5 Multiplication and Division

Multiplication

In Class 3, we have learnt how to multiply a given number by a number consisting of two or less digits. We have also studied the various properties of multiplication.

In a multiplication sum:

The number to be multiplied is called the Multiplicand.

The number by which we multiply is called the Multiplier.

And, the result of multiplication is called the Product.

Example: In $123 \times 4 = 492$, we have:
multiplicand = 123, multiplier = 4 and product = 492.

Properties of Multiplication

I. Order Property of Multiplication

Example 1: **Find the products: 36×23 and 23×36. What do you conclude?**

Solution: We have:

$$\begin{array}{r} 36 \\ \times\ 23 \\ \hline 108 \\ +\ 720 \\ \hline 828 \end{array} \qquad \begin{array}{r} 23 \\ \times\ 36 \\ \hline 138 \\ +\ 690 \\ \hline 828 \end{array}$$

Conclusion: We have, $36 \times 23 = 23 \times 36$.

We may take the products of other numbers, taken in pairs. We shall find in each case that by changing the order of numbers, the product is not changed.
This result is true for large numbers also. Thus,

The product of two numbers does not change, when the order of numbers is changed. This property is known as Order Property of Multiplication.

Assessment 4

QUESTION BAG 1

(Objective Type Q

Tick (✓) the correct answer.

1. Which of the following does not equal to 1500?
   (a) 3×500 (b) 300×50 (c) 30×50 (d) 300×5
2. Which of the following does not equal to 1800?
   (a) 60×30 (b) 45×40 (c) 90×20 (d) 150×12
3. Which of the following statements is correct?
   (a) $(8 \times 3) \times 4 = 8 \times (4 \times 3)$ (b) $(8 \times 4) \times 3 = 8 \times (4 + 3)$
   (c) $(8 \times 4) \times 3 = (8 \times 4) + 3$ (d) $(8 \times 4) \times 3 = (8 + 4) \times 3$
4. $11341 \div 11 = ?$
   (a) 131 (b) 1031 (c) 1310 (d) 1301
5. The product of all odd numbers between 3 and 8 is
   (a) 105 (b) 35 (c) 12 (d) 28
6. In which number sentence does 15 make the equation true?
   (a) $180 \div \square = 12$ (b) $150 \div \square = 15$
   (c) $100 \div \square = 4$ (d) $105 \div \square = 15$
7. $100 \times 1000 \times \ldots\ldots = 100000$
   (a) 10 (b) 1 (c) 0 (d) 100
8. Which digit should come in place of $\square$ so that the given multiplication is correct?
   (a) 1 (b) 5
   (c) 7 (d) 9

$$\begin{array}{r} 4\square 8 \\ \times \quad 8 \\ \hline 3984 \end{array}$$

9. 260×60 equals
   (a) 1260 (b) 12600 (c) 1560 (d) 15600
10. The remainder obtained on dividing 600 by 7 is
    (a) 3 (b) 4 (c) 5 (d) 6
11. $636 \times 100 = 636 \times 4 \times \ldots\ldots$
    The missing number is
    (a) 20 (b) 25 (c) 50 (d) 100
12. The product of two numbers is 2175. If one of the numbers is 15, the other number is
    (a) 125 (b) 135 (c) 145 (d) 155

How many 16s are there in
(a) 59
The number of 6s in the pr
(a) 2
The number of 3s in the q
(a) 1
Divide the largest 4-digit n
(a) 99
A school needs 1500 pen
(a) 50
A theatre has 68 rows of
(a) 1536
A man earns ₹ 2465 ever
(a) ₹ 73950
Mr Roy's car has done 1
(a) 38
How many 50-rupee not
(a) 163

1. Fill in the blanks.

(a) Multiplicand × Mu
(b) Division is equal
(c) Multiplication is
(d) Dividend is exact
(e) $983 \times 1 = \ldots\ldots$
(f) $628 \times 0 = \ldots\ldots$
(g) We cannot divid

13. How many 16s are there in 1264?
(a) 59 (b) 69 (c) 79 (d) 89

14. The number of 6s in the product 5555 × 3 is
(a) 2 (b) 3 (c) 4 (d) None of these

15. The number of 3s in the quotient of 4995 ÷ 15 is
(a) 1 (b) 2 (c) 3 (d) None of these

16. Divide the largest 4-digit number by the largest 2-digit number. The quotient obtained is
(a) 99 (b) 11 (c) 100 (d) 101

