

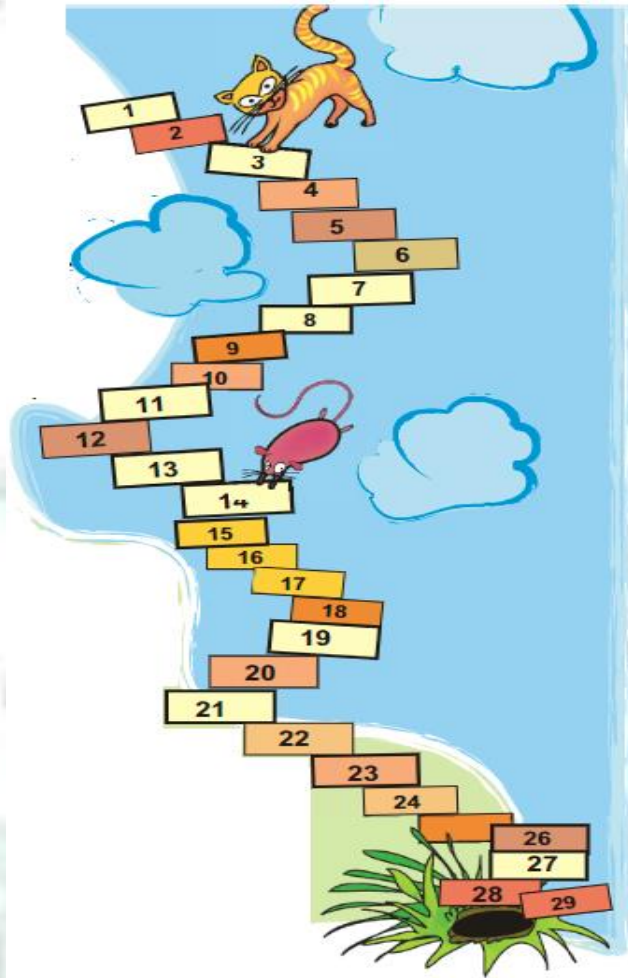


पुर्णमा International School
Shree Swaminarayan Gurukul, Zundal

Grade - V
Maths
Specimen
copy
Year 21-22

Chapter – 6

Be My Multiple, I'll Be Your Factor

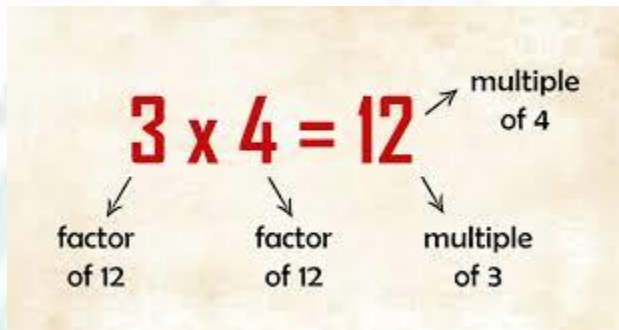


Key Points to Remember

- Introduction.
- Highest common factor by prime factorization method
- Lowest common factor by prime factorization method
- Make the factor tree by prime factorization method
- Activity.

❖ **Introduction.**

- Factor – A number is said to be a factor of another number if it can divide the number completely.
Example – $6 \div 3 = 2$
- 1 is the factor of every number. It is also the smaller factor of a number.
- Multiples – A number is said to be a multiple of another number if it can be divided completely by that number.
Example – 2 can divide 4 completely. So, 4 is a multiple of 2.



- Prime numbers – The numbers having only two factors – 1 and the number itself are called prime numbers.
Example –

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

- **Composite numbers** – The numbers having more than two factors are called composite numbers.
Example – 4, 6, 8, 9, 10, 12
- 1 is either a prime or a composite number.

❖ **Highest common factor (H.C.F.)**

While doing prime factorization by division method, start dividing the given number by the smallest prime number and continue till we are left with 1.

1. 8 and 12

$$\begin{array}{r|l} 2 & 8 \\ \hline 2 & 4 \\ \hline 2 & 2 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$8 = 2 \times 2 \times 2$$

$$12 = 2 \times 2 \times 3$$

$$\text{H.C.F} = 2 \times 2 = 4$$

Thus, H.C.F. of 8 and 12 is 4

2. 10 and 25

$$\begin{array}{r|l} 2 & 10 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$10 = 2 \times 5$$

$$25 = 5 \times 5$$

$$\text{H.C.F.} = 5$$

Thus, H.C.F. of 10 and 25 is 5.

