



We know that the repeated addition of a certain number is multiplication.

Such as: $2 + 2 + 2 + 2 + 2$

or 6 times 2 = 12

or $6 \times 2 = 12$

or 12 is the product of 6 and 2.

Mona keeps an account of the money she puts in her piggy bank. She takes ₹ 25 from her mother daily and puts it in her piggy bank. She has been doing this from last 115 days.

Her father asked - Mona, how many rupees are there in your piggy bank? Mona calculated -

115 times ₹ 25

or $115 \times ₹ 25$

Mona knows - $25 = 20 + 5$

Therefore, $115 \times 25 = 115 \times 20 + 115 \times 5$

$= 2300 + 575$

$= ₹ 2875$

She did it like this too -

Multiplicand	1 1 5
Multiplier	$\times 2 5$
	5 7 5
	$+ 2 3 0 0$
Product	$₹ 2 8 7 5$

(First multiplied the digit at ones place of 25, which is 5 by 115)

(Then multiplied the digit in the tens place of 25, which is 2 or 20 by 115)

(Then both products were added)

Mona told - My dear father there are ₹ 2875 in my piggy bank.





Do it yourself - ● 132×25

● 240×32

● 405×64

Today Mona's father gave her ₹ 125. She started thinking that if she had put ₹ 125 in a piggy bank daily, how many rupees would have been collected in 115 days?

Let's help Mona in this -

Look - $115 \text{ times } ₹ 125$

or $115 \times ₹ 125$

We know $125 = 100 + 20 + 5$

Therefore, $115 \times 125 = 115 \times 100 + 115 \times 20 + 115 \times 5$

$$= 11500 + 2300 + 575$$

$$= ₹ 14375$$

Mona's brother calculated it like this -

$$\begin{array}{r} 115 \\ \times 125 \\ \hline \end{array}$$

5 7 5 First multiplied 5 ones by 115 times.

+2 3 0 0 Then he multiplied 2 tens or 20 by 115 times.

+1 1 5 0 0 Now multiplied 1 hundred or 100 by 115 times.

₹ 1 4 3 7 5 Then added all the three products.

Now tell us which method did you like Mona's or Amit's?



Do it yourself - ●

850

●

703

●

562

$$\begin{array}{r} 850 \\ \times 613 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 703 \\ \times 234 \\ \hline \hline \end{array}$$

$$\begin{array}{r} 562 \\ \times 304 \\ \hline \hline \end{array}$$

Let's Understand and do -

$$512 \times 100 = 51200, \quad 735 \times 200 = \dots\dots\dots, \quad 465 \times 300 = \dots\dots\dots$$

We have seen that to multiply a number by 100, 200, 300,900 we multiply the number by 1, 2, 3,9 respectively and insert two zeros on the right of the product.





Think - Similarly if we multiply 1000, 2000, 3000,9000 by any number what will be the product?

Properties of multiplication

① Divide a piece of rectangular sheet into 6 equal parts horizontally and 3 equal parts vertically. Look, the total number of rectangles are $6 \times 3 = 18$. Now, rotate this piece of rectangular sheet according to the figure.

	1	2	3
1			
2			
3			
4			
5			
6			

Now, you have 3 equal horizontal parts and 6 equal vertical parts.

Look, Now total number of rectangles are $3 \times 6 = 18$

	1	2	3	4	5	6
1						
2						
3						

Hence, $6 \times 3 = 3 \times 6 = 18$



Do it yourself - (By drawing on paper)

● $8 \times 9 = \dots\dots\dots$ and $9 \times 8 = \dots\dots\dots$

Hence $8 \times 9 = 9 \times 8 = \dots\dots\dots$

● $15 \times 12 = \dots\dots\dots$ and $12 \times 15 = \dots\dots\dots$

Hence $\dots\dots\dots \times \dots\dots\dots = \dots\dots\dots \times \dots\dots\dots = \dots\dots\dots$

In this way we can say that -

The product does not change even when the order of the numbers are changed.

② Let's multiply any number by 1-

$$5 \times 1 = 5$$

$$32 \times 1 = 32$$

$$1 \times 78 = 78$$

$$1 \times 312 = 312$$



Do it yourself -

● $68 \times 1 = \dots\dots\dots$

● $1 \times 95 = \dots\dots\dots$

● $520 \times 1 = \dots\dots\dots$

In this way we can say that -

The product of any number and 1 is always the number itself.

✳ Discuss with students these methods of multiplication in detail.



3 Let's multiply any number by '0' -

$$0 \times 4 = 0$$

$$45 \times 0 = 0$$

$$164 \times 0 = 0$$

$$0 \times 203 = 0$$



Do it yourself -

$$7 \times 0 = \dots\dots\dots$$

$$0 \times 64 = \dots\dots\dots$$

$$512 \times 0 = \dots\dots\dots$$

$$0 \times 135 = \dots\dots\dots$$

In this way we can say that -

The product of any number and zero is always zero.

Word Problems

- There are 172 balls in a box. How many balls will be there in 345 such boxes?

Number of balls in a box = 172

Number of boxes = 345

Hence, total number of balls = 345×172

$$\begin{array}{r} 345 \\ \times 172 \\ \hline 690 \\ 24150 \\ + 34500 \\ \hline 59340 \end{array}$$

Hence, the total number of balls will be 59340.

- Reena saves ₹ 375 per month. How much money will she save in 10 years?

