WHOLE NUMBER

NUMBERS

Number are mathematical symbol by which we express date, time, distance, position, quantity etc. We use ten symbols (0, 1, 2, 3 4, 5, 6, 7, 8, 9) to write any number.

CLASSIFICATION OF NUMBER

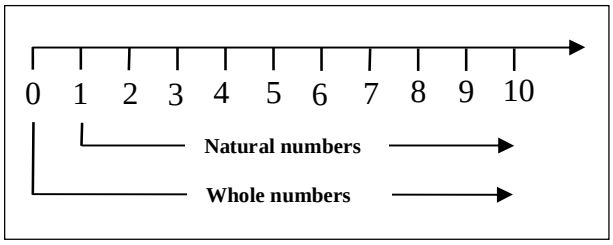
- **Natural numbers:** All counting numbers are known as natural numbers.

  N = { 1, 2, 3, 4, ... }.

- **Whole numbers:** All natural numbers together with 0 form the collection of all whole numbers.

  W = { 0, 1, 2, 3, 4, ... }.

  - Counting of Whole numbers starts from 0.
  - All natural numbers are whole numbers but all whole numbers are natural numbers not necessary.
  - The whole number can't be negative.



PROPERTIES OF WHOLE NUMBER

If a, b, c are any whole number, then

(i) Closure property for addition : a + b is a whole number.

(ii) Closure property for multiplication a × b is a whole number.

(iii) Commutative property for addition : a + b = b + a.

(iv) Commutative property for multiplication : a × b = b × a.

(v) Associative property for addition : a + (b + c) = (a + b) + c.

(vi) Associative property for multiplication: a × (b × c) = (a × b) × c.

(vii) Distributive property: a × (b × c) = a × b + a × c.

(viii) Identity for addition : a + 0 = 0 + a = a

(ix) Identity for multiplication: a × 1 = 1 × a = a.

(x) 0 ÷ a = 0 but a ÷ 0 is not defined.

- **Even Numbers:** All natural numbers which are divisible by 2 are called even numbers. Even numbers are denoted by the expression **2n**, where n is any natural number.

  So, if E is a set of even numbers, then **E = {2, 4, 6, 8, ...}.**

- **Odd Numbers:** All natural numbers which are not divisible by 2 are called odd numbers.

  Odd numbers are denoted by the general expression **2n – 1 or 2n + 1** where n is any natural number.

  If O is a set of odd numbers, then

  O = { 1, 3, 5, 7, 9, ...}.

WORKSHEET

1. Which is the smallest whole number ?

(A) 0 (B) 2 (C) 1 (D) 3

2. The product of the successor and predecessor of 99 is

(A) 9800 (B) 9900

(C) 1099 (D) 9700

3. For a 15, b = 7, c = 3, check whether

(a) $a \times (b + c) = (a \times b) + (a \times c)$

(b) $(a \times b) \times c = a \times (b \times c)$

(c) $(a + b) + c = a + (b + c)$

(d) $(a - b) - c = a - (b - c)$

4. Find the value of

(a) $3128 \times 124 - 3128 \times 24$

(b) $541 \times 10 \times 367 - 267 \times 5410$

5. The product of a whole number (other than zero) and its successor is

(A) an even number (B) an odd number

(C) divisible by 4 (D) divisible by 3

6. Find the difference between smallest natural number and smallest whole number.

7. Simplify : $126 \times 55 + 126 \times 45$

8. Add the numbers 234, 197 and 103. By using Associative Property.

9. Study the following pattern and write its next two steps:

$1 \times 8 + 1 = 9$

$12 \times 8 + 2 = 98$

$123 \times 8 + 3 = 987$

$1234 \times 8 + 4 = 9876$

$12345 \times 8 + 5 = 98765$

10. Find the value of $783 \times 999 + 783$.

11. Find the value of $2528 \times 136 - 2528 \times 36$.

12. A taxi driver filled his car petrol tank with 40 litres of petrol on Monday. The next day, he filled the tank with 50 litres of petrol. If the petrol costs Rs. 44 per litre, how much did he spend in all on petrol ?

