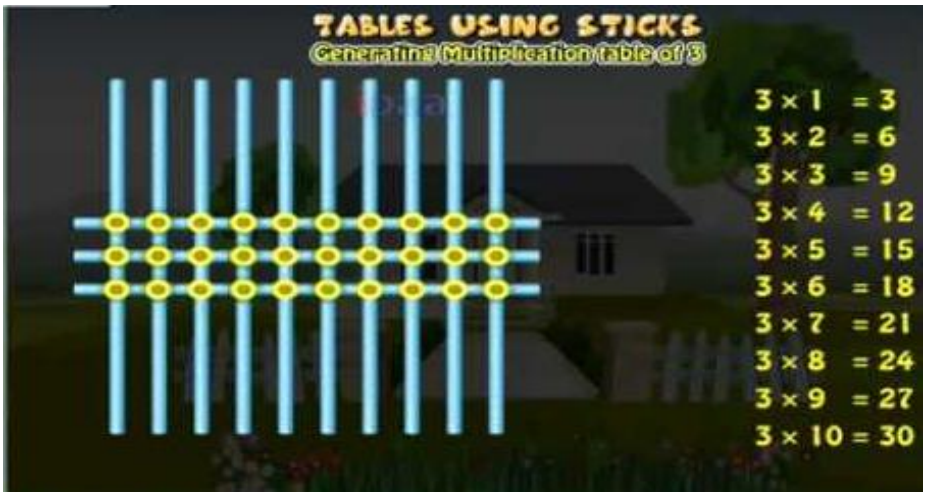
This shows 3 horizontal sticks × 1 vertical stick = 3 × 1

Similarly put 3 more vertical sticks and mark the points at which it touches the horizontal sticks. Add all the points of contact between seven sticks.

There are 12 such points. Hence 3 × 4 = 12



Similarly by adding more sticks vertically one by one ,we will get the table of 3.

