Class: IV

Mathematics

Note: Students are requested to write the notes in fair copy, and do practice of remaining questions by your own in rough copy.

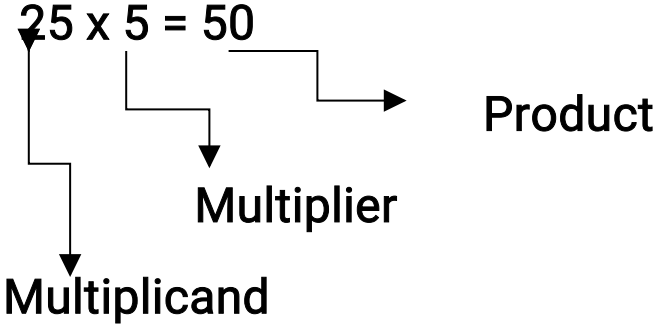
Chapter no. 4

Multiplication

Important Points:

- Multiplication is repeated addition.
- The number to be multiplied is called the multiplicand.
- The number with which we multiply is called the multiplier.
- The answer of multiplication is product.

Ex: 25 x 5 = 50



Properties of Multiplication:

1. Multiplicative property of 1 - When a number is multiplied by 1, the product is the number itself.

   Ex: 4156 x 1 = 4156

2. Multiplicative property of zero - When any number is multiplied by zero, the product is always zero.

   Ex: 427 x 0 = 0

3. Order Property of multiplication – A change in the order of two numbers does not change the product of two numbers.

   Ex: 17 x 6 = 102, 6 x 17 = 102

   Thus, 17 x 6 = 6 x 17

4. Grouping property of Multiplication – A change in the grouping of three numbers does not change the product of the three numbers.

   Ex: (10 x 7) x 6 = 70 x 6 = 420

   10 x (7 x 6) = 10 x 42 = 420

   Thus, (10 x 7) x 6 = 10 x (7 x 6)

5. Distributive property of multiplication over addition: The distributive property states that multiplying a sum by a number gives the same result as multiplying each addend by the number and then adding the products together.

Ex: (40 + 2) x 15 = 42 x 15 = 630

40 x 15 + 2 x 15 = 600 + 30 = 630

Thus, (40 + 2) x 15 = 40 x 15 + 2 x 15

Exercise – 1

1. **Fill in the blanks** :(Solve this exercise using Properties of Multiplication.)

(a) 185 x 1 = 185

(b) 270 x 1 = _____

(c) 928 x 175 = 175 x 928

(d) 1078 x _____ = 928 x 1078

(e) 138 x (413 x 644) = (138 x 413) x 644

(f) 427 x (25 + _____) = 427 x 25 + 427 x 68

2. **Multiply the following :**

(a) 5 x 8 x 4

Sol: (5 x 8) x 4

= (40) x 4

= 40 x 4

= 160

(b) 11 x 4 x 7

Sol: (11 x 4) x 7

= (44) x 7

= 308

(c) Practice by yourself

3. **Find the product using distributive property:**

Steps: (i) First multiply each addend separately

(ii) Then add their products.

(a) (5 + 6) x 9

Sol: 5 x 9 + 6 x 9

= 45 + 54

= 99

(b) (11 + 8) x 7

Sol: 11 x 7 + 8 x 7

= 77 + 56

= 133

(c) (15 + 6) x 6

Sol: 15 x 6 + 6 x 6

= 70 + 36

= 106

(d), (e) and (f) solve by yourself.

Multiplication using Expanded notation method:

Steps: 1. First of all we will write large numbers into expanded form.

2. Multiply each of the expanded number separately.

3. Add their products.

Exercise – 2

1. Find the product using expanded notation.

(a) 15 x 6

Sol: (10 + 5) x 6

= 6 x 10 + 6 x 5

= 60 + 30

= 90

(b) 5 x 43

Sol: 5 x (40 +3)

= 5 x 40 + 5 x 3

= 200 + 15

= 215

(c) 39 x 8

Sol: (30 + 9) x 8

= 30 x 8 + 9 x 8

= 240 + 72

= 312

(d) 27 x 9

Sol: (20 + 7) x 9

= 20 x 9 + 7 x 9

= 180 + 63

= 243

(e) 115 x 3

Sol: (100 + 10 + 5) x 3

= 100 x 3 + 10 x 3 + 5 x 3

= 300 + 30 + 15

= 345

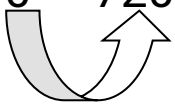
Remaining problems you have to practice in your rough copy

Multiplication by 10, 100 and 1000:

Steps:

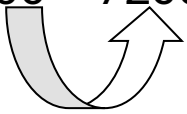
1. To multiply a number by 10, put a zero to the right of the number.