3. 10, 15 and 55

$$\begin{array}{r|l} 2 & 10 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 5 & 55 \\ \hline 11 & 11 \\ \hline & 1 \end{array}$$

$$10 = 2 \times 5$$

$$15 = 3 \times 5$$

$$55 = 5 \times 11$$

$$\text{H.C.F.} = 5$$

Thus, H.C.F. of 10, 15 and 55 is 5.

4. 200, 120 and 240

$$\begin{array}{r|l} 2 & 200 \\ \hline 2 & 100 \\ \hline 2 & 50 \\ \hline 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 120 \\ \hline 2 & 60 \\ \hline 2 & 30 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 240 \\ \hline 2 & 120 \\ \hline 2 & 60 \\ \hline 2 & 30 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$200 = 2 \times 2 \times 2 \times 5 \times 5$$

$$120 = 2 \times 2 \times 2 \times 3 \times 5$$

$$240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$$

$$\text{H.C.F.} = 2 \times 2 \times 2 \times 5$$

Thus, H.C.F. of 200, 120 and 240 is 40.

5. 35, 105 and 140

5	35
7	5
	1

3	105
5	35
7	7
	1

2	140
2	70
5	35
7	7
	1

$$35 = 5 \times 7$$

$$105 = 3 \times 5 \times 7$$

$$140 = 2 \times 2 \times 5 \times 7$$

$$\text{H.C.F.} = 5 \times 7$$

Thus, H.C.F. of 35, 105 and 140 is 35.

❖ **Lowest common multiple. (L.C.M.)**

1. 6, 8 and 12.

2	6, 8, 12
2	3, 4, 6
2	3, 2, 3
3	3, 1, 3
	1, 1, 1

$$\text{L.C.M} = 2 \times 2 \times 2 \times 3$$

Thus, L.C.M of 6, 8 and 12 is 24.

2. 24 and 30

2	24	30
2	12	15
2	6	15
3	3	15
5	1	5
	1	1

L.C.M = $2 \times 2 \times 2 \times 3 \times 5 = 120$
Thus, L.C.M. of 24 and 30 is 120.

3. 60 and 282

2	60	282
2	30	141
3	15	47
5	5	47
47	1	47
	1	1

L.C.M = $2 \times 2 \times 3 \times 5 \times 47 = 2820$
Thus, L.C.M. of 60 and 282 is 2820.

4. 102, 119 and 153

2	102, 119, 153
3	51, 119, 153
3	17, 119, 51
7	17, 119, 17
17	17, 17, 17
	1 1 1

L.C.M = $2 \times 3 \times 3 \times 7 \times 17 = 2142$
Thus, L.C.M. of 102, 119 and 153 is 2142.

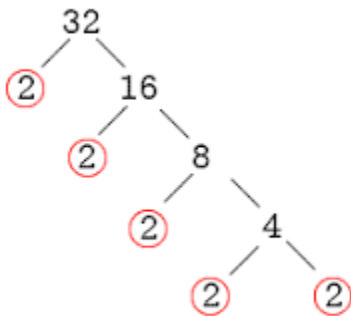
5. 36, 48 and 72

2	36, 48, 72,
2	18, 24, 36
2	9, 12, 18
2	9, 6, 9
3	9, 3, 9
3	3, 1, 3
	1, 1, 1

L.C.M = $2 \times 2 \times 2 \times 2 \times 3 \times 3 = 144$
Thus, L.C.M. of 36, 48 and 72 is 144.

