# CLASS - VI

# CHAPTER – 2

# WHOLE NUMBERS

# Module – 3/3

## 1. Patterns in Whole Numbers

Some numbers like 4 or 9 can also be arranged as squares;

$$4 \longrightarrow \quad \vdots \vdots \qquad 9 \longrightarrow \quad \vdots \vdots \vdots$$

Some numbers can also be arranged as triangles.

For example,

$$3 \longrightarrow \quad \therefore \qquad 6 \longrightarrow \quad \therefore$$

Note that the triangle should have its two sides equal. The number of dots in the rows starting from the bottom row should be like 4, 3, 2, 1. The top row should always have 1 dot.

We shall try to arrange numbers in elementary shapes made up of dots. The shapes we take are (1) a line (2) a rectangle (3) a square and (4) a triangle. Every number should be arranged in one of these shapes. No other shape is allowed.

Now, complete the table :

| Number | Line | Rectangle | Square | Triangle |
|--------|------|-----------|--------|----------|
| 2 | Yes | No | No | No |
| 3 | Yes | No | No | Yes |
| 4 | Yes | Yes | Yes | No |
| 5 | Yes | No | No | No |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |

Answer the following questions:

1. Which numbers can be shown only as a line?

2. Which can be shown as squares?

3. Which can be shown as rectangles?

4. Write down the first seven numbers that can be arranged as triangles, e.g. 3, 6, ...

Patterns with numbers are not only interesting, but are useful especially for verbal calculations and help us to understand properties of numbers better.

**Patterns Observation**

Observation of patterns can guide you in simplifying processes. Study the following:

(a) 117+9 = 117+10 −1 = 127−1 = 126

(b) 117−9 = 117−10 +1 = 107+1 = 108

(c) 117 + 99 = 117+100−1 = 217−1 = 216

(d) 117 − 99 = 117−100+1 = 17+1 = 18

Does this pattern help you to add or subtract numbers of the form

9, 99, 999,…?

Here is one more pattern :

(a)  84×9 =84×(10−1)                    (b)  84 × 99 = 84 × (100 − 1)

Such shortcuts enable you to do sums verbally.

(i)  $96 \times 5 = 96 \times \dfrac{10}{2} = \dfrac{960}{2} = 480$  (ii) $96 \times 25 = 96 \times \dfrac{100}{4} = \dfrac{9600}{4} = 2400$

(iii) $96 \times 125 = 96 \times \dfrac{1000}{8} = \dfrac{96000}{8} = 12000\ldots$

## EXERCISE

**1**.  Which of the following will not represent zero:

(a) 1 + 0          (b)  0 × 0          (c) $\dfrac{0}{2}$          (d) $\dfrac{10 - 10}{2}$

2.  If the product of two whole numbers is zero, can we say that one or both of them will be zero? Justify through examples.

3.  Write the successor of :  (a) 2440701 (b) 100199 (c) 1099999 (d) 2345670

4.  Write the predecessor of : (a) 94 (b) 10000 (c) 208090 (d) 7654321

5.  Find : 7 + 18 + 13; 16 + 12 + 4

6.  Find : 25 × 8358 × 4 ; 625 × 3759 × 8

7.  Find 15 × 68; 17 × 23; 69 × 78 + 22 × 69 using distributive property.

8.  Simplify: 126 × 55 + 126 × 45

9.  A taxidriver 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?

10. A vendor supplies 32 litres of milk to a hotel in the morning and 68 litres of milk in the evening. If the milk costs Rs 15 per litre, how much money is due to the vendor per day?

11. Find the value of the following:

    (a) 297 × 17 + 297 × 3 (b) 54279 × 92 + 8 × 54279

    (c)  81265 × 169 – 81265 × 69 (d) 3845 × 5 × 782 + 769 × 25 × 218

12. Find the product using suitable properties.

    (a) 738 × 103 (b) 854 × 102 (c) 258 × 1008 (d) 1005 × 168

13. Find using distributive property :

    (a) 728 × 101 (b) 5437 × 1001 (c) 824 × 25 (d) 4275 × 125 (e) 504 × 35

14. Find the sum by suitable rearrangement:

    (a) 837 + 208 + 363 (b) 1962 + 453 + 1538 + 647

**15.** Find the product by suitable rearrangement:

(a)  2 × 1768 × 50      (b)  4 × 166 × 25    (c)  8 × 291 × 125

(d)  625 × 279 × 16    (e)  285 × 5 × 60    (f)  125 × 40 × 8 × 25

**16.** A dealer purchased 139 VCRs. If the cost of each set is Rs 14350, find the cost of all the sets together.

**17.** A housing society constructed 397 houses. If the cost of construction for each house is Rs. 325000, what is the total cost for all the houses?

**18.** Using distributive property, find the following product?

(a) 937 x 105        (b) 346 x 1007          (c) 947 x 96    (d) 996x 267

**19.** 50 chairs and 30 blackboards were purchased for a school. If each chair casts Rs. 165 and a blackboard costs Rs. 445, find the total amount of the bill.

**20.**  The product of two whole numbers is zero. What do you conclude.

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