For Ex: 72 x 10 = 720



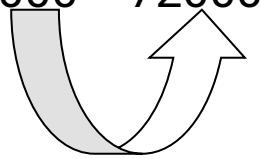
2. To multiply a number by 100, put two zeros to the right of the number.

For Ex: 72 x 100 = 7200



3. To multiply a number by 1000, put three zeros to the right of the number.

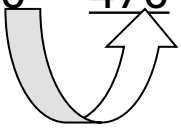
For Ex: 72 x 1000 = 72000



Exercise - 3

1. Fill in the blanks:

(a) 47 x 10 = 470



(b) 52178 x 10 = 521780

(c) 68 x 100 = _____

(d) 499 x 100 = _____

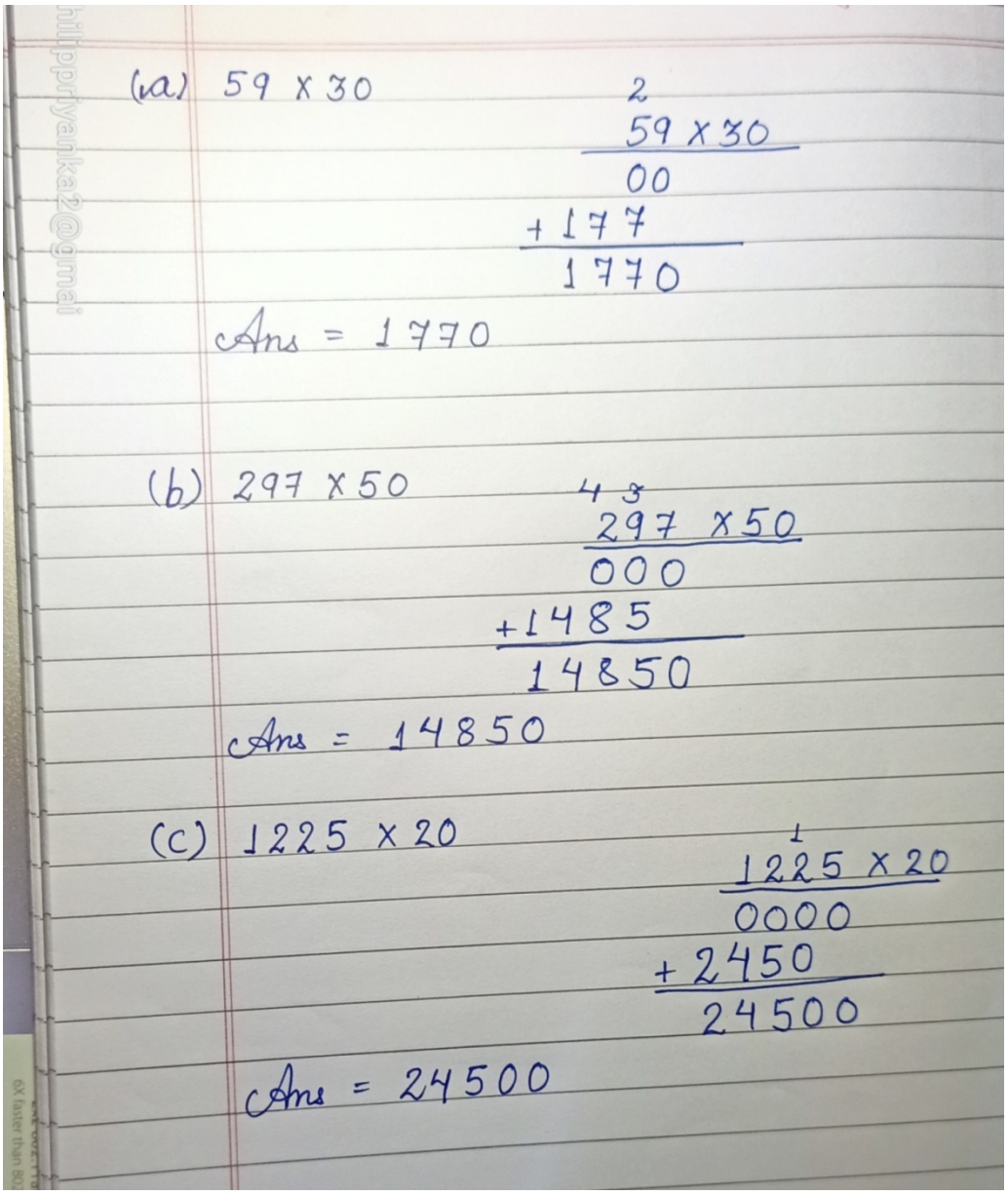
(e) 928 x 1000 = _____

(f) 91 x 1000 = _____

2. Find each of the following products:

(a) 59 x 30

Sol:



(d), (e), (f), (g), (h) and (i) solve by yourself.

3. Using suitable grouping find the product:

(a) 5 x 97 x 20

Sol: (5 x 20) x 97

= 100 x 97

= 9,700

(b) 45 x 4 x 125

Sol: 45 x (4 x 125)

= 45 x 500

= 22,500

(c) 2 x 627 x 50

Sol: (2 x 50) x 627

= 100 x 627

= 62,700

(d), (e) and (f) solve by yourself.

Multiplication of 3-digit number by 1-digit number:

Steps:

1. First of all we have to multiply digit at ones place.
2. Then we have to multiply digit at Tens place.
3. Then we have to multiply digit at Hundreds place.

Example:

Th	H	T	O
	3	3	
x	3	5	6
			6
2	1	3	6

