



Introduction to Multiplication

1. Multiplication is the **repeated addition**.
2. The number to be multiplied is called the **multiplicand**.
3. The number you multiply by is called the **multiplier**.
4. The result of multiplication is called the **product**.

For Example:

25	×	7	=	175
↓		↓		
Multiplicand		Multiplier	=	Product

5. The product of any number and zero is zero (0).

For Example: $16 \times 0 = 0$

6. The product of 1 and any number is the number itself. This is called the property of 1 or multiplicative identity.

For Example: $18 \times 1 = 18$

7. A change in the order of multiplier and the multiplicand does not affect the product and this is called the **order property**.

For Example: $6 \times 4 = 4 \times 6 = 24$

8. If you multiply three numbers in any order, the product will be the same.

For Example:

$$2 \times 5 \times 4 = (2 \times 5) \times 4 = 10 \times 4 = 40$$

$$2 \times 5 \times 4 = 2 \times (5 \times 4) = 2 \times 20 = 40$$

$$2 \times 5 \times 4 = (2 \times 4) \times 5 = 8 \times 5 = 40$$





Multiplication Tables From 0 to 10

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100



Multiplication Tables From 11 to 20

Table of 11

$11 \times 1 = 11$	11 Ones are 11
$11 \times 2 = 22$	11 Twos are 22
$11 \times 3 = 33$	11 Threes are 33
$11 \times 4 = 44$	11 Fours are 44
$11 \times 5 = 55$	11 Fives are 55
$11 \times 6 = 66$	11 Sixes are 66
$11 \times 7 = 77$	11 Sevens are 77
$11 \times 8 = 88$	11 Eights are 88
$11 \times 9 = 99$	11 Nines are 99
$11 \times 10 = 110$	11 Tens are 110

Table of 12

$12 \times 1 = 12$	12 Ones are 12
$12 \times 2 = 24$	12 Twos are 24
$12 \times 3 = 36$	12 Threes are 36
$12 \times 4 = 48$	12 Fours are 48
$12 \times 5 = 60$	12 Fives are 60
$12 \times 6 = 72$	12 Sixes are 72
$12 \times 7 = 84$	12 Sevens are 84
$12 \times 8 = 96$	12 Eights are 96
$12 \times 9 = 108$	12 Nines are 108
$12 \times 10 = 120$	12 Tens are 120



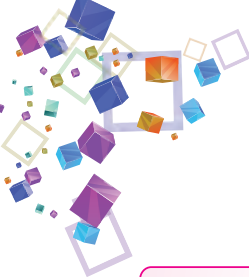


Table of 13

$13 \times 1 = 13$	13 Ones are 13
$13 \times 2 = 26$	13 Twos are 26
$13 \times 3 = 39$	13 Threes are 39
$13 \times 4 = 52$	13 Fours are 52
$13 \times 5 = 65$	13 Fives are 65
$13 \times 6 = 78$	13 Sixes are 78
$13 \times 7 = 91$	13 Sevens are 91
$13 \times 8 = 104$	13 Eights are 104
$13 \times 9 = 117$	13 Nines are 117
$13 \times 10 = 130$	13 Tens are 130

Table of 14

$14 \times 1 = 14$	14 Ones are 14
$14 \times 2 = 28$	14 Twos are 28
$14 \times 3 = 42$	14 Threes are 42
$14 \times 4 = 56$	14 Fours are 56
$14 \times 5 = 70$	14 Fives are 70
$14 \times 6 = 84$	14 Sixes are 84
$14 \times 7 = 98$	14 Sevens are 98
$14 \times 8 = 112$	14 Eights are 112
$14 \times 9 = 126$	14 Nines are 126
$14 \times 10 = 140$	14 Tens are 140

Table of 15

$15 \times 1 = 15$	15 Ones are 15
$15 \times 2 = 30$	15 Twos are 30
$15 \times 3 = 45$	15 Threes are 45
$15 \times 4 = 60$	15 Fours are 60
$15 \times 5 = 75$	15 Fives are 75
$15 \times 6 = 90$	15 Sixes are 90
$15 \times 7 = 105$	15 Sevens are 105
$15 \times 8 = 120$	15 Eights are 120
$15 \times 9 = 135$	15 Nines are 135
$15 \times 10 = 150$	15 Tens are 150