17. A school needs 1500 pencils in a year. How many boxes of 30 pencils each must the school buy?
(a) 50 (b) 500 (c) 300 (d) 450

18. A theatre has 68 rows of seats with 24 seats in each row. How many seats are there in the theatre?
(a) 1536 (b) 1632 (c) 1792 (d) 1904

19. A man earns ₹ 2465 every month. How much does he earn in 3 years?
(a) ₹ 73950 (b) ₹ 83810 (c) ₹ 88416 (d) ₹ 88740

20. Mr Roy's car has done 1248 km over 26 days. How many kilometres is that in one day?
(a) 38 (b) 43 (c) 46 (d) 48

21. How many 50-rupee notes can one get for ₹ 8650?
(a) 163 (b) 173 (c) 183 (d) 193

QUESTION BAG 2

1. **Fill in the blanks.**
(a) Multiplicand × Multiplier = ... Product
(b) Division is equal ..... sharing
(c) Multiplication is repeated .... addition while division is repeated ..... subtraction
(d) Dividend is exactly divisible by the divisor if the ..... remainder is zero.
(e) 983 × 1 = ... 983 ..... and 983 ÷ 1 = ... 983 .....
(f) 628 × 0 = ... 0 ..... and 0 ÷ 628 = ... 0 .....
(g) We cannot divide a number by ..... 0 ..... .

(h) The quotient and dividend are equal when the divisor is 1.

(i) The quotient is zero, if the dividend is zero.

(j) In the number 35486, place value of 5 × place value of 8 = 40000

(k) If multiplicand, multiplier and product are equal, then each of them is equal to 1

(l) If quotient is 1, then dividend = Divisor

(m) The three numbers whose product is equal to their sum are 1, 2, 3.

2. State whether each of the following statements is true or false.

(a) The remainder is always smaller than the divisor. T

(b) $1068 \div 0 = 0$ f

(c) $8182 \div 8182 = 1$. T

(d) The product is always greater than both the multiplicand and the multiplier. f

(e) Multiplication of a number by 10 increases the place value of a digit 10 times. T