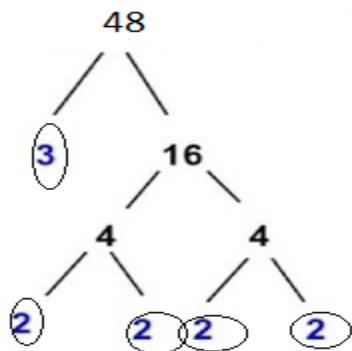
❖ **Make the factor tree.**

1. 32



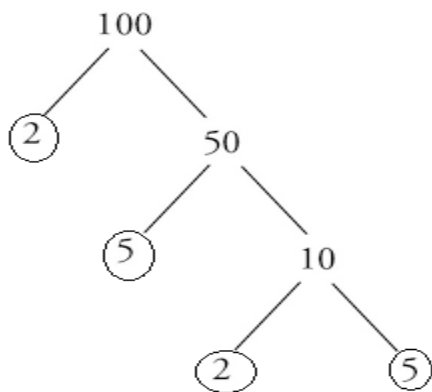
Factors of 32 = $2 \times 2 \times 2 \times 2 \times 2$

2. 48



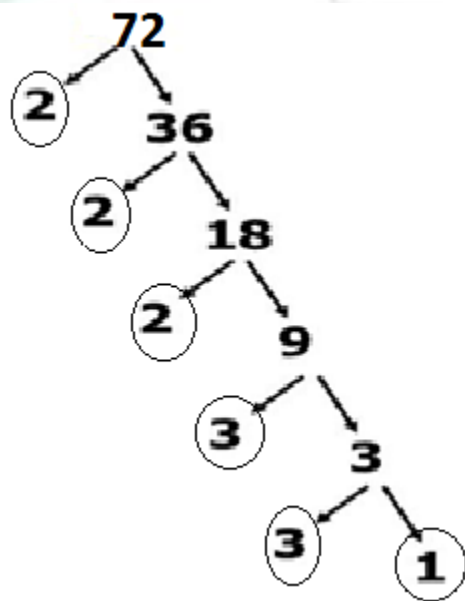
Factors of 48 = $2 \times 2 \times 2 \times 2 \times 3$

3. 100



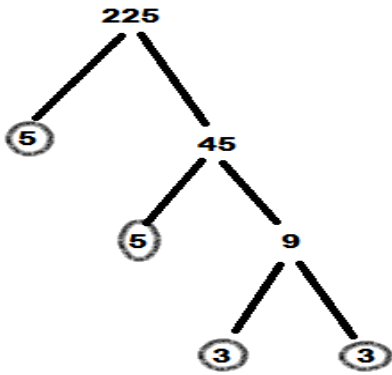
Factors of 100 = $2 \times 2 \times 5 \times 5$

4. 72



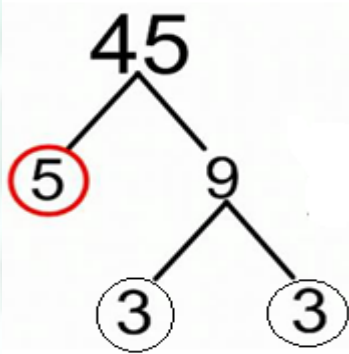
Factors of 72 = $1 \times 2 \times 2 \times 2 \times 3 \times 3$.

5. 225



Factors of 225 = $3 \times 3 \times 5 \times 5$

6. 45



Factors of 45 = $3 \times 3 \times 5$

❖ **Word problems:**

1. There are three buckets containing 24 L, 36 L and 48 L of milk. Find the capacity of smallest bucket that can measure the milk in the three buckets.

Solution –

The capacity of the smallest required bucket will be the L.C.M. of 24, 36 and 48. So we find the L.C.M.

2	24 , 36 , 48
2	12 , 18 , 24
3	6 , 9 , 12
2	2 , 3 , 4
2	1 , 3 , 2
3	1 , 3 , 1
	1 , 1 , 1

$$\text{L.C.M.} = 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 144$$

Thus L.c.m of 24, 36 and 48 is 144.

2. Three plastic containers contain 400 L, 500 L and 600 L of oil. Find the capacity of the largest container that can be filled an exact number of times from each drum.

Solution –

The capacity of the largest required container will be the H.C.F. of 400, 500 and 600. So we find the H.C.F.

