

## <u>MATHEMATICS</u> MULTIPLICATION





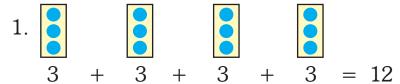
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## **MULTIPLICATION**

# READY ... STEADY

A. Write the multiplication facts.

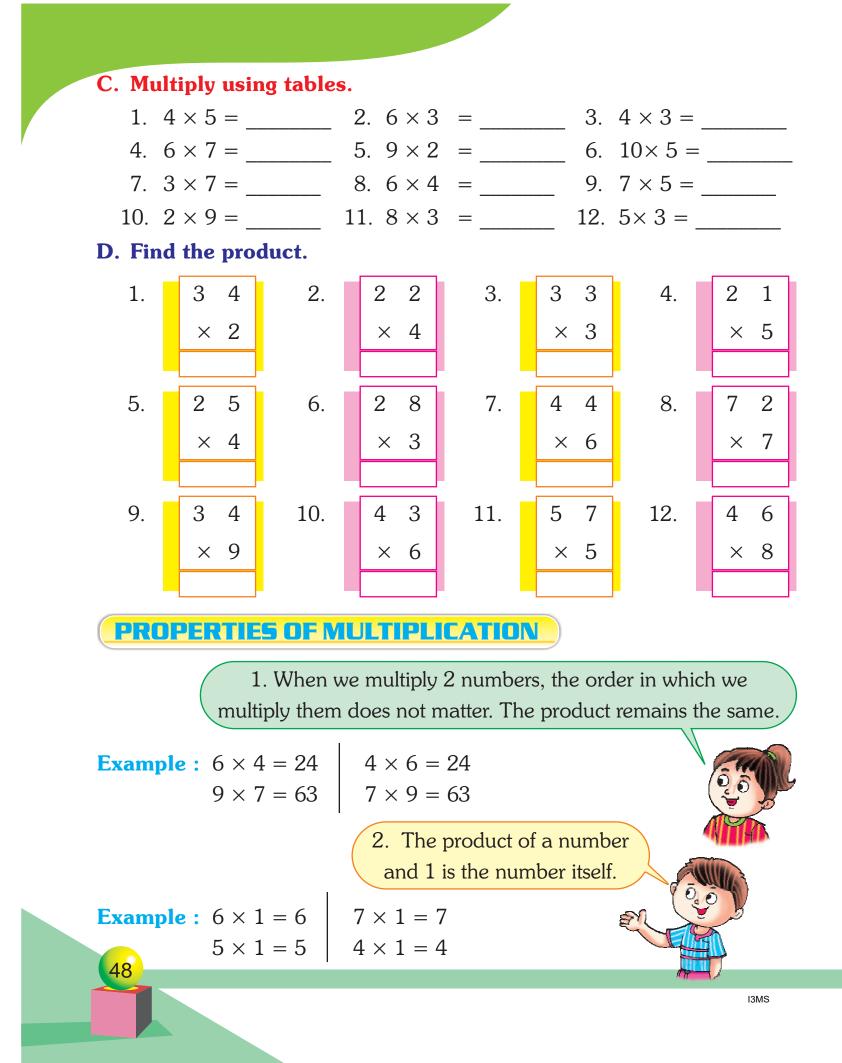


+ - x + + - x

- 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	6 - Table	9 - Table
1 × 4 =	1 × 6 =	1 × 9 =
2 × 4 =	2 × 6 =	2 × 9 =
3 × 4 =	3 × 6 =	3 × 9 =
4 × 4 =	4 × 6 =	4 × 9 =
5 × 4 =	5 × 6 =	5 × 9 =
6 × 4 =	6 × 6 =	6 × 9 =
7 × 4 =	7 × 6 =	7 × 9 =
8 × 4 =	8 × 6 =	8 × 9 =
9 × 4 =	9 × 6 =	9 × 9 =
10 × 4 =	10 × 6 =	10 × 9 =
	•	17



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.