Table of 16

$16 \times 1 = 16$	16 Ones are 16
$16 \times 2 = 32$	16 Twos are 32
$16 \times 3 = 48$	16 Threes are 48
$16 \times 4 = 64$	16 Fours are 64
$16 \times 5 = 80$	16 Fives are 80
$16 \times 6 = 96$	16 Sixes are 96
$16 \times 7 = 112$	16 Sevens are 112
$16 \times 8 = 128$	16 Eights are 128
$16 \times 9 = 144$	16 Nines are 144
$16 \times 10 = 160$	16 Tens are 160





Table of 17

$17 \times 1 = 17$	17 Ones are 17
$17 \times 2 = 34$	17 Twos are 34
$17 \times 3 = 51$	17 Threes are 51
$17 \times 4 = 68$	17 Fours are 68
$17 \times 5 = 85$	17 Fives are 85
$17 \times 6 = 102$	17 Sixes are 102
$17 \times 7 = 119$	17 Sevens are 119
$17 \times 8 = 136$	17 Eights are 136
$17 \times 9 = 153$	17 Nines are 153
$17 \times 10 = 170$	17 Tens are 170

Table of 18

$18 \times 1 = 18$	18 Ones are 18
$18 \times 2 = 36$	18 Twos are 36
$18 \times 3 = 54$	18 Threes are 54
$18 \times 4 = 72$	18 Fours are 72
$18 \times 5 = 90$	18 Fives are 90
$18 \times 6 = 108$	18 Sixes are 108
$18 \times 7 = 126$	18 Sevens are 126
$18 \times 8 = 144$	18 Eights are 144
$18 \times 9 = 162$	18 Nines are 162
$18 \times 10 = 180$	18 Tens are 180

Table of 19

$19 \times 1 = 19$	19 Ones are 19
$19 \times 2 = 38$	19 Twos are 38
$19 \times 3 = 57$	19 Threes are 57
$19 \times 4 = 76$	19 Fours are 76
$19 \times 5 = 95$	19 Fives are 95
$19 \times 6 = 114$	19 Sixes are 114
$19 \times 7 = 133$	19 Sevens are 133
$19 \times 8 = 152$	19 Eights are 152
$19 \times 9 = 171$	19 Nines are 171
$19 \times 10 = 190$	19 Tens are 190

Table of 20

$20 \times 1 = 20$	20 Ones are 20
$20 \times 2 = 40$	20 Twos are 40
$20 \times 3 = 60$	20 Threes are 60
$20 \times 4 = 80$	20 Fours are 80
$20 \times 5 = 100$	20 Fives are 100
$20 \times 6 = 120$	20 Sixes are 120
$20 \times 7 = 140$	20 Sevens are 140
$20 \times 8 = 160$	20 Eights are 160
$20 \times 9 = 180$	20 Nines are 180
$20 \times 10 = 200$	20 Tens are 200





Exercise 5.1

1. Fill in the blanks.

a. $11 \times 8 = 11 \text{ eights are } 88$

f. $13 \times 9 = \dots\dots\dots$

b. $16 \times 5 = \dots\dots\dots$

g. $20 \times 5 = \dots\dots\dots$

c. $14 \times 4 = \dots\dots\dots$

h. $15 \times 6 = \dots\dots\dots$

d. $13 \times 7 = \dots\dots\dots$

i. $17 \times 7 = \dots\dots\dots$

e. $18 \times 6 = \dots\dots\dots$

j. $19 \times 3 = \dots\dots\dots$

2. Fill in the blanks without multiplying.

a. $0 \times 836 = 836 \times 0 = \boxed{}$

b. $966 \times 0 = 0 \times 966 = \boxed{}$

c. $304 \times 1 = 1 \times 304 = \boxed{}$

d. $1 \times 208 = 208 \times 1 = \boxed{}$

e. $82 \times 65 = \boxed{} \times 82$

f. $75 \times \boxed{} = 408 \times 75$

g. $706 \times \boxed{} \times 442 = 844 \times 442 \times 706$

h. $\boxed{} \times 712 \times 86 = 86 \times 604 \times 712$



Multiplication by 1-digit Number (without carry over)

Example I : Multiply 243 by 2.