Exercise – 4 (You have to solve in your book)

Multiplication of 4 – digit number by 1 – digit number:

Steps:

1. First of all we have to multiply digit at ones place.
2. Then we have to multiply digit at Tens place.
3. Then we have to multiply digit at Hundreds place.
4. Then we have to multiply digit at Thousands place.

2 Multiply 3768 by 2.

Step 1 : Multiply 2 with the digit at the ones place of 3768.

8 ones × 2 = 16 ones

Write 6 in the ones place and carry over 1 to the tens place.

Th	H	T	O
◯	◯	①	
3	7	6	8
×			2
			6

Step 2 : Multiply 2 with the digit at the tens place of 3768.

6 tens × 2 = 12 tens

12 tens + 1 ten = 13 tens

Write 3 in the tens place and carry over 1 to the hundreds place.

Th	H	T	O
◯	①	①	
3	7	6	8
×			2
		3	6

Step 3 : Multiply 2 with the digit at the hundreds place of 3768.

7 hundreds × 2 = 14 hundreds

(14 + 1) hundreds = 15 hundreds

Write 5 in the hundreds place and carry over 1 to the thousands place.

Th	H	T	O
①	①	①	
3	7	6	8
×			2
	5	3	6

Step 4 : Multiply 2 with the digit at the thousands place of 3768.

3 thousands × 2 = 6 thousands

(6 + 1) thousands = 7 thousands

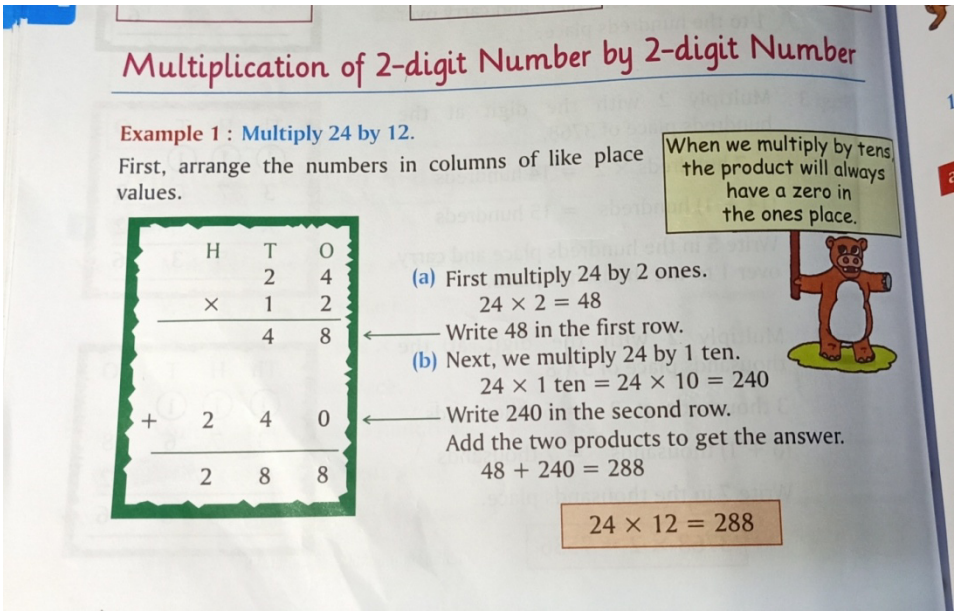
Write 7 in the thousands place.