(f) We divide the divisor by the dividend. f

3. Fill in the placeholders.

(a) $14 \times 5 =$ 70 (b) $16 \times 7 =$ 112 (c) $18 \times 4 =$ 72

(d) $12 \times 9 =$ 108 (e) $19 \times 2 =$ 38 (f) $15 \times 3 =$ 45

(g) $13 \times 6 =$ 78 (h) $17 \times 8 =$ 136 (i) $20 \times 5 =$ 100

4. Multiply:

(a) 1297×496 (b) 4829×385 (c) 5489×527

5. Multiply:

(a) $84 \times 100 =$ 8400 (b) $3000 \times 100 =$ 300000

(c) $60 \times 100 =$ 6000 (d) $9300 \times 100 =$ 930000

(e) $856 \times 1000 =$ 856000 (f) $6060 \times 1000 =$ 6060000

(g) $900 \times$ 100 $= 90000$ (h) $630 \times$ 1000 $= 630000$

6. Multiply:

(a) $63 \times 70 =$ 4410 (b) $30 \times 50 =$ 1500

(c) $246 \times 200 =$ 49200 (d) $84 \times 40 =$ 3360

(e) 505×90

(g) 96×300

(i) 78×800

7. **Divide:**

(a) $10648 \div 2$

8. What is the leas

9. The annual salar

0. How many minu

1. Multiply the grea

2. **Fill in the plac**

(a) $36 \div 18$

(c) $3600 \div 18$

(e) $9000 \div 3$

(g) $9000 \div 300$

3. **Complete the f**

	Divi
(a)	84
(b)	98
(c)	63
(d)	80

4. A travel agency pa one ticket?

5. A block of houses each flat has 3 roo

6. Divide the smalles

(e) 505×90 = 45450

(f) 999×30 = 29970

(g) 96×300 = 28800

(h) 44×600 = 26400

(i) 78×800 = 62400

(j) 222×70 = 15540

7. **Divide:**

(a) $10648 \div 27$ (b) $79041 \div 53$ (c) $60350 \div 86$

8. What is the least number that should be subtracted from 18448 to make it exactly divisible by 48?

9. The annual salary of a man is ₹ 2,92,380. What is his monthly salary?

10. How many minutes are there in the month of April?

11. Multiply the greatest 4-digit number with the greatest 2-digit number.

12. **Fill in the placeholders.**

(a) $36 \div 18$ = 2

(b) $360 \div 18$ = 20

(c) $3600 \div 18$ = 200

(d) $36000 \div 18$ = 2000

(e) $9000 \div 3$ = 3000

(f) $9000 \div 30$ = 300

(g) $9000 \div 300$ = 30

(h) $9000 \div 3000$ = 3

13. **Complete the following table.**

	Dividend	Divisor	Quotient	Remainder
(a)	84096	1000		
(b)	9804	100		
(c)	6356		63	
(d)	80702		80	

14. A travel agency paid ₹ 86886 as airfare for 18 tickets to travel from Delhi to Goa. What was the cost of one ticket?

15. A block of houses in a colony has 15 buildings. Each building has 7 storeys. Each storey has 4 flats and each flat has 3 rooms. How many rooms are there in the block?

16. Divide the smallest 5-digit number by 29.

6 Factors and Multiples

Factors

When a number divides another number exactly, then the divisor is called a factor of the dividend

Examples:

I. We know that 4 divides 12 exactly.

$\therefore$ 4 is a factor of 12.

II. We know that 7 divides 35 exactly.

$\therefore$ 7 is a factor of 35.

III. We know that $8 \times 9 = 72$.

Clearly, each one of 8 and 9 divides 72 exactly.

$\therefore$ Each one of 8 and 9 is a factor of 72.

IV. We know that $3 \times 4 \times 7 = 84$.

Clearly, each one of 3, 4 and 7 divides 84 exactly.

$\therefore$ Each one of 3, 4 and 7 is a factor of 84.

Solved Examples

Example 1: Is 11 a factor of 1034?

Solution: Let us divide 1034 by 11.

$$\begin{array}{r} 94 \\ 11\overline{)1034} \\ -99 \\ \hline 44 \\ -44 \\ \hline 0 \end{array}$$

Clearly, 11 divides 1034 exactly.

$\therefore$ 11 is a factor of 1034.

Example 2: Show that 15 is not a factor of 1309.

Solution: Let us divide 1309 by 15.

$$\begin{array}{r} 87 \\ 15\overline{)1309} \\ -120 \\ \hline 109 \\ -105 \\ \hline \end{array}$$

Clearly, on dividing 1309 by 15, we get 4 as remainder.

$\therefore$ 1309 is not completely divisible by 15.

Hence, 15 is not a factor of 1309.

Exercise 21

1. **Fill in the blanks.**
   (a) The smallest prime number is ..... 2 .....
   (b) The number which is neither prime nor composite is ..... 1 .....
   (c) The first odd prime number is ..... 3 .....
   (d) The smallest even composite number is ..... 4 .....
   (e) The smallest odd composite number is ..... 9 .....
   (f) All even numbers except 2 are ..... composite ..... numbers.
2. Write all prime numbers less than 40.
3. Write all prime numbers between 40 and 80.
4. Write all prime numbers between 80 and 100.
5. Write all composite numbers between 40 and 60.

Prime Factorisation

The method of expressing a composite number as the product of prime factors is called prime factorisa

We may resolve a number into its prime factors by building factor trees as under:

Step 1: Find the least prime number by which the given number is divisible. Resolve the number into factors taking this prime number as one of them.

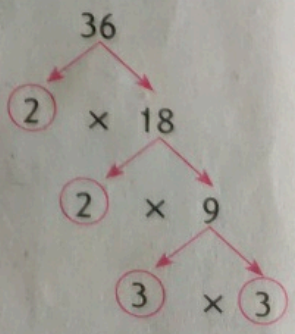
Step 2: Resolve the second factor further into two factors out of which at least one factor is prime.

Step 3: Go on splitting the factors till you get all the prime factors.

Step 4: Circle all the prime factors.