Solutions :

Step 1 : Arrange the numbers for multiplication.

Step 2 : Multiply ones place of the multiplicand 3 by multiplier 2.

H	T	O
2	4	3
	×	2
4	8	6





$$2 \times 3 = 6$$

Write 6 in ones column.

Step 3 : Multiply tens place of the multiplicand 4 by multiplier 2.

$$2 \times 4 = 8$$

Write 8 in tens column.

Step 4 : Multiply hundreds place of the multiplicand 2 by multiplier 2.

$$2 \times 2 = 4$$

Write 4 in hundreds column.

Therefore, $2 \times 243 = 486$.

Answer: 486



Multiplication by 1 digit (with carry over)

Example II: Multiply 386 by 8.

Solutions :

Step 1 : Arrange the numbers for multiplication.

Step 2 : Multiply ones place. $8 \times 6 = 48$

Write 8 in ones column and carry 4 at the top of tens column.

Step 3 : Multiply tens place. $8 \times 8 = 64$

Add carry 4. $64 + 4 = 68$

Write 8 in tens column and write the carry 6 at the top of hundreds column.

Step 4 : Multiply hundreds place. $8 \times 3 = 24$

Add carry 6. $24 + 6 = 30$

Write 0 in hundreds column and carry 3 in thousand column.

Therefore, $8 \times 386 = 3088$.

Th	H	T	O
3	6	4	
	3	8	6
		\times	8
3	0	8	8

Answer: 3088



Facts to Know

- ❖ A Scottish mathematician, John Napier (1550 – 1617), invented Logarithms which helped people to do more calculations in short time.





Exercise 5.2

1. Multiply the following without carry over.

a.

2	0	3
	×	3

b.

3	1	2
	×	3

c.

2	3	0
	×	2

d.

1	4	3
	×	2

e.

2	1	2
	×	4

f.

1	0	1
	×	5

2. Multiply the following with carry over.

a.

2	8	7
	×	3

b.

1	6	9
	×	5

c.

1	6	8
	×	4

d.

1	5	7
	×	5

e.

2	5	4
	×	3

f.

4	7	6
	×	2





Multiplication by 10,000 and 1000

- ❖ If you multiply a number by 10, then you simply write a zero after the number or numeral.

For Example :

$$\begin{array}{rclcl} 9 & \times & 10 & = & 9 \text{ tens} & = & 90 \\ 73 & \times & 10 & = & 73 \text{ tens} & = & 730 \\ 422 & \times & 10 & = & 422 \text{ tens} & = & 4220 \\ 1846 & \times & 10 & = & 1846 \text{ tens} & = & 18460 \end{array}$$

- ❖ If you multiply a number by 100, then you write two zeros after the number or numeral.

For Example :

$$\begin{array}{rclcl} 7 & \times & 100 & = & 7 \text{ hundreds} & = & 700 \\ 68 & \times & 100 & = & 68 \text{ hundreds} & = & 6800 \\ 847 & \times & 100 & = & 847 \text{ hundreds} & = & 84700 \end{array}$$

- ❖ If you multiply a number by 1000, then you write three zeros after the number or numeral.

For Example :

$$\begin{array}{rclcl} 5 & \times & 1000 & = & 5 \text{ thousands} & = & 5000 \\ 40 & \times & 1000 & = & 40 \text{ thousands} & = & 40000 \end{array}$$



Multiplication by Multiple of 10

Multiple of 10 is a number obtained by multiplying a number by 10.

For Example :

$$\begin{array}{rclcl} 9 & \times & 20 & = & 9 \times 2 \text{ tens} \\ & & & = & 18 \text{ tens} & = & 180 \\ 22 & \times & 30 & = & 22 \times 3 \text{ tens} \\ & & & = & 66 \text{ tens} & = & 660 \end{array}$$

Multiplying 9 by 2, you get 18. Now write one zero at the right of the product 18 to get 180.





Multiplying 22 by 3, you get 66. Now, write one zero at the right of the product 66 to get 660.

Now, $24 \times 300 = 24 \times 3$ hundreds = 72 hundreds = 7200.

