

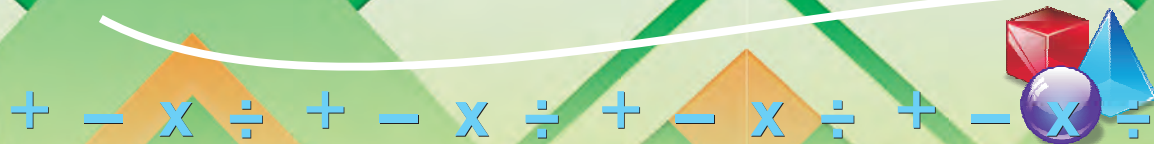


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LESSON
PART 5




4



MULTIPLICATION

READY ... STEADY

A. Write the multiplication facts.

1.  $3 + 3 + 3 + 3 = 12$ _____

2. $5 + 5 + 5 + 5 + 5 + 5 = 30$ _____

3. $6 + 6 + 6 + 6 + 6 = 30$ _____

4. $4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 32$ _____

5. $10 + 10 + 10 + 10 + 10 = 50$ _____

B. Complete these multiplication tables.

4 – Table

$1 \times 4 =$	_____
$2 \times 4 =$	_____
$3 \times 4 =$	_____
$4 \times 4 =$	_____
$5 \times 4 =$	_____
$6 \times 4 =$	_____
$7 \times 4 =$	_____
$8 \times 4 =$	_____
$9 \times 4 =$	_____
$10 \times 4 =$	_____

6 – Table

$1 \times 6 =$	_____
$2 \times 6 =$	_____
$3 \times 6 =$	_____
$4 \times 6 =$	_____
$5 \times 6 =$	_____
$6 \times 6 =$	_____
$7 \times 6 =$	_____
$8 \times 6 =$	_____
$9 \times 6 =$	_____
$10 \times 6 =$	_____

9 – Table

$1 \times 9 =$	_____
$2 \times 9 =$	_____
$3 \times 9 =$	_____
$4 \times 9 =$	_____
$5 \times 9 =$	_____
$6 \times 9 =$	_____
$7 \times 9 =$	_____
$8 \times 9 =$	_____
$9 \times 9 =$	_____
$10 \times 9 =$	_____

C. Multiply using tables.

1. $4 \times 5 =$ _____ 2. $6 \times 3 =$ _____ 3. $4 \times 3 =$ _____
4. $6 \times 7 =$ _____ 5. $9 \times 2 =$ _____ 6. $10 \times 5 =$ _____
7. $3 \times 7 =$ _____ 8. $6 \times 4 =$ _____ 9. $7 \times 5 =$ _____
10. $2 \times 9 =$ _____ 11. $8 \times 3 =$ _____ 12. $5 \times 3 =$ _____

D. Find the product.

1.
$$\begin{array}{r} 34 \\ \times 2 \\ \hline \end{array}$$
 2.
$$\begin{array}{r} 22 \\ \times 4 \\ \hline \end{array}$$
 3.
$$\begin{array}{r} 33 \\ \times 3 \\ \hline \end{array}$$
 4.
$$\begin{array}{r} 21 \\ \times 5 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 25 \\ \times 4 \\ \hline \end{array}$$
 6.
$$\begin{array}{r} 28 \\ \times 3 \\ \hline \end{array}$$
 7.
$$\begin{array}{r} 44 \\ \times 6 \\ \hline \end{array}$$
 8.
$$\begin{array}{r} 72 \\ \times 7 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 34 \\ \times 9 \\ \hline \end{array}$$
 10.
$$\begin{array}{r} 43 \\ \times 6 \\ \hline \end{array}$$
 11.
$$\begin{array}{r} 57 \\ \times 5 \\ \hline \end{array}$$
 12.
$$\begin{array}{r} 46 \\ \times 8 \\ \hline \end{array}$$

PROPERTIES OF MULTIPLICATION

1. When we multiply 2 numbers, the order in which we multiply them does not matter. The product remains the same.

Example : $6 \times 4 = 24$ | $4 \times 6 = 24$
 $9 \times 7 = 63$ | $7 \times 9 = 63$



2. The product of a number and 1 is the number itself.

Example : $6 \times 1 = 6$ | $7 \times 1 = 7$
 $5 \times 1 = 5$ | $4 \times 1 = 4$



3. Product of a number and zero is zero.



Example : $5 \times 0 = 0$ $0 \times 7 = 0$
 $89 \times 0 = 0$ $0 \times 0 = 0$

Now, let us discover another property of multiplication.