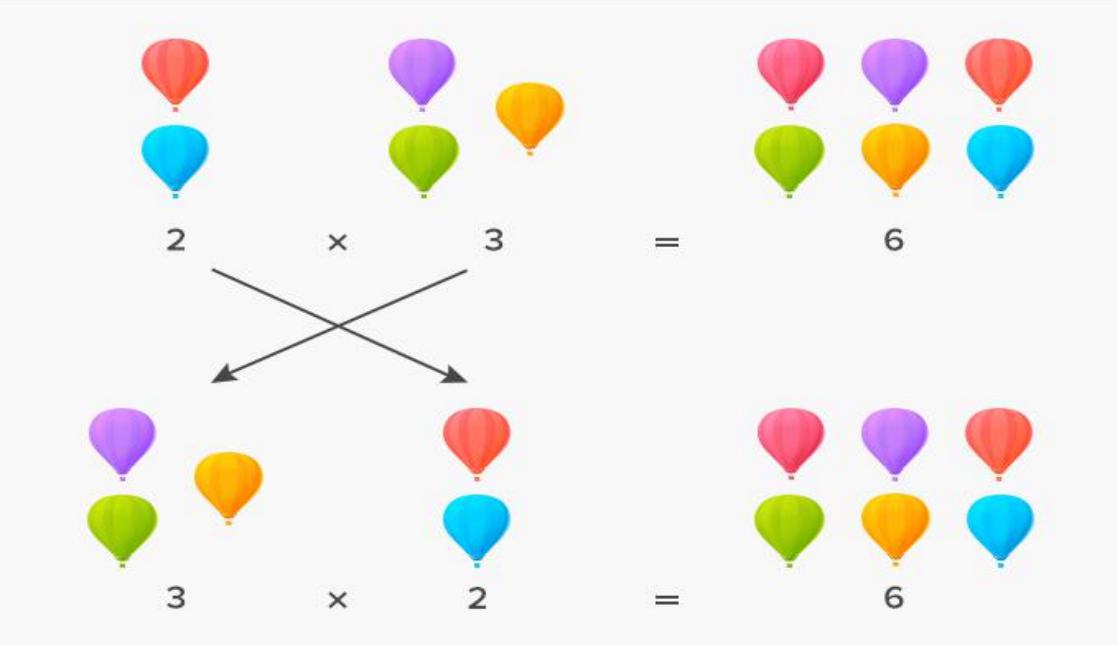


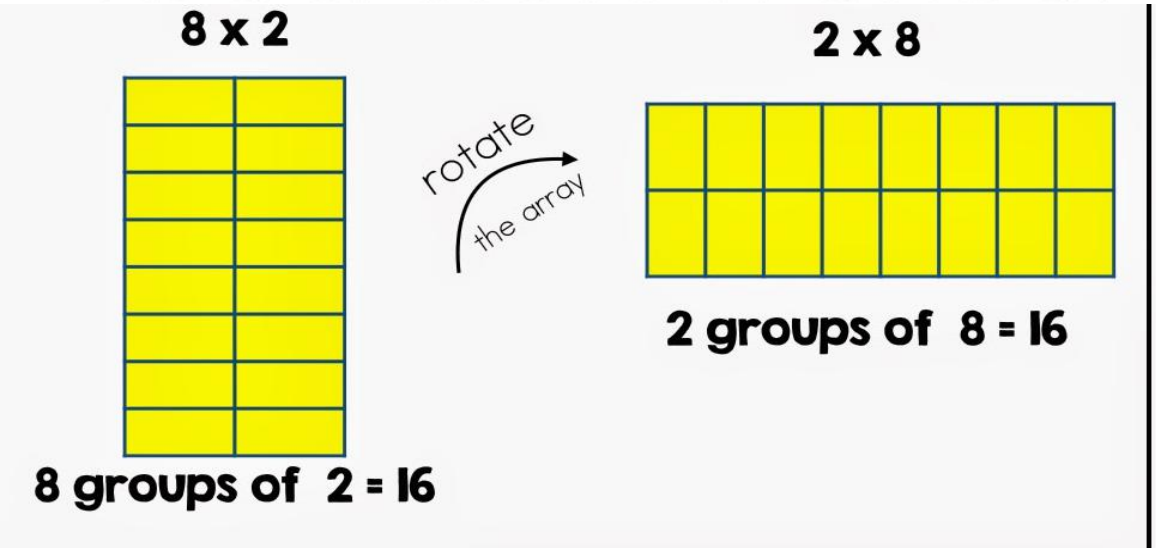
Properties of Multiplication:

1. The product of two numbers remains the same even after changing the order of the numbers.

6 × 7 = 42 **9 × 4 = 36**

7 × 6 = 42 **4 × 9 = 36**





2. **When a number is multiplied by 1,the product is the number itself.**

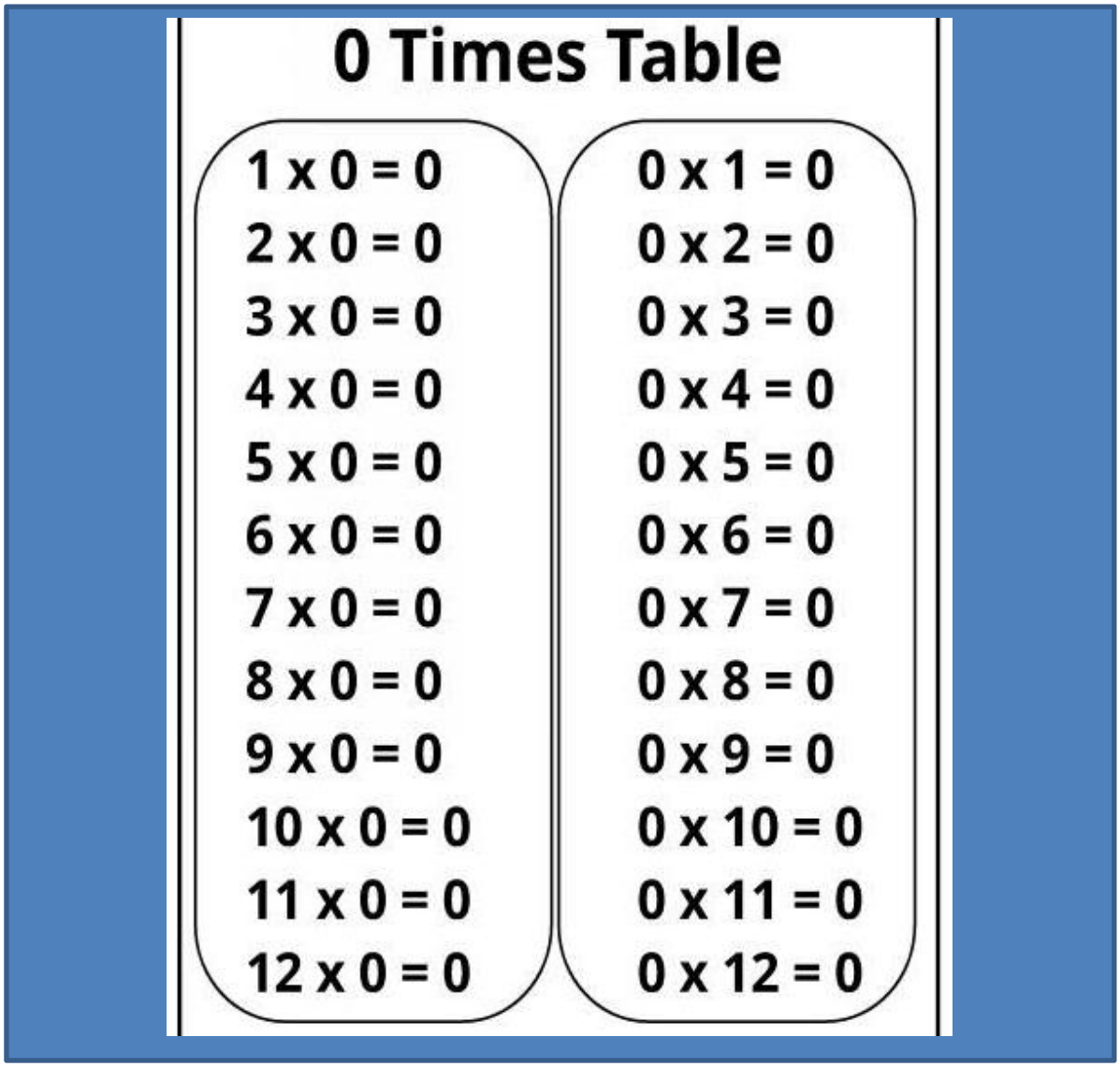
$6 \times 1 = 6$ $9 \times 1 = 9$

$15 \times 1 = 15$ $35 \times 1 = 35$

3. **When a number is multiplied by zero, the product is always 0.**

$6 \times 0 = 0$ $7 \times 0 = 0$

$12 \times 0 = 0$ $45 \times 0 = 0$



Multiplication of Two-digit Numbers by One -digit Number(Without carry over):

To execute the multiplication of a two digit number by a one digit number, we will consider one example-

EXAMPLE 1: Multiply 3 4 by 2

	T	O
	3	4
×		2
	_____	
	6	8

Method:

Step 1 : First multiply the digit 4 which is in ones place by 2 write the product below ones column. So, $2 \times 4 = 8$

Step 2 : Then multiply the digit 3 which is in tens place by 2 and write the product below tens column . So $2 \times 3 = 6$

Ans. 68

Multiplication of Two-digit Numbers by One -digit Number(With carry over):

To understand the multiplication of a two - digit number by a one digit number, see the following example:

EXAMPLE 1: Multiply 2 4 by 6

	T	O
	2	
	2	4
×		6
	_____	
	1	4 4

Method:

Step 1 : Start with the ones, multiply 6 with 4.

6 ones × 4 ones = 24 ones = 2 tens + 4 ones.

Write 4 under ones column and carry over 2 tens to the tens column.

Step 2 : Multiply 2 with 6 and carry over to the product.

2 tens × 6 ones = 12 tens + 2 tens(carry over) = 14 tens.

Write 4 under tens column and 1 under hundreds column.

