MATHEMATICS

Multiplication

Notes

BASIC PROPERTIES OF MULTIPLICATION

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Let us revise the basic properties of multiplication :

1. The product of two numbers does not change even if we change the order of the numbers.

For Example : $7 \times 8 = 56$ and $8 \times 7 = 56$

So, $7 \times 8 = 8 \times 7$.

Similarly, $9 \times 7 = 63$ and $7 \times 9 = 63$

So, $9 \times 7 = 7 \times 9$.

2. The product of three numbers does not change even if we change the groupings of the numbers.

For Example : $(7 \times 8) \times 5 = 56 \times 5 = 280$

$(8 \times 5) \times 7 = 40 \times 7 = 280$

Therefore, $(7 \times 8) \times 5 = (8 \times 5) \times 7$.

3. The product of a number and 1 is the number it self.

For Example : $17 \times 1 = 17$

$28 \times 1 = 28$

4. The product of any number and 0 is zero.

For Example : 25 × 0 = 0

0 × 211 = 0

MULTIPLICATION BY 1000, 2000, ……, 9000

Look at the following pattern carefully :

$3 \times 1 = 3$ $22 \times 1 = 22$

$3 \times 10 = 30$ $22 \times 10 = 220$

$3 \times 100 = 300$ $22 \times 100 = 2200$

Similarly, we get

$3 \times 1000 = 3000$ $22 \times 1000 = 22000$

EXAMPLE 1 : Multiply 19 and 26 by 3000.

SOLUTION :

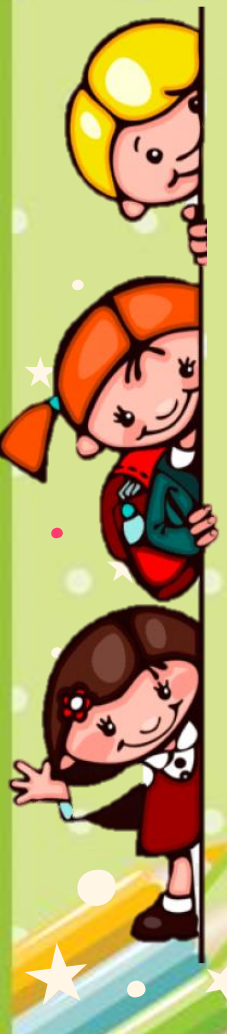
$$19 \times 3000 = (19 \times 3) \times 1000 = 57 \times 1000 = 57000$$

$$26 \times 3000 = (26 \times 3) \times 1000 = 78 \times 1000 = 78000$$

EXERCISE 3.1

1. Find the product :

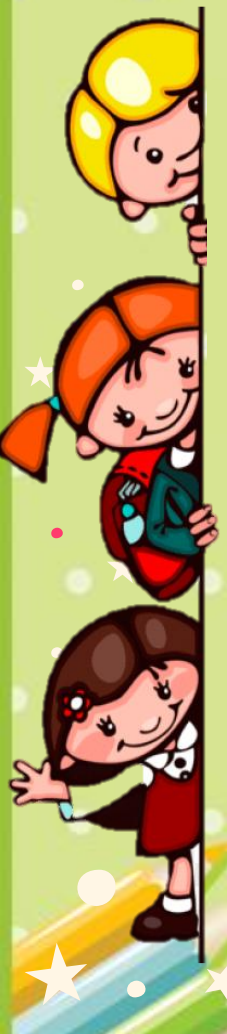
(i) 5 × 1000



EXERCISE 3.1

1. Find the product :

(ii) 16 × 2000



EXERCISE 3.1

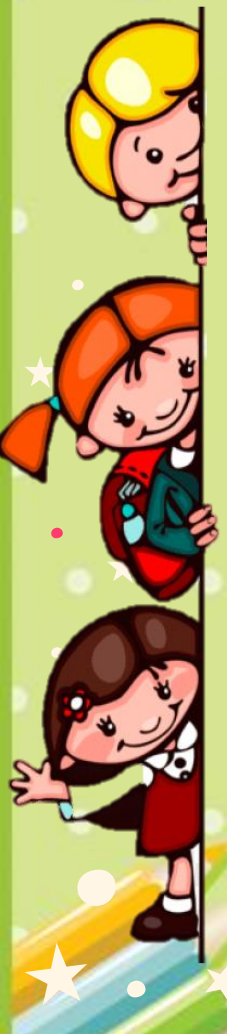
1. Find the product :

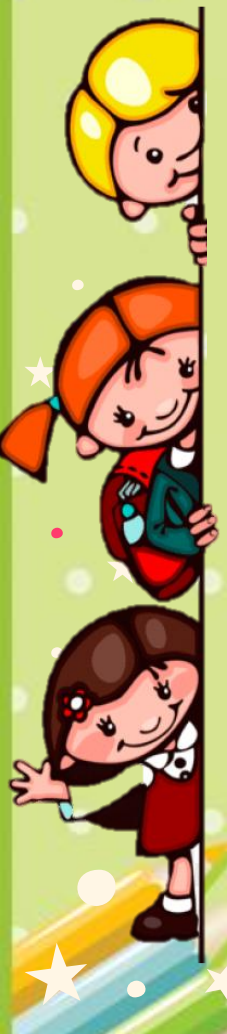
(iii) 21 × 4000

EXERCISE 3.1

1. Find the product :

(iv) 45 × 2000





EXERCISE 3.1

1. Find the product :

(v) 28 × 3000

MULTIPLICATION BY 3-DIGIT NUMBER

We multiply a number by 3-digit number in the same way as we multiply a number by 2-digit number.