Consider the numbers 3, 4 and 5.

We group any two of the numbers and then multiply their product by the third number.

$$(3 \times 4) \times 5 = 12 \times 5 = 60 \qquad (4 \times 5) \times 3 = 20 \times 3 = 60$$

$$(3 \times 5) \times 4 = 15 \times 4 = 60$$

So, remember

4. When you multiply three numbers grouping them in any order, the product is always the same.



Exercise 4.1

Use the properties of multiplication to fill in the blanks.

1. $10 \times 1 = \underline{\hspace{2cm}}$
2. $8 \times 9 = 9 \times \underline{\hspace{2cm}}$
3. $105 \times 0 = \underline{\hspace{2cm}}$
4. $23 \times 1 = \underline{\hspace{2cm}}$
5. $(5 \times 6) \times 7 = (5 \times \underline{\hspace{1cm}}) \times 6$
6. $5 \times 6 = 6 \times \underline{\hspace{2cm}}$
7. $88 \times 0 = \underline{\hspace{2cm}}$
8. $4 \times (7 \times 8) = 7 \times (\underline{\hspace{1cm}} \times 8)$
9. $44 \times 0 = \underline{\hspace{2cm}}$
10. $66 \times 33 = \underline{\hspace{2cm}} \times 66$
11. $43 \times 19 \times 28 = 19 \times \underline{\hspace{1cm}} \times 28$
12. $6507 \times 0 = \underline{\hspace{2cm}}$
13. $9999 \times 1 = \underline{\hspace{2cm}}$
14. $238 \times 42 = 42 \times \underline{\hspace{2cm}}$
15. $8000 \times 0 = \underline{\hspace{2cm}}$
16. $456 \times 5 \times 72 = 72 \times 5 \times \underline{\hspace{2cm}}$
17. $222 \times 100 = 100 \times \underline{\hspace{2cm}}$
18. $354 \times 312 \times 0 = \underline{\hspace{2cm}}$



MULTIPLYING A 3-DIGIT NUMBER BY A 1-DIGIT NUMBER

You have learnt to multiply a 2-digit number by a 1-digit number in Class 2. Multiplying a 3-digit number is similar.

Multiplying without regrouping

Example : Multiply 342 by 2.

Solution :

Write the numbers as shown.

Step 1 : Multiply 2 ones by 2 :

$$2 \text{ ones} \times 2 = 4 \text{ ones}$$

Write 4 in the ones column.

Step 2 : Multiply 4 tens by 2 :

$$4 \text{ tens} \times 2 = 8 \text{ tens}$$

Write 8 in the tens column.

Step 3 : Multiply 3 hundreds by 2 :

$$3 \text{ hundreds} \times 2 = 6 \text{ hundreds}$$

Write 6 in the hundreds column.

Answer : 684

H	T	O
3	4	2
	×	2
6	8	4



Exercise 4.2

Multiply the following.

1.

H	T	O
2	3	3
	×	3

2.

H	T	O
2	1	2
	×	4

3.

H	T	O
1	1	0
	×	5

4.

H	T	O
3	4	4
	×	2

5.

H	T	O
1	0	1
	×	8

6.

H	T	O
1	1	1
	×	7

7.

H	T	O
2	2	2
	×	4

8.

H	T	O
3	0	2
	×	3

Multiplying with regrouping

Example 1 : Multiply 314 by 6.