13. Find the product by suitable rearrangement:

(a) $8 \times 391 \times 125$ (b) $2 \times 1234 \times 50$

14. If you're on a diet and have a breakfast consisting of 150 calories, a lunch consisting of 350 calories, and a dinner consisting of 1000 calories, then find the sum of the calories consumed that day.

15. The school canteen charges 20 Rs. for lunch and Rs. 4 for milk for each day. How much money do you spend in 5 days on these things ?

16. A taxi driver filled his car fuel tank with 45 litres petrol on Monday. The next day again he filled the tank with 35 litres petrol. If the petrol costs ` 65 per litre, how much did he spends on petrol in two days ?

17. Give five pairs of numbers whose sum or difference is 990.

18. Find the product of the largest 3-digit and 5-digit numbers using distributive property.

19. If the cost of one scooter is ` 24,350, find the cost of 999 scooters.

20. If the cost of one air-conditioner is ` 16, 350, find the cost of 101 air-conditioners.

SOLUTION SHEET

Sol.1 (A) 0

Sol.2 **(A)** We know that

So the successor of 99 = 99 + 1 = 100

We get predecessor of 99 = 99 – 1 = 98

Product of them = 100 × 98 = 9800

3. For Self

Sol.4 (a) 3128 × [124 – 24]

3128 × 100 = 312800

(b) 5410 × 367 – 267 × 5410

5410 × (367 – 267)

5410 × (100)

= 541000

Sol.5 **(A)** Consider whole number = 1

So the successor of 1 = 1 + 1 = 2

Product between them = 1 × 2 = 2

Hence, 2 is an even number.

Sol.6 Smallest natural number = 1

Smallest whole number = 0

Difference = 1 – 0 = 1

Sol.7 126 × 55 + 126 × 45 = 126 × (55 + 45)

= 126 × 100 = 12600

Sol.8 234 + 197 + 103

= 234 + (197 + 103)

= 234 + 300 = 534

Sol.9 123456 × 8 + 6 = 987654

1234567 × 8 + 7 = 9876543

Sol.10 783 × 999 + 783

= (783 × 999) + (783 × 1)

= 783(999 + 1)

(Distributive property of multiplication over addition)

= 783 × 1000 = 7,83,000

Sol.11 2528 × 1336 – 2528 × 36

= 2528 (136 – 36) (Distributive)

= 2528 × 100 = 2,52,800

Sol.12 Petrol filled on Monday = 40 litres.

Petrol filled the next day = 50 litres

∴ Total petrol filled on the two days = 40 litres + 50 litres = 90 litres.

∴ Cost of petrol per litre = Rs. 44

∴ Cost of 90 litres petrol = Rs. 44 × 90 = Rs. 3960.

Sol.13 (a) 8 × 391 × 125 = 391 × (125 × 8)

= 391 × 1000 = 391,000

(b) 2 × 1234 × 50 = 1234 × (2 × 50)

= 1234 × 100

= 123,400

Sol.14 Breakfast consisting of 150 calories. Lunch consisting of 350 calories. Dinner consisting of 1000 calories. The sum of the calories consumed that day is 150 + 350 + 1000 = 1500 calories.

Sol.15 Cost of lunch = 5 × 20 = Rs. 100

Cost of milk = 5 × 4 = Rs. 20

Total coast = Rs. (100 + 20) = Rs. 120

Sol.16 65 × (45 + 35)

= 65 × (80)

= ` 5200

Sol.17 1000 – 10 = 990

1100 – 110 = 990

890 + 100 = 990

790 + 200 = 990

690 + 300 = 990

Sol.18 999 × 99999

999 × (100000 – 1)

= 99900000 – 999

= 99899001

Sol.19 24350 × (999)

24350 × (1000 – 1)

= 24350000 – 24350

= 24325650

Sol.20 16350 × (101)

16350 × (100 + 1)

= 1651350