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

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

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

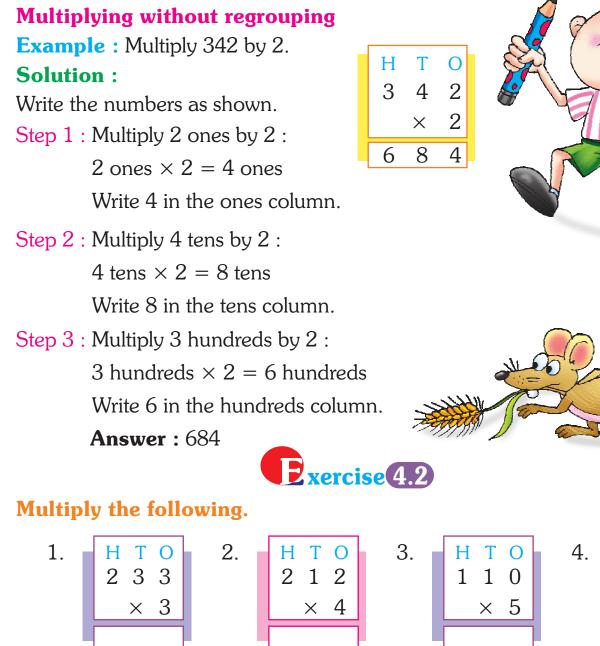


### Use the properties of multiplication to fill in the blanks.

1. 10 × 1 =	2. 8 × 9 = 9 ×
3. 105 × 0 =	4. 23 × 1 =
5. $(5 \times 6) \times 7 = (5 \times \_) \times 6$	6. $5 \times 6 = 6 \times$
7. 88 × 0 =	8. $4 \times (7 \times 8) = 7 \times (\_\_ \times 8)$
9. 44 × 0 =	10. 66 × 33 = × 66
11. $43 \times 19 \times 28 = 19 \times \_\_\_ \times 28$	12. 6507 × 0 =
13. 9999 × 1 =	14. $238 \times 42 = 42 \times$
15. 8000 × 0 =	16. $456 \times 5 \times 72 = 72 \times 5 \times$
17. 222 × 100 = 100 ×	
	49

### **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.



ΤΟ

1

7

1 1

Х

Η

7.

6.

5.

50

ΗΤΟ

1 0 1

 $\times 8$ 

3

Η

8.

ΤΟ

 $\times$  4

2 2 2

Η

ΤΟ

2

3 4 4

X

Η Τ Ο

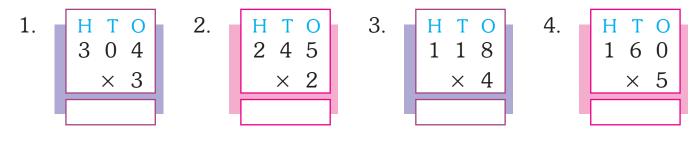
3 0 2

Х

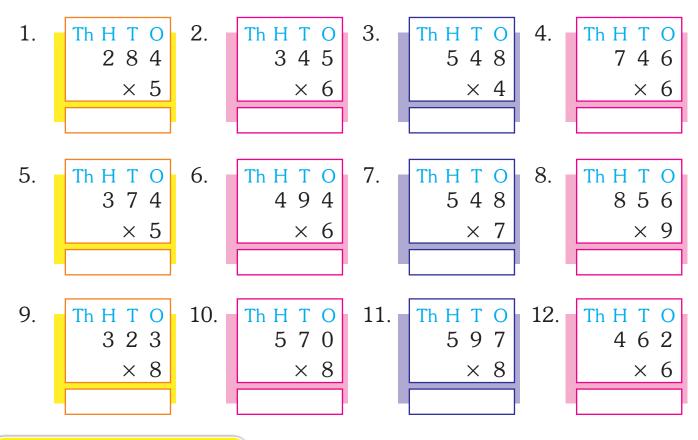
Multiplying with regrouping **Example 1**: Multiply 314 by 6. **Solution** : Step 1 : Multiply 4 ones by 6. 4 ones  $\times$  6 = 24 ones Th H  $\mathbf{O}$ 2 1 Regroup : 24 ones = 2 tens + 4 ones3 4 Write 4 in the ones column. 6 Х Carry 2 to the tens column. Step 2 : Multiply 1 ten by 6. 1 8 8 4  $1 \text{ ten } \times 6 = 6 \text{ tens}$ Add the carried over : 2 tens + 6 tens = 8 tensWrite 8 in the tens column. Step 3 : Multiply 3 hundreds by 6. 3 hundreds  $\times$  6 = 18 hundreds. 18 hundreds = 1 thousand + 8 hundreds.Write 8 in the hundreds column and 1 in the thousands column. **Answer** : 1884 **Example 2 :** Find the product :  $265 \times 7$ **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. Th H Τ Step 2 : Multiply 6 tens by 7. 4 3 2 6  $6 \text{ tens} \times 7 = 42 \text{ tens}.$ Х carried 3 tens + 42 tens = 45 tens. Write 5 in tens 8 5 1 place and carry 4 to the hundreds column. Step 3 : Multiply 2 hundreds by 7. 2 hundreds  $\times$  7 = 14 hundreds. carried 4 hundreds + 14 hundreds = 18 hundreds. Write 8 in the hundreds place and 1 in the thousands place. **Answer** : 1855