Solution :

Step 1 : Multiply 4 ones by 6.

$$4 \text{ ones} \times 6 = 24 \text{ ones}$$

Regroup : 24 ones = 2 tens + 4 ones

Write 4 in the ones column.

Carry 2 to the tens column.

Step 2 : Multiply 1 ten by 6.

$$1 \text{ ten} \times 6 = 6 \text{ tens}$$

Add the carried over : 2 tens + 6 tens = 8 tens

Write 8 in the tens column.

Step 3 : Multiply 3 hundreds by 6.

$$3 \text{ hundreds} \times 6 = 18 \text{ hundreds.}$$

18 hundreds = 1 thousand + 8 hundreds.

Write 8 in the hundreds column and 1 in the thousands column.

Answer : 1884

Th	H	T	O
		2	
	3	1	4
		×	6
1	8	8	4

Example 2 : Find the product : 265×7

Solution :

Step 1 : Multiply 5 ones by 7.

5 ones \times 7 = 35 ones. Write 5 in the ones place and carry 3 to the tens column.

Step 2 : Multiply 6 tens by 7.

$$6 \text{ tens} \times 7 = 42 \text{ tens.}$$

carried 3 tens + 42 tens = 45 tens. Write 5 in tens place and carry 4 to the hundreds column.

Step 3 : Multiply 2 hundreds by 7.

$$2 \text{ hundreds} \times 7 = 14 \text{ hundreds.}$$

carried 4 hundreds + 14 hundreds = 18 hundreds.

Write 8 in the hundreds place and 1 in the thousands place.

Answer : 1855

Th	H	T	O
	4	3	
	2	6	5
		×	7
1	8	5	5



Exercise 4.3

A. Multiply the following.

1.

H	T	O
3	0	4
× 3		

2.

H	T	O
2	4	5
× 2		

3.

H	T	O
1	1	8
× 4		

4.

H	T	O
1	6	0
× 5		

B. Multiply the following.

1.

Th	H	T	O
2	8	4	
× 5			

2.

Th	H	T	O
3	4	5	
× 6			

3.

Th	H	T	O
5	4	8	
× 4			

4.

Th	H	T	O
7	4	6	
× 6			

5.

Th	H	T	O
3	7	4	
× 5			

6.

Th	H	T	O
4	9	4	
× 6			

7.

Th	H	T	O
5	4	8	
× 7			

8.

Th	H	T	O
8	5	6	
× 9			

9.

Th	H	T	O
3	2	3	
× 8			

10.

Th	H	T	O
5	7	0	
× 8			

11.

Th	H	T	O
5	9	7	
× 8			

12.

Th	H	T	O
4	6	2	
× 6			

WORD PROBLEMS

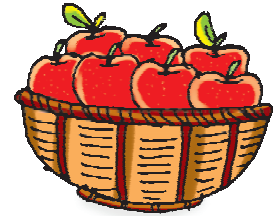
Example : There are 36 apples in a box. How many apples are there in 8 boxes ?

Solution : Number of apples in one box = 36
 Number of apples in 8 boxes = 36×8
 $= 288$

H	T	O
3	6	
× 8		
288		

Exercise 4.4

1. The cost of a school bag is ₹ 48. How much will 9 school bags cost ?
2. There are 7 days in a week. How many days are there in 63 weeks ?
3. 55 people can travel in a bus. How many people can travel in 6 buses ?
4. There are 60 minutes in an hour. How many minutes are there in 9 hours ?
5. There are 156 apples in a basket. How many apples are there in 9 baskets ?
6. In a grove, there are 9 rows of trees. In each row, there are 52 trees. How many trees are there in the grove ?
7. A car travels 58 kilometres in an hour. How many kilometres does it travel in 5 hours ?
8. Each child in the class needs 7 exercise books. There are 32 children in the class. How many exercise books are needed in all ?
9. If a book costs ₹ 7, how much will 253 books cost ?