Multiplying 24 by 3, you get 72. Now, write two zeros at the right of the product 72 to get 7200.

Now, $20 \times 400 = 20 \times 4$ hundreds = 80 hundreds = 8000.

Multiplying 20 by 4, you get 80. Now, write two zeros at the right of 80 to get 8000.

In the same way, the multiplication by other multiples of 10 can be obtained.



Multiplication of 2-digit Number by 2-digit Number

First Method

Example III: Multiply 34 by 12.

Solution :

Step 1 : Arrange the numbers for multiplication.

Step 2 : Multiply the multiplicand 34 by 2 ones of the multiplier.

$$34 \times 2 = 68$$

Write 68 in the first row of the result.

Step 3 : Multiply the multiplicand 34 by 1 ten of the multiplier. The place value of 1 ten is 10, then $34 \times 10 = 340$.

Write 340 in the second row of the result.

Step 4 : Add the rows $68 + 340 = 408$ and write 408 as the product.

Therefore, $34 \times 12 = 408$.

Answer: 408

	H	T	O
		3	4
\times		1	2
		6	8
$+$	3	4	0
	4	0	8





Second Method

Example IV : Multiply 43 by 38.

Solution :

Step 1 : Arrange the numbers for multiplication.

Step 2 : Multiply the multiplicand 43 by 8 of the multiplier 38.

$$8 \times 43 = 344$$

Write 344 in the first row of the result.

Step 3 : Put zero (0) or cross (×) at ones place below 344 and then multiply the multiplicand 43 by 3 of the multiplier 36.

$$\text{i.e. } 3 \times 43 = 129.$$

Write 129 in the second row of the result before zero (0).

Step 4 : Now, add 344 and 1290.

$$344 + 1290 = 1634$$

Therefore, $43 \times 38 = 1634$.

Answer: 1634

Th	H	T	O
		4	3
	×	3	8
<hr/>			
	3	4	4
+	1	2	9
<hr/>			
1	6	3	4



Exercise 5.3

1. Solve the following.

a. $8 \times 1000 = \dots\dots\dots$

b. $34 \times 100 = \dots\dots\dots$

c. $62 \times 1000 = \dots\dots\dots$

d. $407 \times 10 = \dots\dots\dots$

e. $585 \times 100 = \dots\dots\dots$

f. $984 \times 10 = \dots\dots\dots$





2. Multiply the following.

a.

$$\begin{array}{r} 28 \\ \times 11 \\ \hline 28 \\ + 280 \\ \hline 308 \end{array}$$

b.

$$\begin{array}{r} 86 \\ \times 13 \\ \hline \\ \hline \end{array}$$

c.

$$\begin{array}{r} 56 \\ \times 14 \\ \hline \\ \hline \end{array}$$

d.

$$\begin{array}{r} 62 \\ \times 16 \\ \hline \\ \hline \end{array}$$

e.

$$\begin{array}{r} 44 \\ \times 12 \\ \hline \\ \hline \end{array}$$

f.

$$\begin{array}{r} 68 \\ \times 31 \\ \hline \\ \hline \end{array}$$

g.

$$\begin{array}{r} 74 \\ \times 21 \\ \hline \\ \hline \end{array}$$

h.

$$\begin{array}{r} 46 \\ \times 51 \\ \hline \\ \hline \end{array}$$



Word Problems

Example V : A packet contains 26 toffees. How many toffees are there in 25 such packets ?

Solution : Number of toffees in one packet = 26

Number of toffees in 25 such packets

$$= 26 \times 25$$

H	T	O
	2	6
×	2	5
1	3	0
5	2	×
6	5	0

Therefore, total number of toffees = 650.

Answer: 650 toffees.





Exercise 5.4



1. There are 84 rows in a library. If each row contains 24 books, then how many books are there in the library?
2. Mrinal has 76 boxes of chocolates. If each box contains 5 chocolates then how many chocolates are there in all ?
3. A milkman vendor sells 84 milk bottles in a day. How many milk bottles would he sell in 9 days ?
4. The cost of a bag is ₹ 36. Find the cost of 8 such bags?
5. Ritika bought 23 sets of colour pencils. If one set costs ₹ 68, then how much money did she pay ?
6. There are 45 seats in a metro bus. How many seats are there in 16 such buses ?