Th	H	T	O
①	①	①	
3	7	6	8
×			2
7	5	3	6

3768 × 2 = 7536

MATHS

Exercise – 5 (You have to solve in your book)



Multiplication of 2-digit Number by 2-digit Number

Example 1 : Multiply 24 by 12.

First, arrange the numbers in columns of like place values.

When we multiply by tens, the product will always have a zero in the ones place.

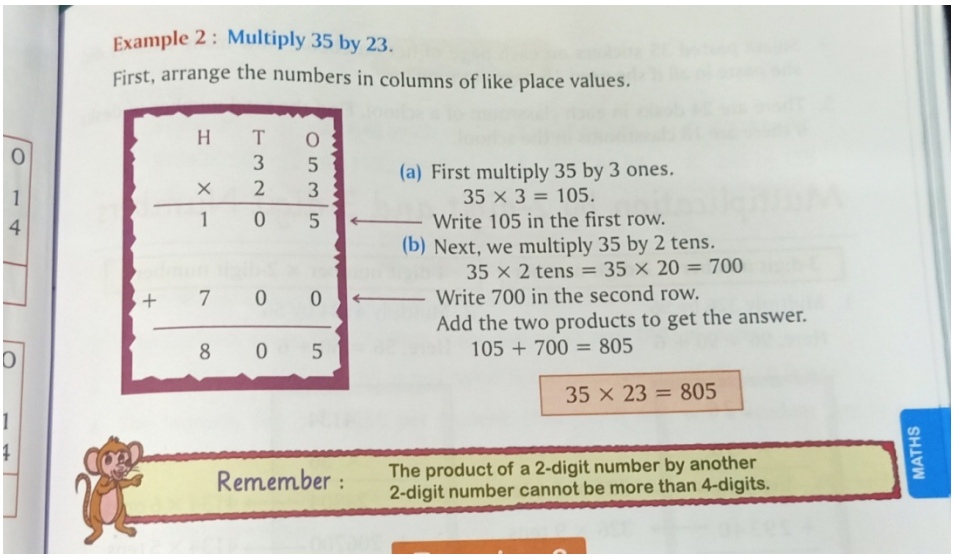
	H	T	O
		2	4
×		1	2
		4	8
+	2	4	0
	2	8	8

(a) First multiply 24 by 2 ones.
$24 \times 2 = 48$
Write 48 in the first row.

(b) Next, we multiply 24 by 1 ten.
$24 \times 1 \text{ ten} = 24 \times 10 = 240$
Write 240 in the second row.

Add the two products to get the answer.
$48 + 240 = 288$

$24 \times 12 = 288$



Example 2 : Multiply 35 by 23.

First, arrange the numbers in columns of like place values.

	H	T	O
		3	5
×		2	3
	1	0	5
+	7	0	0
	8	0	5

(a) First multiply 35 by 3 ones.
$35 \times 3 = 105.$
Write 105 in the first row.

(b) Next, we multiply 35 by 2 tens.
$35 \times 2 \text{ tens} = 35 \times 20 = 700$
Write 700 in the second row.

Add the two products to get the answer.
$105 + 700 = 805$

$35 \times 23 = 805$

Remember : The product of a 2-digit number by another 2-digit number cannot be more than 4-digits.

MATHS

Exercise – 6

(Question no. 1 you have to solve in your book)

Word Problems

2. One box contains 48 chocolates. How many chocolates are there in 36 such boxes?

Sol: Number of chocolates in one box = 48

Number of boxes = 36 (so here we will multiply 48 from 36)

$$\begin{array}{r} 48 \times 36 \\ \hline 288 \\ +1440 \\ \hline 1728 \end{array}$$

Ans: So, there are 1728 chocolates in 36 boxes.