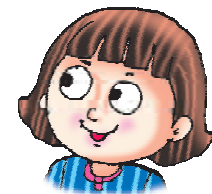
MULTIPLYING BY TENS

Take a look at the following examples :

$$3 \times 10 = 30 \quad 7 \times 10 = 70 \quad 20 \times 10 = 200 \quad 15 \times 10 = 150$$

Do you find something in common ?

When we multiply a number by 10, we simply put a zero to the right of the number.



If we have to multiply a number by 20, 30, ..., 90 then what do we do ?

Example : 7×20 or 7×2 tens = 14 tens = 140.

When we multiply a number by 10, 20, 30, ..., 90 we multiply the number by 1, 2, 3, ..., 9 and put a zero on the right of the product.

MULTIPLYING BY HUNDREDS

$$5 \times 100 = 5 \times 1 \text{ hundred} = 5 \text{ hundreds} = 500$$

$$8 \times 200 = 8 \times 2 \text{ hundreds} = 16 \text{ hundreds} = 1600$$

$$13 \times 300 = 13 \times 3 \text{ hundreds} = 39 \text{ hundreds} = 3900$$

When we multiply a number by 100, 200, ..., 900 we multiply the given number by 1, 2, ..., 9 and write two zeros on the right of the product.

Exercise 4.5

Multiply the following.

1. 31×30 2. 16×20 3. 15×30 4. 21×100

5. 11×800 6. 10×800 7. 34×200 8. 19×100

9. 64×70 10. 17×500 11. 19×400 12. 9×800

MULTIPLYING BY 2-DIGIT NUMBERS

Example : Multiply 74×28

Solution : $28 = 20 + 8$

74 is multiplied by $20 + 8$, or

74 is multiplied by 20 and 74 is multiplied by 8

and the two products are added.

$$74 \times 20 = 1480$$

$$74 \times 8 = 592$$

$$1480 + 592 = 2072$$

Answer : 2072

Short method

Th	H	T	O
		7	4
		×	28
<hr/>			
	5	9	2
1	4	8	0
<hr/>			
2	0	7	2

→ 74×8
→ 74×20
→ 74×28

Exercise 4.6

Multiply the following in your note book.

1.

Th	H	T	O
	1	9	
	×	1	7

2.

Th	H	T	O
	4	6	
	×	2	9

3.

Th	H	T	O
	6	0	
	×	4	2

4.

Th	H	T	O
	6	8	
	×	2	7

5.

Th	H	T	O
	4	1	
	×	5	9

6.

Th	H	T	O
	2	6	
	×	3	5

7.

Th	H	T	O
	4	9	
	×	1	8

8.

Th	H	T	O
	7	2	
	×	2	6

9.

Th	H	T	O
	6	9	
	×	4	7

10.

Th	H	T	O
	2	1	8
	×	4	5

11.

Th	H	T	O
	3	0	9
	×	2	4

12.

Th	H	T	O
	2	9	0
	×	3	2

13.

Th	H	T	O
	6	9	
	×	2	2

14.

Th	H	T	O
	7	9	
	×	5	4

15.

Th	H	T	O
	5	6	
	×	9	4

16.

Th	H	T	O
	8	6	
	×	8	4

17.

Th	H	T	O
	4	2	
	×	6	9

18.

Th	H	T	O
	1	4	6
	×	3	3

19.

Th	H	T	O
	9	3	
	×	7	8

20.

Th	H	T	O
	1	2	8
	×	1	7

WORD PROBLEMS

Example : A bus can carry 38 passengers. How many passengers can 42 such buses carry ?

Solution :

$$\begin{aligned} \text{One bus carries} &= 38 \text{ passengers} \\ \text{So, 42 buses carry} &= 38 \times 42 \\ &= 1596 \text{ passengers} \end{aligned}$$

H	T	O
	3	8
	×	42
<hr/>		
	7	6
1	5	20
<hr/>		
1	5	96

Exercise 4.7

1. Multiply the largest 3-digit number by the largest 1-digit number.
2. There are 7 days in a week. How many days are there in 52 weeks ?

