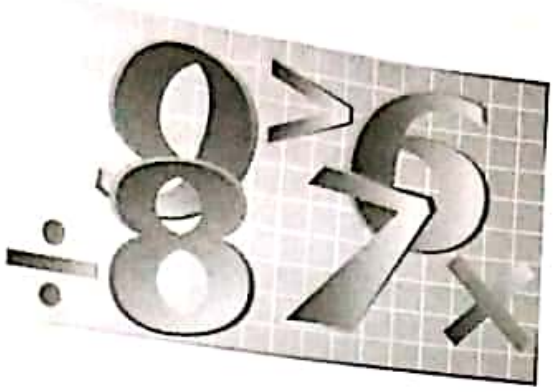
25 Activities



Activity–1

Objective (i) To verify that addition is commutative for whole numbers, and
(ii) to verify that multiplication is commutative for whole numbers

Materials Required (a) Two grid papers in which each square is of dimension 1 cm × 1 cm
(b) Slips of paper in two different colours (red and green) and measuring 1 cm × 1 cm
(c) Glue

Theory (i) Addition of whole numbers is commutative, e.g., $4 + 5 = 5 + 4$.
(ii) Multiplication of whole numbers is commutative, e.g., $3 \times 4 = 4 \times 3$.

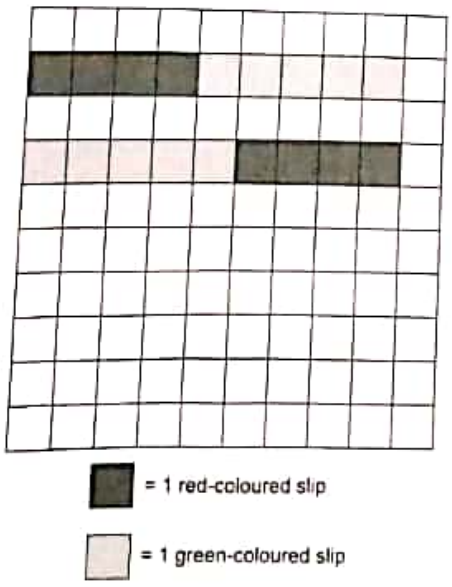
Procedure

Step 1. Take a grid paper, a few red-coloured slips and a few green-coloured slips.

Step 2. In one row of squares on the grid paper, paste 4 red-coloured slips followed by 5 green-coloured slips.

Step 3. In another row of squares below the above-mentioned row, paste 5 green-coloured slips followed by 4 red-coloured slips.

Step 4. We observe that the number of squares covered in the first row is equal to the number of squares covered in the second row. This shows that $4 + 5 = 5 + 4$.



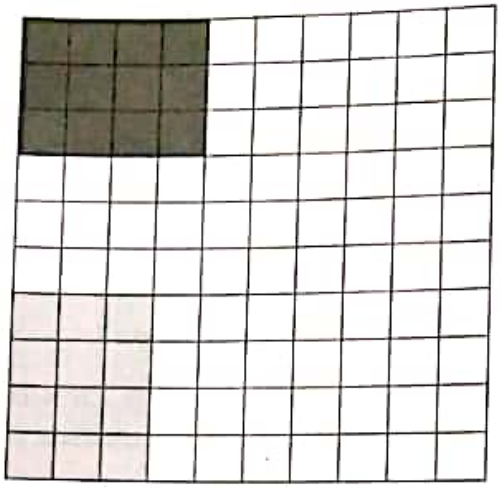
(i)

Step 5. Take another grid paper, some red-coloured slips and some green-coloured slips.

Step 6. Paste red-coloured slips in 3 rows of 4 squares each on the grid paper.

Step 7. Moving below, paste green-coloured slips in 4 rows of 3 squares each.

Step 8. We observe that the number of squares covered by the red-coloured slips is equal to the number of squares covered by the green-coloured slips. This shows that $3 \times 4 = 4 \times 3$.



(ii)

Result It is verified that:

(i) Addition is commutative for whole numbers.

(ii) Multiplication is commutative for whole numbers.

Remarks The above procedure can be repeated for other numbers, to verify the commutative property of addition and multiplication of whole numbers.

Activity–2

Objective To find prime numbers from 1 to 100 by the method 'sieve of Eratosthenes'

Materials Required (a) Grid paper having squares of dimension 1 cm × 1 cm
(b) A black sketch pen
(c) A pair of scissors

Theory To check whether a number less than 100 is a prime number or not, we have to test its divisibility by 2, 3, 5 and 7 only.

Procedure

Step 1. Cut out a 10 × 10 grid from the grid paper.

Step 2. Write numbers from 1 to 100 in this grid, as shown in the figure (i).

Step 3. Cross out 1.

Step 4. Encircle 2 and cross out remaining multiples of 2, i.e., 4, 6, 8, 10, ..., 100.

Step 5. Encircle 3 and cross out remaining multiples of 3, i.e., 6, 9, 12, 15, ..., 99.

Step 6. Encircle 5 and cross out remaining multiples of 5, i.e., 10, 15, 20, 25, ..., 95.

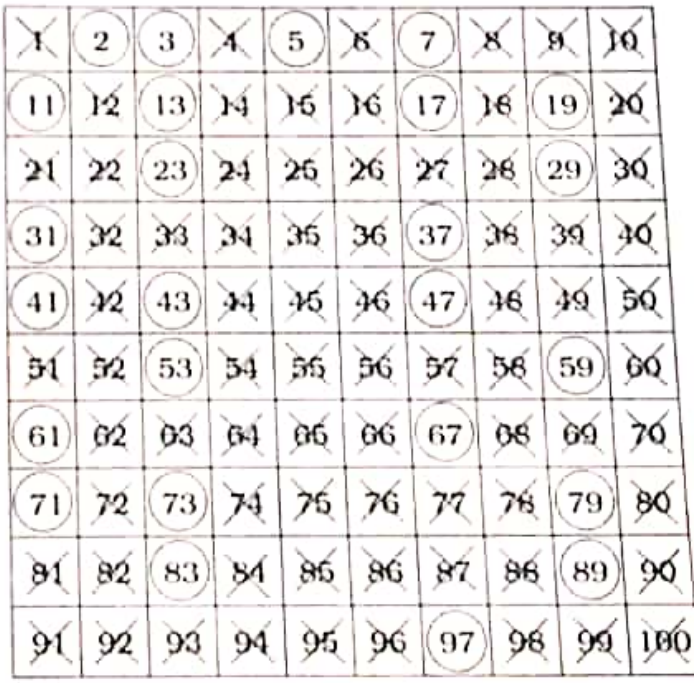
Step 7. Encircle 7 and cross out remaining multiples of 7, i.e., 14, 21, 28, 35, ..., 91.

Step 8. Encircle each one of the remaining numbers.

Step 9. The grid appears as shown in the figure (ii).

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

(i)



(ii) Sieve of Eratosthenes

Result In the sieve of Eratosthenes shown in the figure (ii), all the encircled numbers ar prime numbers and all the crossed numbers except 1 are composite numbers.