A. Multiply the following.



### **B.** Multiply the following.



### WORD PROBLEMS

52

**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 =  $36 \times 8$ 

= 288

H	$\frac{T}{4}$	0 6	
	×	8	
2	8	8	

# 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 :

 $3 \times 10 = 30$   $7 \times 10 = 70$   $20 \times 10 = 200$   $15 \times 10 = 150$ Do you find something in common ?

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



53

If we have to multiply a number by 20, 30, ..., 90 then what do we do ? **Example :**  $7 \times 20$  or  $7 \times 2$  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.

I3MS

## **MULTIPLYING BY HUNDREDS**

$5 \times 100$	=	$5 \times 1$ hundred	=	5 hundreds	=	500
$8 \times 200$	=	$8 \times 2$ hundreds	=	16 hundreds	=	1600
$13 \times 300$	=	$13 \times 3$ hundreds	=	39 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.



#### Multiply the following.

1. 31 >	× 30	2. 16 × 20	3. 15 × 30	4. 21 × 100
5. 11 >	× 800	6. 10 × 800	7. $34 \times 200$	8. 19 × 100
9. 64 >	× 70 1	$0.17 \times 500$	11. $19 \times 400$	12. 9 × 800

**MULTIPLYING BY 2-DIGIT NUMBERS** 

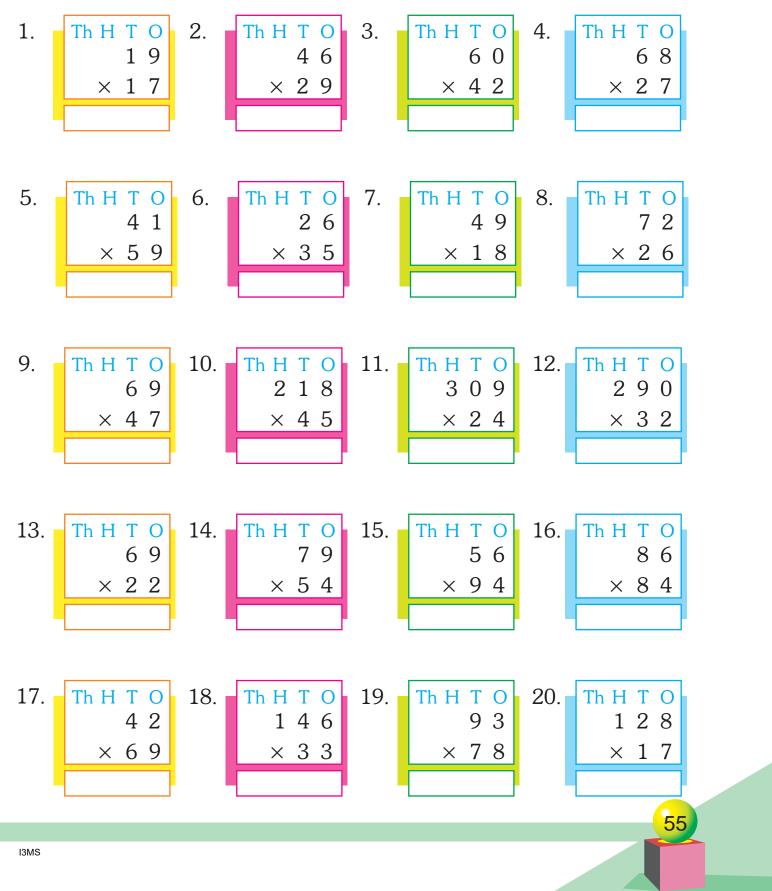
Example :	Multiply $74 \times 28$
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Solution : 28 = 20 + 8 74 is multiplied by 20 + 8, or 74 is multiplied by 20 and 74 is multiplied by 8 and the two products are added.