2	400	2	500	2	600
2	200	2	250	2	300
2	100	5	125	2	150
2	50	5	25	3	75
5	25	5	5	5	25
5	5		1	5	5
					1

$$400 = 2 \times 2 \times 2 \times 2 \times 5$$

$$500 = 2 \times 2 \times 5 \times 5 \times 5$$

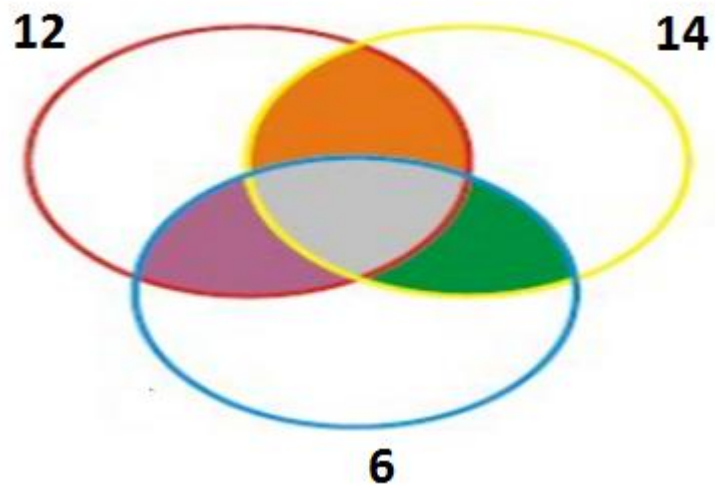
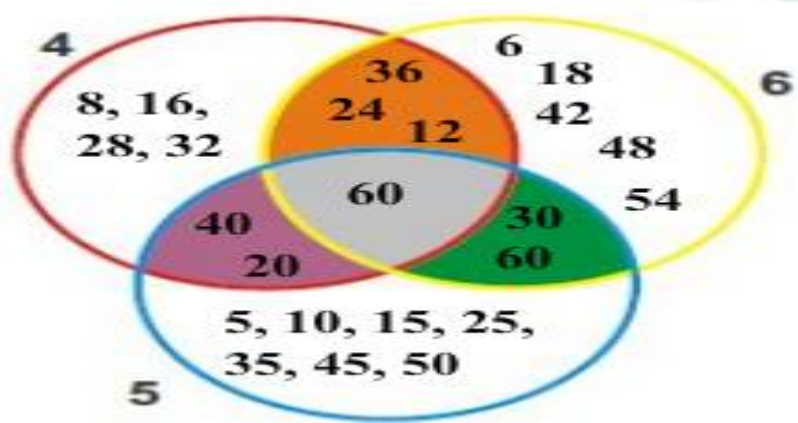
$$600 = 2 \times 2 \times 2 \times 3 \times 5 \times 5$$

$$\text{H.C.F. is } 2 \times 2 \times 5 = 20$$

So, the capacity of required container is 20 L.

Activity

- ❖ Make venn diagram of common multiples:
For example (text book page no 92)



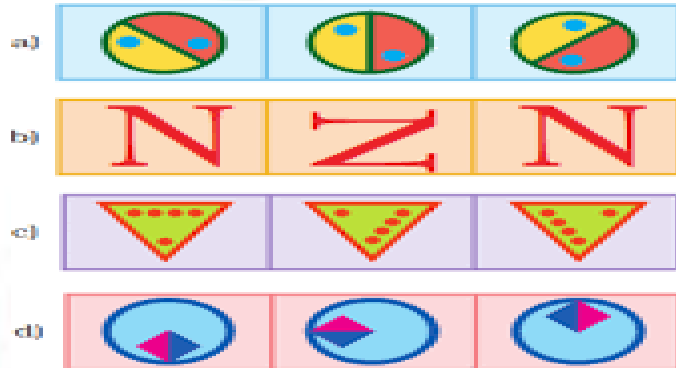
Chapter – 7

Can You See the Pattern?

