



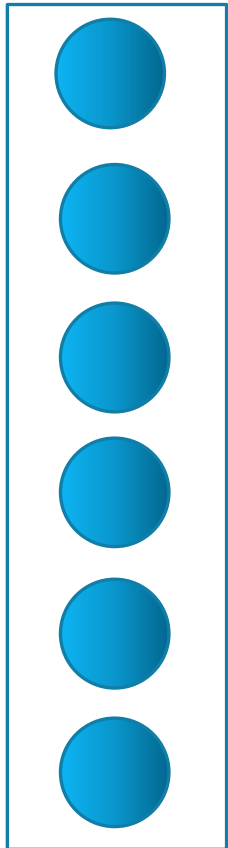
CHAPTER-3

PLAYING WITH NUMBERS

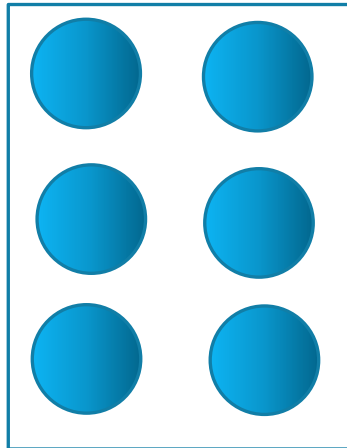
AECS ANUPURAM
MODULE 1/2

LET'S BEGIN WITH A GAME!

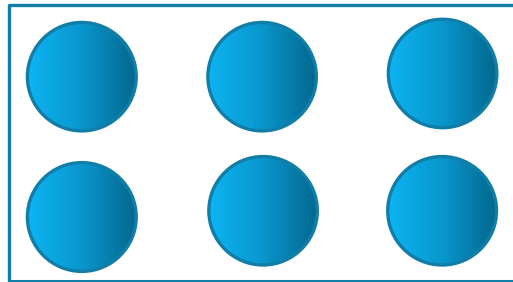
➤ There are six marbles. What are the possible ways of arranging them in rows ?



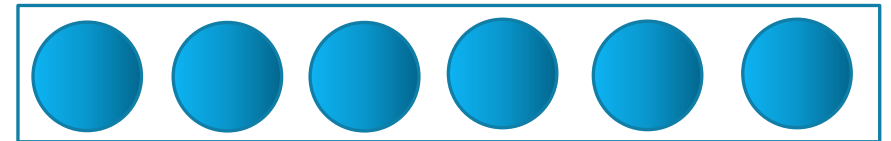
1 x 6



2 x 3



3 x 2



6 x 1

6 can be written as the product of two numbers in different ways: $6=1 \times 6$; $6=2 \times 3$; $6=3 \times 2$; $6=6 \times 1$

WHAT ARE FACTORS?

- A factor of a number is an exact divisor
- 1 is a factor of every number
- Every number is a factor of itself
- Every factor is less than or equal to the given number
- Number of factor of a given number are finite

WHAT ARE MULTIPLES?

- A number is a multiple of its factors
- Every multiple of a number is greater than or equal to that number
- Number of multiples of a given number is infinite
- Every number is a multiple of itself

PERFECT NUMBERS

➤ A number for which the sum of all its factors is equal to twice the number is called a perfect number

e.g. Factors of 6 are = 1, 2, 3 and 6

$1 + 2 + 3 + 6 = 12 = \text{Twice the number } 6$

EXAMPLE-1

➤ Question: Write all the factors of 50

➤ Solution:

$$50 = 1 \times 50$$

$$50 = 2 \times 25$$

$$50 = 5 \times 10$$

$$50 = 10 \times 5$$

$$50 = 25 \times 2$$

$$50 = 50 \times 1$$

➤ Thus, all the factors of 50 are: 1, 2, 5, 10, 25 & 50

EXAMPLE-2

➤ Question: Write the first five multiples of 20

➤ Solution:

$20 \times 1 = 20$
$20 \times 2 = 40$
$20 \times 3 = 60$
$20 \times 4 = 80$
$20 \times 5 = 100$

➤ The required multiples are 20, 40, 60, 80 & 100

EXERCISE-1

1. Write all the factors of the following numbers

(a)15 (b)21 (c)28 (d)40 (d)27 (e)36 (f)100

2. Write the first five multiples of

(a)4 (b)6 (c)8 (d)10 (e)7

3. Complete the table by writing the multiples of 9 up to 100

9		27			54					99
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PRIME NUMBERS AND COMPOSITE NUMBERS

NO.	FACTORS	NO. OF FACTORS
1	1	1
2	1,2	2
3	1,3	2
4	1,2,4	3
5	1,5	2
6	1,2,3,6	4
7	1,7	2
8	1,2,4,8	4
9	1,3,9	3
10	1,2,5,10	4
11	1,11	2
12	1,2,3,4,6,12	6

➤ The number 1 has only one factor(i.e. itself)

➤ 2,3,5,7,11,etc are having exactly two factors 1 and the number itself

➤ There are numbers 4,6,8,9,10,12,etc having more than two factors

THINGS TO REMEMBER



- 1 is neither prime nor composite
- Prime numbers: Numbers(other than 1)with only two factors namely 1 and itself
- Composite numbers: Numbers that have more than two factors

SIEVE OF ERATOSTHENES METHOD : STEP-1

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

STEP-2

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

STEP-3

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

STEP-4

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

STEP-5

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

- All the encircled numbers are prime
- All the crossed-out numbers are composite

THINGS TO REMEMBER



- 2 is the smallest prime number and is even
- Every prime number other than 2 is odd
- Two prime numbers whose difference is 2 are called twin primes

EXERCISE-2

1. Write all the prime numbers between 1 and 100.
2. What is the greatest prime number between 1 and 50?
3. Write 7 consecutive composite numbers less than 100 so that there is no prime numbers in between.
4. Express the following as a sum of two odd primes
(a)34 (b)24 (c)54 (d)48 (e)72
5. Give three pairs of twin primes
6. Express the following as the sum of three odd primes
(a)39 (b)41 (c)29 (d)47 (e)55

thank you!