Patterns

1. for each pattern, given below write the next three steps.

i) 1×9+1=10
12+9+2=110
123×3×9+=1110
1234+9+4=11110
~~9×9+7=88~~
~~98×9+6=888~~
~~987×9+5=8888~~
12345×9+5=111110
123456×9+6=1111110

2) 9×9+7=88
98×9+6=888
987×9+5=8888
9876×9+4=88888
7) 98765×9+3=888888
987654×9+2=88,88,888

ii) 1×8+1=9
12×8+2=98
~~123×~~123×8+3=987
1234×8+4=9876
12345×8+5=98765
123456×8+6=987654

iii) 111÷3=37
222÷6=37
333÷9=37
444÷12=37
555÷15=37
666÷18=37

2. complete each of the following magic squares.

i)

6	7		
	5	9	
8	3	4	

Sum for row-wise is as follows

~~6+9+8~~ = 6+7+2 = 15

1+5+9=15

8+3+4=15

Sum for column wise is as follows.

6+1+8=15

7+5+3=15

2+9+4=15

sum for diagonal wise is as follows.

6+5+4=15

2+5+8=15

Hence, the magic square

iii)

16	2	12
6	10	14
8	18	4

Row wise sum is follows

16+2+12=30

6+10+14=30

8+18+4=30

column wise sum is as follows.

16+6+8=30

2+10+18=30

12+14+4=30

Diagonal wise sum is as follow

16+10+4=30

12+10+8=30
Hence, the magic square is.

ii)

4	9	8
11	7	3
6	5	10

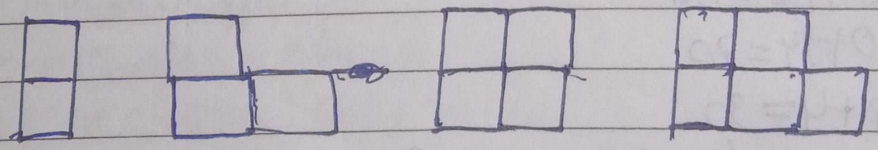
Row wise sum is as follows:

4+9+8=21
11+7+3=21
6+5+10=21
column wise sum is as follow

4+11+6=21
9+7+5=21
8+3+10=21
Diagonal wise sum is as follows

9+7+10=21
8+7+6=21
Hence the magic square is

3. See the following pattern carefully:



i) If n denotes the number of figures and S denotes the number of match sticks;

ii) Find S in term of n.

ii) Find how matches are required to make the

1) 15th figure

2) 40th figure

iii) Write a description of the pattern in words.

Ans. The table is

$S = 3n + 4$

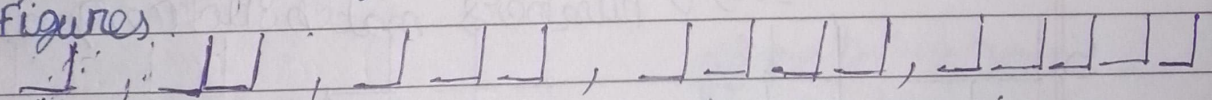
N	1	2	3	4
	7	10	13	16

ii) 1) 15th Figure has $= 3 \times 15 + 4$
$= 49$ matches

2) 40th figure has $= 3 \times 40 + 4$
$= 124$ matches.

(iii) It is clear that each time the figure (n) is increased by 4, the number of matches (S) are increased by 3

4. (i) In the following pattern, draw the next two figures

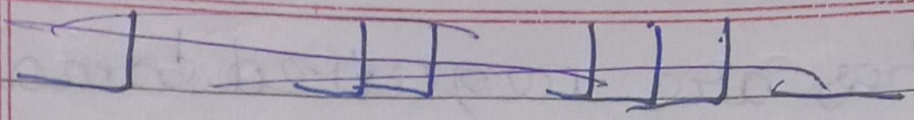


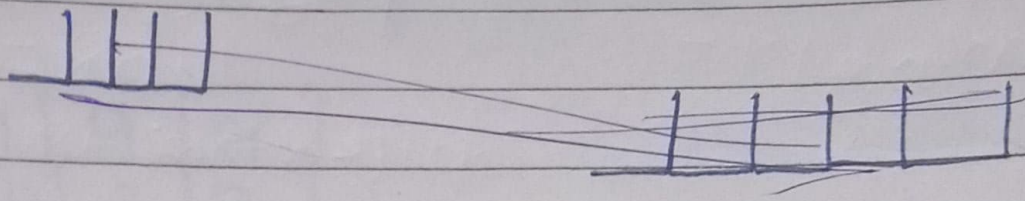
ii) Construct a table to describe the figures in the above pattern.

iii) If n denotes the number of figure and L denotes the number of matchsticks, find.

iv) Find how many matchsticks are required to make the:

1) 12th figure
2) 20th Figure





N	1	2	3	4	5
L	2×1=2	4	6	8	10

2×2=4 2×3=6 2×4=8 2×5=10

ii) The table is given above

iii) Hence, the value of L is
$L = 2n$

iv) 1) Number match sticks in 12th figure = 2×12=24

2) Number match sticks in 20th figure = 2×20=40