Multiplication



Multiplication of tens

Tony: Multiplying a number by ten means taking ten times that number.

Thus, 3×10 is ten times 3 or three tens, or $3 \times 10 = 30$.

Also, $4 \times 10 = 40$, $5 \times 10 = 50$, $6 \times 10 = 60$, $10 \times 10 = 100$.

Sonu: Then 13×10 will be 130, $24 \times 10 = 240$ and $40 \times 10 = 400$.

Tai : Yes. To multiply a number by ten, we just need to put a zero after it.

Salma: 20×3 means 20 + 20 + 20. And that is 60.

Tony: 20×3 means three times 2 tens = 6 tens = 60.

Tai: To find 20×3 , we can multiply 2 and 3 and place a zero after it. So the

product is 60. In this way,

 $20 \times 6 = 2T \times 6 = 12T = 120$ $50 \times 7 = 35 T = 350$

 $40 \times 5 = 4T \times 5 = 20T = 200$ $80 \times 3 = 24 T = 240$

Sonu: If there's a zero in the units place of both numbers, what do we do?

Tai: When multiplying 30×20 , write one of the numbers in the tens form.

 30×20 means $30 \times 2T$

Salma: But this gives us 60T. That means 600.

Sonu: So 30×20 is 600, right?

Tony: $3T \times 2T$ is 6H!

Tai : Right! It means that in 30 × 20, first carry out 3 × 2 and then write two

zeros after their product.

Try it. $40 \times 20 = 800$. $30 \times 30 = 900$.

If there is a zero in the units place of both numbers, then, multiply the digits in their tens places and write two zeros after the product.

♦ Multiply.

Multiplication of a two-digit number by a one-digit number: the lattice method

Sonu: Yesterday I bought two books for 34 rupees each. Guess how much I must have paid for them.

Salma: To find it out, we must multiply 34 by 2.

Tai : I will tell you a trick for doing this multiplication. For making the 6 times table, we had divided 6 into two convenient parts, 4 and 2. Let's do the same here. We shall split 34 into two convenient parts, 30 and 4. As 30 is a tens number, it is easy to multiply.

×	30 (3 T)	4 (4 U)
2	(30×2) 60	(4 × 2) 8

Sonu: First, we multiply 30, that is 3 tens by 2. We get 6 tens, which is 60.

Then, 4 units \times 2 = 8

Lastly, we add 60 and 8.

60 + 8 = 68. So, $34 \times 2 = 68$.

- **♦** Multiply.
 - ❖ 37 × 4

×

4

120
+ 28
148

 \div 56 × 3

×	50	6
3	150	18

 $37 \times 4 = 148$

30

120

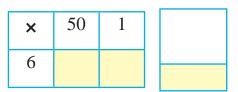
7

28

- $56 \times 3 = 168$
- **♦** Use the above method to carry out the following multiplications.
 - **❖** 42 × 3

×	40	2	
3			





◆ 73 × 5

×	70	3	
5			

❖ 39 × 8

×	30	9
8		

Multiplying two two-digit numbers : the lattice method

❖ Twelve rupees are to be collected from each child for a visit to the zoo. If 25 children are going, how much money will be collected?

Nandu: To find it out, we have to multiply 25 by 12.

Tai: We shall again split the numbers into convenient parts and multiply using the lattice method.

Let's split the numbers like this : 25 = 20 + 5 and 12 = 10 + 2.

×	20	5
10	200	50
2	40	10

 $25 \times 12 = 300$ rupees will be collected.

- **♦** Multiply.
 - **.** 43 × 23

×	40	3	
20			
3			

♦ 62 × 13

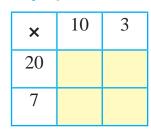
×	60	2
10		
3		

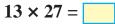
$$62 \times 13 =$$

❖ 32 × 14

×	30	2
10		
4		

❖ 13 × 27





♦ Multiply.