Money saved by Reena in 1 month = ₹ 375

Number of months in 1 year = 12

Total number of months in 10 years = 10×12
= 120



Therefore, money saved by Reena in 120 months = 120×375

$$\begin{array}{r} 120 \\ \times 375 \\ \hline 600 \\ 8400 \\ + 36000 \\ \hline 45000 \end{array}$$

Hence, Reena will save ₹ 45000 in all.



Do it yourself -

- If the cost of a book is ₹ 235. Find the cost of 148 such books?
- There are 165 mango trees in a row in an orchard. How many mango trees are there, if there are 105 such rows in the entire orchard?

We have learnt

- Multiplication of 3-digit numbers by 3-digit numbers.
- To solve multiplication word problems of 3-digit numbers.
- The product does not change even when the order of the numbers are changed.
- The product of any number and 1 is always the number itself.
- The product of any number and zero is always zero.

The teacher should give the students enough examples to prove the properties of multiplication.



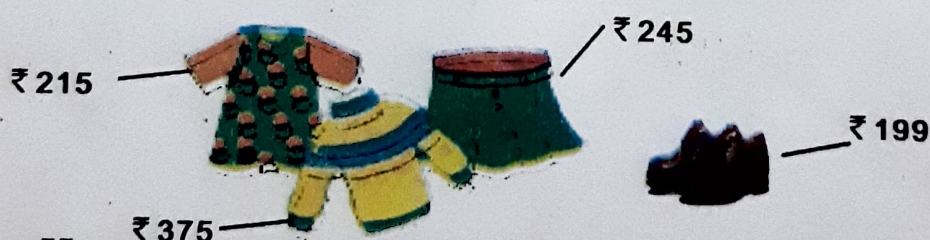
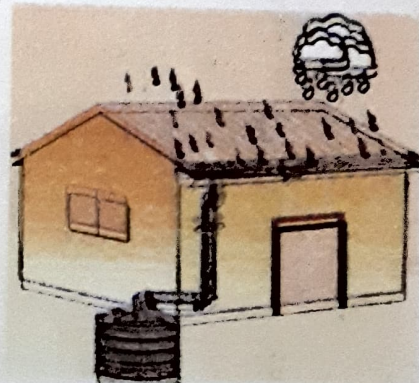
1	2	3	4	5	6	7	8	9	10
2	4	6	....	10	12	....	16	18	....
3	....	9	12	....	18	21	....	27	30
4	8	....	16	20	....	28	32	....	40
....	10	15	....	25	30	....	40	45	....
....	....	....	24	....	36	42	....	54	60
7	14	21	28	35	....	49	56	....	70
8	16	24	....	40	48	....	64	72	....
9	....	27	36	....	....	63	....	....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

11	12	13	14	15	16	17	18	19	20
22	....	26	28	....	32	....	36	....	40
....	36	....	42	....	48	51	....	57	60
44	....	52	....	60	....	68	72	....	80
55	60	65	70	75	80	....	90	95	....
....	72	....	84	90	....	102	....	114	120
77	84	91	....	105	112	119	126	....	140
88	....	104	112	....	128	....	144	152	....
....	108	....	126	135	....	153	....	171	180
110	120	130	....	150	160	170	180	190	....



Exercise

1. Multiply -
 - (a) 580 by 125
 - (b) 500 by 232
 - (c) 758 by 300
 - (d) 365 by 190
2. Solve -
 - (a) 275×354
 - (b) 374×700
 - (c) 294×901
3. There are 25 almirahs in a library and each almirah has 275 books. How many total books are there in the library?
4. The cost of a watch is ₹ 560. Find the cost of 108 such watches?
5. Find the product of the greatest and the smallest 3-digit numbers.
6. If 200 litres of water can be stored by water harvesting system on one roof, How much water can be stored from 15 such roofs?
7. There are 576 students in a school. In a month ₹ 215 per student are spent on mid-day meal. How many rupees in total will be spent on all the students in a month?
8. In a shop, prices of different things are written on them-



Tell us -

- (a) How many rupees will be spent to buy 3 skirts and 2 frocks?
 - (b) What will be the cost of one sweater and 3 pairs of shoes?
9. Make word problems related to multiplication on the basis of given numbers-
 - (a) 625 and 125
 - (b) 777 and 205

Project work - Ask the children to make and solve questions of multiplication based on their experience of household shopping.

Ancient Indian Mathematical System

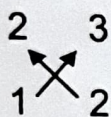
Let's understand -

$$\begin{array}{r} 23 \\ \times 12 \\ \hline 6 \end{array}$$

Step -1 - Multiplication of ones by ones

$$3 \times 2 = 6$$

$$\begin{array}{r} 23 \\ \times 12 \\ \hline 76 \end{array}$$



Step -2 - Cross multiplication of the digits at ones and tens places and then add the products-

$$(2 \times 2) + (1 \times 3) = 7$$

$$\begin{array}{r} 23 \\ \times 12 \\ \hline 276 \end{array}$$

Step -3 - Multiplication of tens by tens

$$2 \times 1 = 2$$



Do it yourself -

● $\begin{array}{r} 57 \\ \times 32 \\ \hline \\ \hline \end{array}$

● $\begin{array}{r} 78 \\ \times 46 \\ \hline \\ \hline \end{array}$

● $\begin{array}{r} 17 \\ \times 56 \\ \hline \\ \hline \end{array}$