Points to Remember



- ❖ Multiplication is the repeated addition.
- ❖ If we multiply three or more numbers in any order, the product will be the same.
- ❖ Multiplication of two numbers may or may not have carrying over.



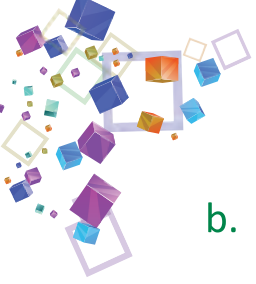
EXERCISE

1. Multiple Choice Questions (MCQs)

Tick (✓) the correct option:

- a. If you multiply three numbers in any order, the product will be
- | | | | |
|---------------|--------------------------|--------------|--------------------------|
| (i) different | <input type="checkbox"/> | (ii) greater | <input type="checkbox"/> |
| (iii) same | <input type="checkbox"/> | (iv) lesser | <input type="checkbox"/> |





b. The number you multiply by is called the

(i) multiplicand

(ii) multiplier

(iii) product

(iv) quotient

c. Which one is the product of 511 and 5 ?

(i) 2550

(ii) 2552

(iii) 2055

(iv) 2555

d. Which one is the product of 383 and 2 ?

(i) 766

(ii) 866

(iii) 666

(iv) 764

2. Multiply the following without carry over.

a. 2313 and 3

b. 3423 and 2

c. 1230 and 3

d. 2443 and 2

3. Multiply the following with carry over.

a. 2385 and 2

b. 2678 and 3

c. 7460 and 3

d. 4824 and 4

4. Multiply.

a. 64 and 28

b. 72 and 44

c. 74 and 42

d. 38 and 23

5. A book contains 96 pages. How many pages are there in 26 such books ?

6. A bucket can hold 74 litres of water. How many litres of water can be held in 23 such buckets?

7. There are 93 fruits in a basket. How many fruits are there in 30 such baskets ?





Multiply $16 \times 23 \times 35$ and $35 \times 23 \times 16$ and compare :

Is $16 \times 23 \times 35 = 35 \times 23 \times 16$?

Lab Activity

Objective : To find patterns in tables.

Materials Required : Thick thermocole, wool and thumbtacks

Process:

Draw a large circle on the thermocole.

Mark out 9 equal parts on the circle and number them from 1 to 9. Press a thumbtack partially through each mark on the circle. Students work in pairs.

Let us try to find the pattern in the 4 times table:

- ❖ One student writes the 4 times table.
- ❖ As shown in the table alongside, the partner changes all the products to single digits.
- ❖ As 4 is the first single digit, the first student then starts by winding the wool around thumbtack number 4.
- ❖ The same wool around thumbtack 8, stretches and wind by the partner now.
- ❖ Till one of the students gets back to thumbtack number 4, the students continue winding the wool around the thumbtacks.

$$1 \times 4 = 4$$

$$2 \times 4 = 8$$

$$3 \times 4 = 12 \text{ (} 1 + 2 = 3 \text{)}$$

$$4 \times 4 = 16 \text{ (} 1 + 6 = 7 \text{)}$$

$$5 \times 4 = 20 \text{ (} 2 + 0 = 2 \text{)}$$

$$6 \times 4 = 24 \text{ (} 2 + 4 = 6 \text{)}$$

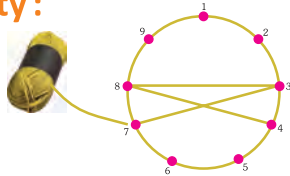
$$7 \times 4 = 28 \text{ (} 2 + 8 = 10 = 1 + 0 = 1 \text{)}$$

$$8 \times 4 = 32 \text{ (} 3 + 2 = 5 \text{)}$$

$$9 \times 4 = 36 \text{ (} 3 + 6 = 9 \text{)}$$

$$10 \times 4 = 40 \text{ (} 4 + 0 = 4 \text{)}$$

Records of the Activity :



Activity may also be done using paper pencil and a ruler.

Are there any common patterns? Is there any table you cannot make a pattern with? Find the patterns in other tables.