3. The price of one notebook is ₹ 28. How much will the shopkeeper get if he sells 2 dozen notebooks in a day?

Sol: Price of one notebook is = ₹ 28

We know that 1 Dozen = 12 items

So, 2 Dozen = 24 items

Ans: Total amount
Shopkeeper gets = ₹ 672

28 x 24

112

+ 560

672

3. Sujata pasted 35 stickers on each page of her notebook. How many stickers did she paste in all if she used 15 pages in total?

Sol: Number of stickers she pasted in one page = 35

Number of pages = 15

Therefore total number of stickers Sujata pasted = _____

(Find out the answer)

35 x 15

175

+ 350

4. There are 24 desks in each classroom of a school. Find

the total number of desks if there are 18 classrooms in the school.

Sol: Number of desks in one classroom = 24

Number of classrooms = 18

Therefore total number of desks = _____

(Find out the answer)

24 x 18

if there are 18 classrooms in the school.

Multiplication by 2-digit and 3-digit Numbers

MATHS

3-digit number × 2-digit number

1. Multiply 326 by 96

Here, 96 = 90 + 6

```
  326
×  96
------
 1956   → 326 × 6 ones
+29340  → 326 × 9 tens
------
 31296
------
```

4-digit number × 2-digit number

2. Multiply 4134 by 56

Here, 56 = 50 + 6

```
  4134
×   56
-------
 24804   → 4134 × 6 ones
+206700  → 4134 × 5 tens
-------
 231504
-------
```

3-digit number × 3-digit number

3. Multiply 873 by 125

Here, 125 = 100 + 20 + 5

```
   873
×  125
------
  4365   → 873 × 5 ones
 17460   → 873 × 2 tens
+87300   → 873 × 1 hundred
------
 109125
------
```

Exercise -7

Multiply:

1. 819 by 80

819 x 80

000

\+ 65520

65520

2. 648 by 27

648 x 27

4536

\+ 12960

17496

3, 4, 5, 6, 7, 8 and 9 solve by yourself

Exercise – 8

Word Problems:

1. The cost of a chair is ₹ 485. Find the cost of 24 such chairs?

Sol: Cost of a chair = ₹ 485

Number of chairs = 24

485 x 24

1940

\+ 9700

11640

Ans : Total cost of 24 such chairs = ₹ 11640

2. A DVD player costs ₹ 2485. What is the cost of 32 such DVD players?

Sol: Cost of a DVD player = ₹ 2485

Number of DVD players = 32

Therefore cost of 32 such DVD players =_____

2485 x 32

\+ _____

(Find out the answer)

3. **The weight of a box is 8485 grams. What is the total weight of 45 such boxes?**

Sol: Weight of one box is = 8485 grams

Number of boxes = 45

So, total weight of 45 such boxes =_____

(Find out the answer)

8485 x 45

\+ _____

4. **The monthly fee is ₹ 2550 per student. How much fees will a student pay in one year?**

Sol: Monthly fees of one student = ₹ 2550

We know that 1 Year = 12 Months

So, total fee for one year = _____

(Find out the answer)

2550 x 12

\+ _____

5. The weight of one watermelon is 3458 grams. How much will 24 such watermelons weight?

Sol: Weight of one watermelon = 3458 grams

Number of watermelons = 24

Total weight of 24 such watermelons = _____

3458 x 24

\+ _____

(Find out the answer)

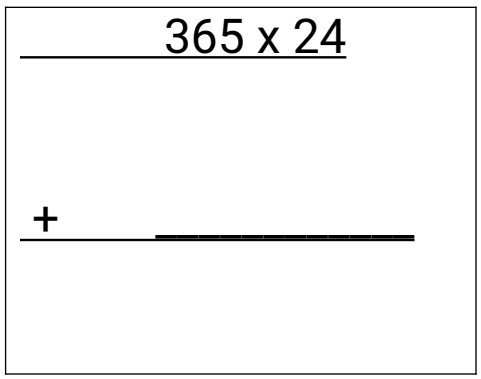
6. How many hours are there in one year?

Sol: We know that 1 Year = 365 Days

1 Day = 24 Hours

So, 1 Year = _____ Hours

(Find out the answer)



7. A football weighs 288 grams. What is the weight of 175 such footballs?

Sol: Weight of one football = 288 grams

Number of footballs = 175

So, total weight of 175 such footballs = _____

288 x 175

\+ _____

(Find out the answer)