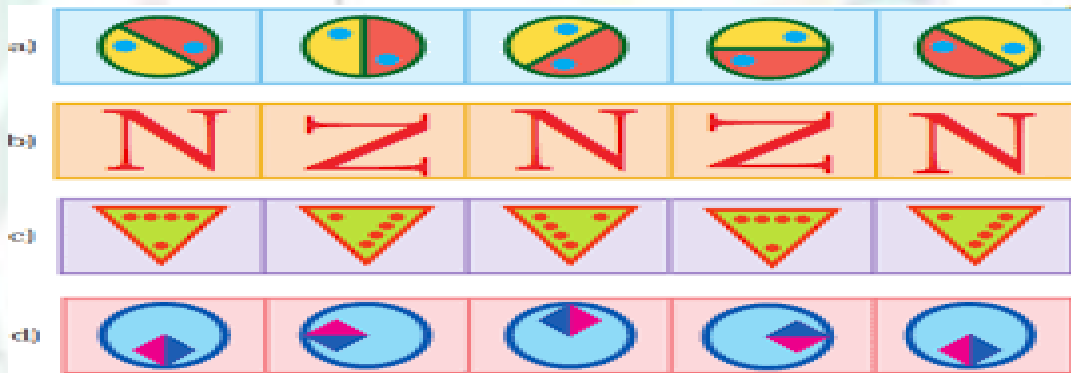
Key Points To Remember

- Complete the pattern
- Numbers and numbers.
- Magic Hexagon
- Magic square
- Activity

❖ Complete the pattern.(Do it in text book page no 100 and 101)



Answer

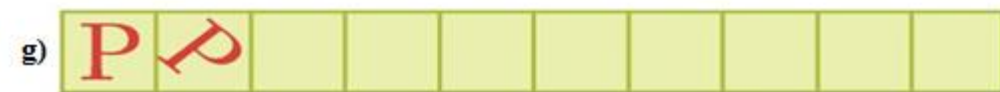




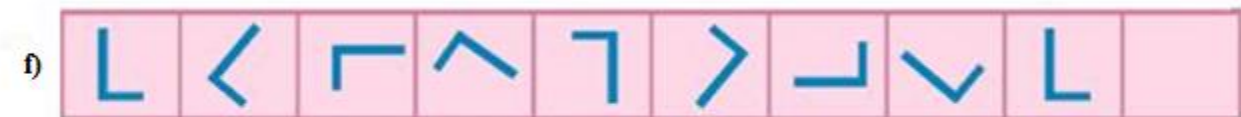
The **rule** of the pattern is — turning by 45° each time. Which will be the next? Tick (✓) the right one.



Using the same rule take it forward till you get back to what you started with.



Answer.

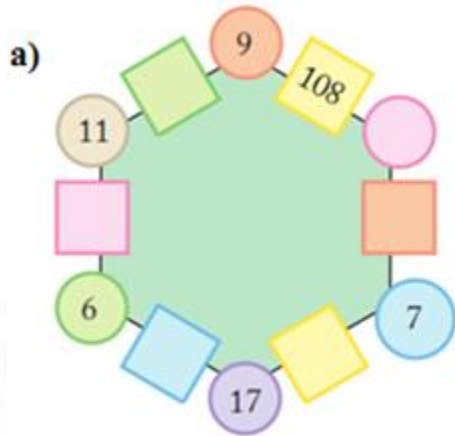


❖ **Numbers and numbers. (Do it in text book page no 105)**

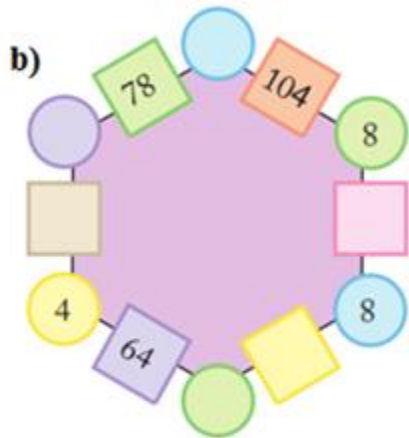
• **Fill in the blanks:**

1. $24 + \underline{19} + 37 = 37 + 24 + 19$
2. $215 + 120 + 600 = 600 + \underline{215} + 120$
3. $14 + \underline{34} + \underline{20} = 34 + 14 + 20$
4. $\underline{80} + 42 + \underline{65} = 65 + \underline{42} + 80$
5. $200 + 300 + \underline{400} = \underline{200} + \underline{300} + 400$
6. $48 \times 13 = 13 \times \underline{48}$
7. $\underline{64} \times 55 = 55 \times 64$
8. $255 \times 15 \times 4 = \underline{15} \times 255 \times 4$
9. $14 \times \underline{70} \times 5 = 14 \times 5 \times 70$

❖ **Magic Hexagon.**



Solution –
 $108 \div 9 = 12$
 $12 \times 7 = 84$
 $7 \times 17 = 119$
 $17 \times 6 = 102$
 $6 \times 11 = 66$
 $11 \times 9 = 99$