❖ 71 × 12

Multiplication : Vertical Arrangement

Tai: We have learnt to multiply using the lattice method. Let us learn another way to do the same. We have understood the operation. We shall only write it in a different way.

ightharpoonup Multiply: 34 × 2

T	Н
3	4
×	2
6	8

First multiply the 4 in the units place by 2. 2 fours are 8. Hence, write 8 under the line in the units place. Now, multiply the 3 in the tens place by 2. 2 threes are 6. Write this 6 under the line in the tens place. The product is 68.

Tony: Good! This is a quick method.

♦ Multiply.

	T	U
	4	2
×		2
	8	4

T	U
2	4
×	2

Т	U
2	2
×	4

T	U
3	1
×	3

Multiplication by carrying over

Tony: How to multiply 26 by 3?

Salma: Let's arrange the multiplication vertically.

First multiply the 6 in the units place by 3.

3 sixes are 18.

T	U
2	6
×	3

Tai : From these eighteen units, we take 10 units to make 1 ten or 1T. We write this ten at the top in the tens place. We write the remaining 8 in the units place under the line. Multiply the 2 in the tens place by 3. Three twos are 6, and with the new 1 ten, we get 7 tens. This, we write in the tens place in the answer.

The product is 78.

\mathbf{U}	
	carrying
	over
\3	
18	
	6 3

ightharpoonup Multiply: 18×4

T	U		
3			
1	8		
×	4		
7	3 2		

First multiply 8 units by 4. Four eights are 32.

30 of these 32 units make 3 tens. Write these 3 tens in the tens place at the top and the 2 units under the line in the units place. Now multiply the 1 in the tens place by 4. 4 ones are 4, and, alongwith the 3 written at the top, we have 7 tens. Write these in the tens place under the line. The product is 72.

♦ Multiply.

Т	U		
1	5		
×	5		

T	U
2	4
×	3

T	U
2	7
×	3

T	U
1	5
×	6

		,		•	
	T		U		
	2	2			
	2		2 3		
×			7		
1 4	16		(2	1
	H	T		U	
	1	6		1	

Tai: Now, look at this carefully. We have to multiply 23 by 7. First we multiply 3 units by 7. Seven threes are 21. Of these 21 units, we make 2 tens and write them at the top in the tens place. 1 is left in the units place. Now, 7 twos are 14, and together with the carried over 2, we get 16 tens.

Salma: 16 tens means 1 hundred, 6 tens. So the product is 161.

Н	T	U
	3	6
	×	4

Н	T	U
	4	0
	×	8

Н	Т	U
	5	4
	×	7

Н	T	U
	9 ×	2 8

Word Problems

*	How many chocolates in 9 jars
	if there are 34 chocolates in 1 jar?

	3		
	3	4	Chocolates in 1 jar
	×	9	Number of jars
3	0	6	Number of chocolates

Total number of chocolates 3

One metre of cloth costs ₹ 95. How much will 6 metres of cloth cost?

Cost of cloth rupees

❖ If one book costs 85 rupees, what is the total cost of 5 such books?

85 Cost of 1 book

Number of books
Rupees

Total cost rupees

One litre of milk costs 40 rupees. How much will 3 litres of milk cost?

Cost of milk

rupees

♦ Solve the following problems.

- ❖ 25 children in a row. How many in 7 rows?
- ♦ How much will 6 towels cost at 53 rupees a towel?
- ❖ 72 apples in 1 box. How many in 5 boxes?
- One box holds 40 laddoos. How many laddoos do 9 boxes hold?

♦ Make your own problems of multiplication and solve them.

Information: 8 rupees for 1 book, 45 books

Problem: If one book costs 8 rupees, how much do 45 books cost in all?

45 books

× 8 cost of 1 book 360 rupees

Total cost of 45 books: 360 rupees.

Information : 48 pomegranates in 1 box 7 boxes

Problem: If there are 48 pomegranates in 1 box, how many are there in 7 boxes?

Total number of pomegranates in the 7 boxes is

- ❖ 15 trees in one row, 9 rows
- 16 toys, cost of each toy ₹ 10.
- 20 laddoos in one box, 8 boxes
- Cost of one book ₹ 36, 7 books.