EXAMPLE 2 : Multiply 246 by 34.

SOLUTION :

$$\begin{array}{r} 246 \\ \times\ 34 \\ \hline 984 \\ 7380 \\ \hline 8364 \end{array}$$

Thus, the product of 246 and 34 is 8364.

EXAMPLE : Multiply 225 by 120.

EXAMPLE : Multiply 2342 by 125.

SOLUTION :

This can be put as follows :

$$
\begin{array}{rl}
2342 & \\
\times\ 125 & \\
\hline
11710 & \leftarrow (2342 \times 5) \\
46840 & \leftarrow (2342 \times 20) \\
234200 & \leftarrow (2342 \times 100) \\
\hline
292750 & \leftarrow (2342 \times 125) \\
\hline
\end{array}
$$

Hence, $2342 \times 125 = 292750$

EXAMPLE : Find the product of 348 and 324.

SOLUTION :

348	←	Multiplicand
× 324	←	Multiplier
1392	←	(348 × 4)
6960	←	(348 × 20)
104400	←	(348 × 300)
112752	←	(348 × 324)

Thus, the product of 348 and 324 is 112752.

NOTE

- In a multiplication, the number to be multiplied is called the **multiplicand.**
- In a multiplication, the number by which the **multiplicand** is multiplied is called the **multiplier.**
- In a multiplication, the result we get is called the **product.**

EXAMPLE : Multiply 1248 by 153.

SOLUTION :

EXAMPLE : A bag contains 12 kg 500 g sugar. Find the capacity of such 26 bags.

SOLUTION :

Capacity of a bag
= 12 kg 500 g

Capacity of such 26 bags
= (12 kg 500 g) × 26
= 325 kg

Working

Kg	g.
12	500
	x 26
75	000
250	000
325	000

∴ The capacity of the 26 bags is 325 kg.

NOTE

When we multiply kg and g by a number, we multiply them in the same ways as we multiply the ordinary numbers. Last three digits on the extreme right represent gram (g) and remaining digits represent kilograms (kg).

EXERCISE 3.2

Find the product :

1. 247 × 36

EXERCISE 3.2

Find the product :

2. 349 × 84

EXERCISE 3.2

Find the product :

3. 2428 × 28

EXERCISE 3.2

Find the product :

4. 328 × 22

EXERCISE 3.2

Find the product :

5. 405 × 22

PROBLEMS ON MULTIPLICATION

EXAMPLE : The cost of a chair is ₹ 880. Find the cost of such 76 chairs ?

SOLUTION :

Cost of a chair = ₹ 880

Cost of the such 76 chairs

= ₹ 880 × 76 = ₹ 66880

$$\begin{array}{r} 880 \\ \times\ 76 \\ \hline 5280 \\ 61600 \\ \hline 66880 \end{array}$$

Hence, the cost of 76 chairs is ₹ 66880.

EXAMPLE : Find the total time in minutes in the month of December.

SOLUTION : We know that the December month has 31 days.

1 day has 24 hours and an hour contains 60 minutes.

No. of minutes in an hour = 60 minutes.

No. of minutes in a day of 24 hours

= 60 × 24 = 1440 minutes

$$\begin{array}{r} 60 \\ \times\ 24 \\ \hline 240 \\ 1200 \\ \hline 1440 \\ \hline \end{array}$$

No. of minutes in 31 days in the December month

= 1440 × 31

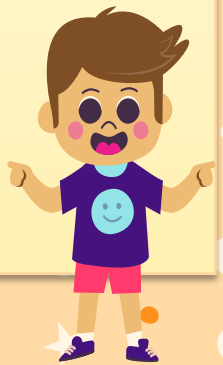
= 44640 minutes

Thus, the total time in minutes in the month of December is 44640 minutes

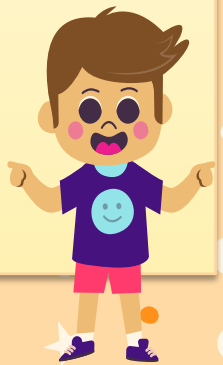
$$\begin{array}{r} 1440 \\ \times\ 31 \\ \hline 1440 \\ 43200 \\ \hline 44640 \end{array}$$

EXERCISE 3.3

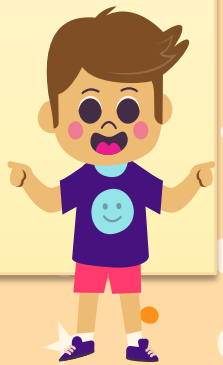
1. A man saves ₹ 350 per month. How much money does he save in 4 years ?



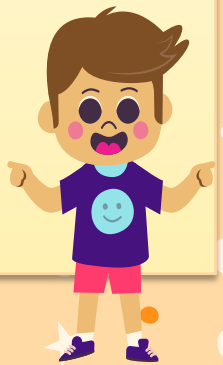
2. Sita types 68 words per minute. How many words does she type in 2 hours and 20 minutes ?



3. A bag contains 24 kg 500 g sugar. How much sugar do such 224 bags contain ?



4. Ram has 520 currency notes of 20 - rupee each.
   How much money does he have ?



5. A basket contains 228 apples. Find the total number of apples in such 325 baskets.