$74 \times 20 = 1480$	Short method
$74 \times 8 = 592$	Th H T O 7 4
1480 + 592 = 2072	$\times 28$
<b>Answer :</b> 2072	$5 9 2 \longrightarrow 74 \times 8$ 1 4 8 0 \longrightarrow 74 \times 20
	$2  0  7  2 \longrightarrow 74 \times 28$

# Exercise 4.6

Multiply the following in your note book.



## WORD PROBLEMS

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

#### **Solution** :

One bus carries

38 passengers

 $38 \times 42$ 

So, 42 buses carry =

= 1596 passengers



	Н	Т	0
		3	8
	$\times$	4	2
		7	6
1	5	2	0
1	5	9	6

- 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 ?

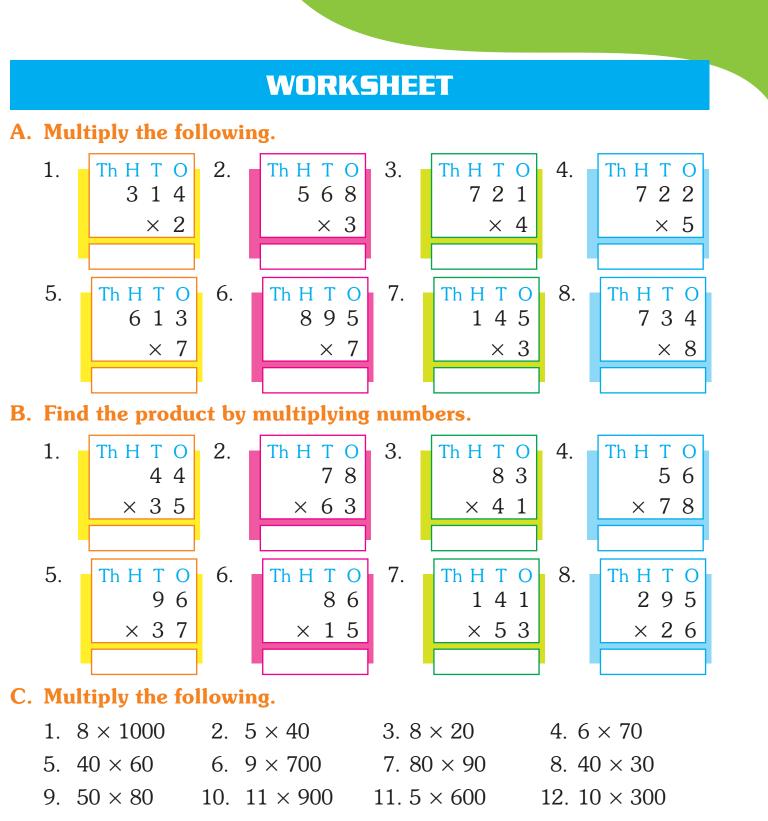
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- 4. There are 85 sweets in a tin. How many sweets are there in 35 tins ?
- 5. There are 64 pages in a note book. How many pages are there in 38 such note books ?
- 6. In a cinema theatre, there are 136 rows of chairs. In each row there are 72 chairs. How many chairs are there in all ?
- 7. How many pencils are there in 98 packets of 50 pencils each ?

56



- 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 ?



### **D.** Solve these word problems.

1. There are 72 pages in a book. How many pages are there in 42 such books ?

57

2. How many sweets are there in 65 packets of 100 sweets each ?

## MATHS LAB

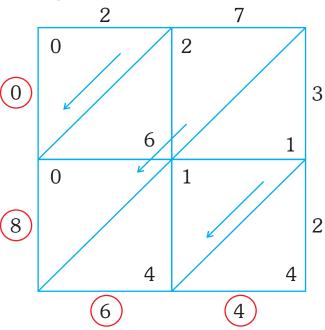
**Objective :** Multiplying the 2-digit numbers on Napier's Cards

**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  $27 \times 32$  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,  $27 \times 32 = 864$ .

58