3. There are 9 packets of erasers, each containing 100 erasers. How many erasers are there in all ?



4. There are 85 sweets in a tin. How many sweets are there in 35 tins ?



5. There are 64 pages in a note book. How many pages are there in 38 such note books ?



6. In a cinema theatre, there are 136 rows of chairs. In each row there are 72 chairs. How many chairs are there in all ?



7. How many pencils are there in 98 packets of 50 pencils each ?



8. Mr. Sinha has 85 notes of ₹ 20. How much money does he have ?

9. In a coconut grove, there are 36 rows of coconut trees. In each row, there are 90 trees. How many coconut trees are there in the grove ?

WORKSHEET

A. Multiply the following.

- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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B. Find the product by multiplying numbers.

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C. Multiply the following.

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|--------------------|---------------------|--------------------|---------------------|
| 1. 8×1000 | 2. 5×40 | 3. 8×20 | 4. 6×70 |
| 5. 40×60 | 6. 9×700 | 7. 80×90 | 8. 40×30 |
| 9. 50×80 | 10. 11×900 | 11. 5×600 | 12. 10×300 |

D. Solve these word problems.

- There are 72 pages in a book. How many pages are there in 42 such books ?
- How many sweets are there in 65 packets of 100 sweets each ?

MATHS LAB

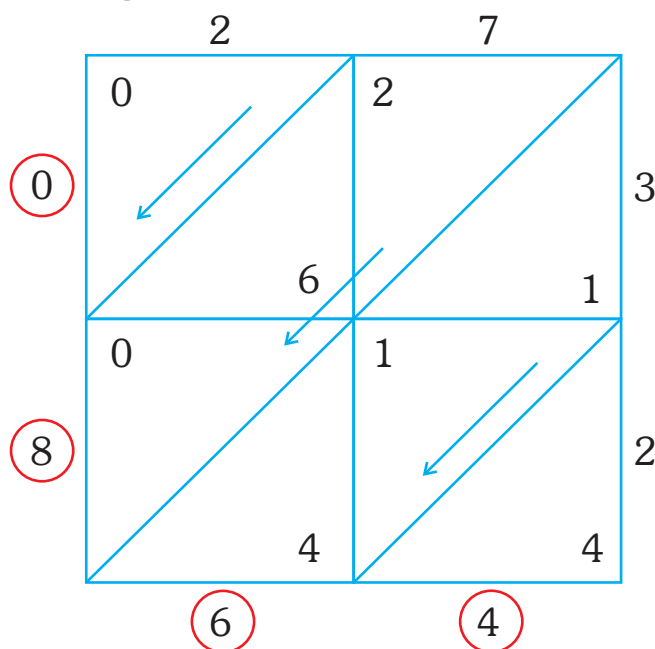
Objective : Multiplying the 2-digit numbers on Napier's Cards

Materials Required : A multiplication problem from your teacher and a card from the Math kit

Preparation : Students will do this activity individually and repeat it as many times as the cards are available in their math kit.

Steps : To solve a problem on Napier's cards, say 27×32 students can take the following steps.

1. Multiplication is rows \times columns. 27 is a 2-digit number. 32 is also a 2-digit number. Take a card from your math kit. The upper triangle shows the tens and the lower triangle shows the units or ones of the products. The numbers to be multiplied are shown on top and along the right side.
2. Multiply 7 by 3 and you get 21. There are 2 tens and 1 one. So, write 1 in the lower triangle and 2 in the upper triangle.
3. Next, multiply $2 \times 3 = 6$. There are no tens. Write 6 in the lower triangle and 0 in the upper triangle.
4. Now, multiply $7 \times 2 = 14$. So, write 4 in the lower triangle and 1 in the upper triangle of right column.
5. Multiply $2 \times 2 = 4$. Write 4 in the lower triangle of the left column.
6. Add the numbers and write the sums below, outside the box. Start reading from the left top, i.e., as 0864. Since a number cannot begin with a zero (0) the answer is 864.



So, $27 \times 32 = 864$.