Solution –
 $104 \div 8 = 13$

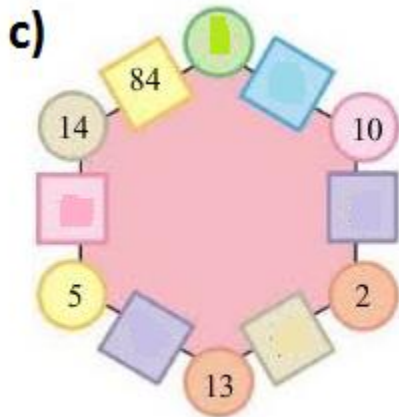
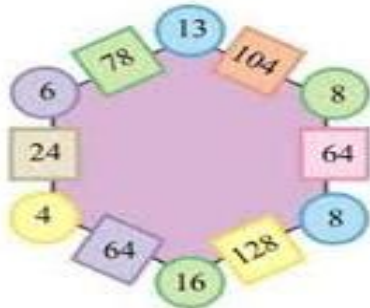
$$78 \div 13 = 6$$

$$6 \times 4 = 24$$

$$64 \div 4 = 16$$

$$16 \times 8 = 128$$

$$8 \times 8 = 64$$



Solution –

$$10 \times 2 = 20$$

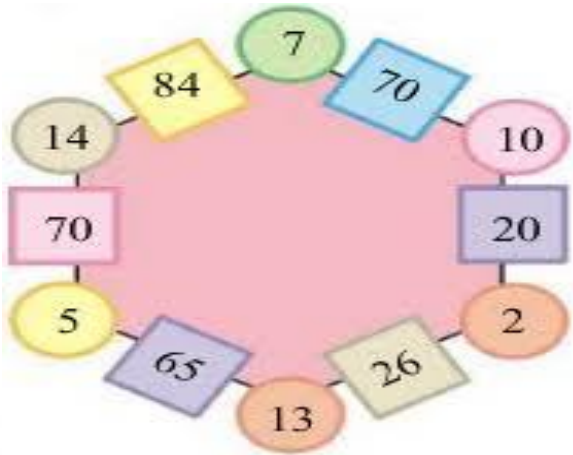
$$2 \times 13 = 26$$

$$13 \times 5 = 65$$

$$5 \times 14 = 70$$

$$84 \div 14 = 6$$

$$6 \times 10 = 60$$



❖ **Magicsquare**

1. Fill this square using all the numbers from 46 to 54.
Rule: The total of each line is 150.

		49
46		
	52	47

Solution –

$$150 - (49 + 47) = 54$$

$$150 - (52 + 47) = 51$$

$$150 - (51 + 46) = 53$$

$$150 - (53 + 49) = 48$$

$$150 - (48 + 52) = 50$$

	48	49
53		
46	50	54

51	52	47
----	----	----

2. Fill this square using all the numbers from 6 to 14.

Rule: The total of each line is 30.

13		11
		7
	10	

Solution –

$$30 - (11 + 7) = 12$$

$$30 - (12 + 10) = 8$$

$$30 - (8 + 13) = 9$$

$$30 - (13 + 11) = 6$$

$$30 - (6 + 10) = 14$$

13	6	11
9	14	7
8	10	12

3. Fill this square using all the numbers from 21 to 29.

Rule: The total of each line is 75.

		28
	25	
22	27	

Solution –

$$75 - (25 + 27) = 23$$

$$75 - (23 + 28) = 24$$

$$75 - (24 + 22) = 29$$

$$75 - (29 + 25) = 21$$

$$75 - (28 + 21) = 26$$

24	23	28
29	25	21
22	27	26

❖ Activity (Do it in text book page no 111)

For Example –

b) ☆ Take a number

☆ Double it × 2 =

☆ Multiply by 5 × 5 =

☆ Divide your answer by 10 ÷ 10 =

b) ☆ Take a number

☆ Double it × =

☆ Multiply by 5 × =

☆ Divide your answer by 10 ÷ =

c) ☆ Take a number

☆ Double it × =

☆ Again double it × =

☆ Add the number you took first to the answer + =

☆ Now again double it × =

☆ Divide by 10 ÷ =