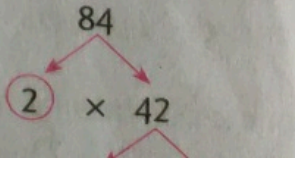
Example: **Find the prime factorisation of each of the following numbers by building factor tr**
(a) 36 (b) 84

Solution: (a) We have:



Thus, we write the prime factorisation of 36 as:
$36 = 2 \times 2 \times 3 \times 3$.

(b) We have:



Thus, we write

QUESTION BAG 1

(Objective Type Questions)

Tick (✓) the correct answer.

1. The smallest prime number is
   (a) 0 (b) 1 (c) 2 (d) 3
2. The number 24 has ..... factors.
   (a) two (b) four (c) six (d) eight
3. Pick out the prime number from the following:
   (a) 17 (b) 27 (c) 39 (d) 49
4. In which of the following is the first number not a factor of the second number?
   (a) 4, 76 (b) 12, 136 (c) 15, 495 (d) 18, 918
5. 8424 is divisible by
   (a) 2 (b) 3 (c) 9 (d) all of these
6. HCF of 36 and 48 is
   (a) 8 (b) 12 (c) 16 (d) 18
7. LCM of 3, 8 and 12 is
   (a) 12 (b) 16 (c) 18 (d) 24
8. Every number is a multiple of ..... .and ..... .
   (a) 0, 1 (b) 0, itself (c) 1, itself (d) None of these
9. Which of the following is a prime number?
   (a) 91 (b) 93 (c) 97 (d) 99
10. The sum of the least prime number and the least composite number is
    (a) 1 (b) 2 (c) 4 (d) 6
11. The number which is divisible by 3 but not by 9 is
    (a) 45 (b) 57 (c) 99 (d) 126
12. LCM of 6, 12 and 18 is
    (a) 18 (b) 36 (c) 24 (d) 72
13. The prime factorisation of 24 is
    (a) $2 \times 3 \times 4$ (b) 6×4 (c) 8×3 (d) $2 \times 2 \times 2 \times 3$
14. Which of the following statements is false?
    (a) Every number is both a factor and a multiple of itself.
    (b) 56 is a multiple of each one of 4, 7 and 8.
    (c) 1 is called a unique number because it has only one factor.
    (d) 30615 is divisible by 9.

15. The sum of prime numbers between 20 and 30 is

(a) 23 (b) 50 (c) 51 (d) 52

QUESTION BAG 2

1. Fill in the blanks.

(a) The smallest composite number is ...4... .
(b) ...1... is a factor of every number.
(c) The greatest prime number less than 100 is ...97... .
(d) There are ...3... prime numbers between 40 and 50.
(e) There are ...4... prime numbers between 1 and 10.
(f) Every non-zero number other than 1 has at least ...2... factors.
(g) Every non-zero number is the ...greatest... factor and ...least... multiple of itself.
(h) The multiples of 8 lying between 50 and 70 are ...56... and ...64... .
(i) The product is called a ...multiple... of each of the multiplicand and the multiplier.
(j) The only consecutive numbers which are prime are ...2... and ...3... .
(k) A number has limited number of factors and unlimited number of multiples.
(l) The smallest odd composite number is ...9... .
(m) The smallest number you should add to an odd number to make it even is ...1...

2. State whether each of the following statements is true or false.

(a) 1 is a composite number. ...F...
(b) 1 is a multiple of every number. ...F...
(c) 2, 4, 6, 8, 12 are all multiples of 4. ...F...
(d) No even number is a prime number. ...F...
(e) The multiple of an even number is always an even number. ...T...
(f) The multiple of an odd number can be an odd or an even number. ...T...
(g) Every number divisible by 10 is also divisible by 5. ...T...
(h) Every number divisible by 2 is also divisible by 6. ...F...
(i) A factor of a number may be greater than the number. ...F...
(j) Every odd number is not a prime number. ...T...
(k) A number which is not prime must be a composite number. ...F...
(l) The common factors of 30 and 36 are 1, 2, 3 and 6. ...T...
(m) To check if a number is a factor of the other, we divide. ...T...

3. State all the factors of:

(a) 54 (b) 84 (c) 144 (d) 196

4. (a) Write all the even multiples of 3 between 10 and 30.
(b) Write all the odd multiples of 7 between 20 and 50.