Ans. 144

Word Problems:

To solve Addition word problems , following points are to be kept in mind :

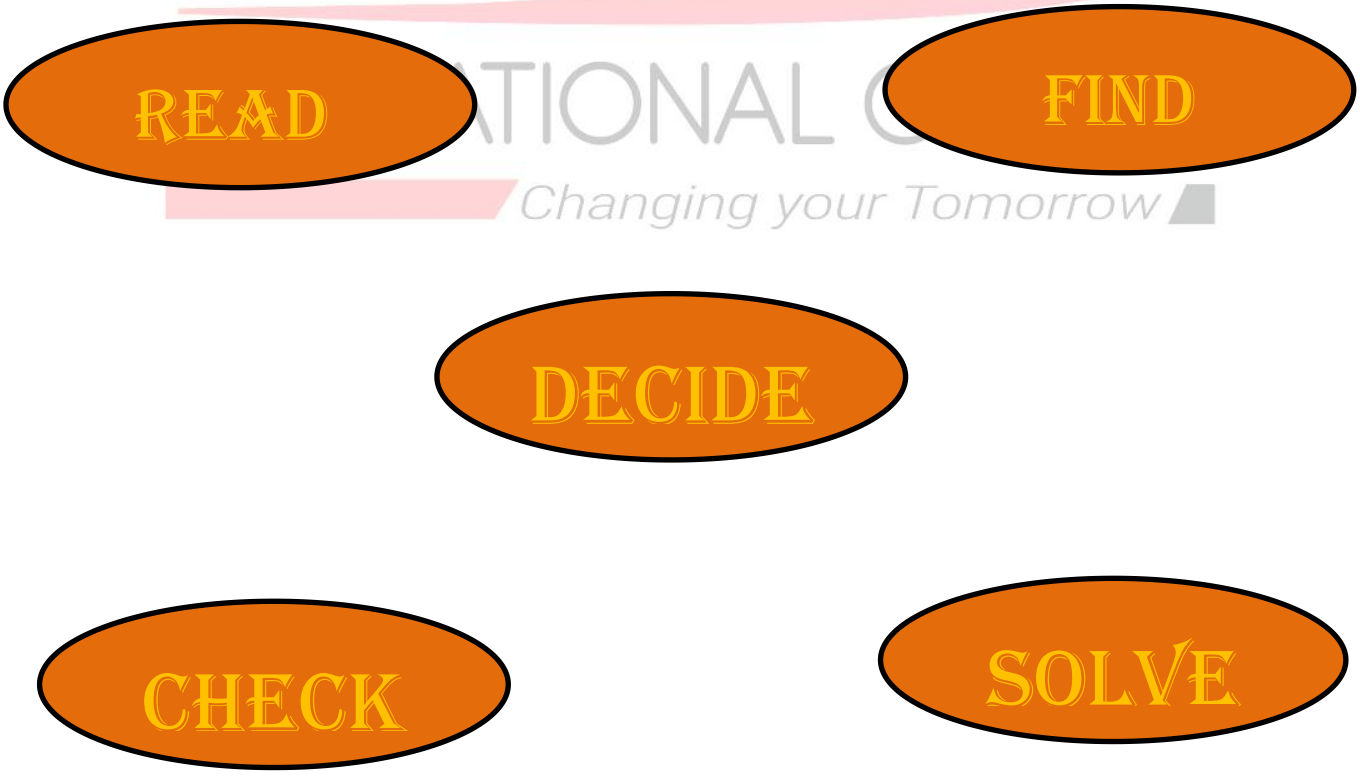
Read the story sums carefully and understand the given information.

Find the fact or the important information.

Decide what to do.

Solve the story sum.

Check your answer.



EXAMPLE 1:

A man sells 79 tickets in a day. How many tickets does he sell in 9 days ?

SOLUTION:

Number of tickets the man sells in a day = 7 9

Number of tickets he sells in 9 days = 7 9 × 9

= 7 1 1

Ans. Therefore the man sells 711 tickets in 9 days.

EXAMPLE 2:

In a school there are 65 classrooms. There are 4 fans in each classroom. How many fans are there in the school ?

SOLUTION:

Number of classrooms in the school = 6 5

Number of fans in each classroom = 4

Total number of fans in the school = 6 5 × 4

= 2 6 0

Ans. Therefore the school has 260 fans in all.

MIND MAP