

# Ex-5.6

$$1 \cdot (i) \quad 1 \times 9 + 1 = \underline{10}$$

$$1 \underline{2} \times 9 + 2 = \underline{110}$$

$$1 \underline{23} \times 9 + 3 = \underline{1110}$$

$$1 \underline{234} \times 9 + 4 = \underline{11110}$$

$$1 \underline{2345} \times 9 + 5 = \underline{111110}$$

$$1 \underline{23456} \times 9 + 6 = \underline{1111110}$$



(i)  $9 \times 9 + 1 = 88$   
 $98 \times 9 + 6 = 888$   
 $987 \times 9 + 5 = 8888$   
 $9876 \times 9 + 4 = 88888$   
 $98765 \times 9 + 3 = 888888$   
 $987654 \times 9 + 2 = 8888888$

(ii)  $1 \times 8 + 1 = 9$   
 $12 \times 8 + 2 = 98$   
 $123 \times 8 + 3 = 987$   
 $1234 \times 8 + 4 =$   
 $12345 \times 8 + 5 = 65$   
 $123456 \times 8 + 6 = 654$

(iv)  $111 \div 3 = 37$   
 $222 \div 6 = 37$   
 $333 \div 9 = 37$   
 $444 \div 12 = 37$   
 $555 \div 15 = 37$   
 $666 \div 18 = 37$

8. 5. 21

Magic Squares

Rows (R)

(i) Sum of R1 =  $6 + 7 + 2 = 15$   
 Sum of R2 =  $1 + 5 + 9 = 15$   
 Sum of R3 =  $8 + 3 + 4 = 15$

Column (C)

Sum of C1 =  $6 + 1 + 8 = 15$   
 Sum of C2 =  $7 + 5 + 3 = 15$   
 Sum of C3 =  $2 + 9 + 4 = 15$

Diagonal (D)

Sum of D1 =  $6 + 5 + 4 = 15$   
 Sum of D2 =  $2 + 5 + 8 = 15$

6	7	2
1	5	9
8	3	4



(ii)  $R_1 \rightarrow 4+9+8=21$   
 $R_2 \rightarrow 11+7+3=21$   
 $R_3 \rightarrow 6+5+10=21$

4	9	8
11	7	3
6	5	10

$C_1 \rightarrow 11+6+4=21$   
 $C_2 \rightarrow 9+7+5=21$   
 $C_3 \rightarrow 8+3+10=21$

$D_1 \rightarrow 4+7+10=21$   
 $D_2 \rightarrow 8+7+6=21$

(iii)  $R_1 \rightarrow 16+2+12=30$   
 $R_2 \rightarrow 6+10+14=30$   
 $R_3 \rightarrow 8+18+4=30$

16	2	12
6	10	14
8	18	4

$C_1 \rightarrow 16+6+8=30$   
 $C_2 \rightarrow 2+10+18=30$   
 $C_3 \rightarrow 12+14+4=30$

$D_1 \rightarrow 16+10+4=30$   
 $D_2 \rightarrow 12+10+8=30$

3. (1)  $S = 3n + 4$   
 (i) 15<sup>th</sup> figure. (ii) 40<sup>th</sup> figure  
 (iii) Write the description of the pattern in words.

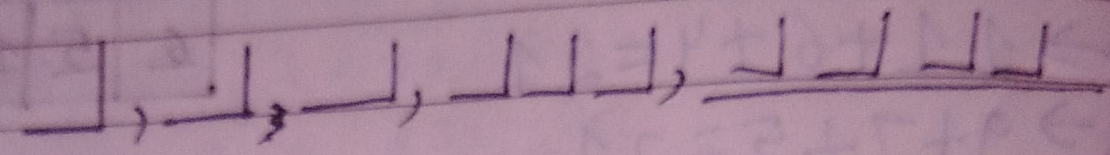
N	1	2	3	4	5	6	7
S	7	10	13	16	19	22	25

Ans: (i) 15<sup>th</sup> figure  
 15<sup>th</sup> figure has =  $3 \times 15 + 4$   
 = 49 matches

(ii) 40<sup>th</sup> figure  
 40<sup>th</sup> figure has =  $3 \times 40 + 4$   
 = 124 matches



(iii) Ans: It is clear that each time the figure is increased by 4, the number of matchsticks are increased by 3.

4. (i) 

(ii)

n	1	2	3	4	5
L	2	4	6	8	10

(iii) Hence, the value of L is

$$L = 2n$$

(iv) (1) 12<sup>th</sup> figure

Number of matchsticks in 12<sup>th</sup> figure =  $2 \times 12 = 24$

(2) 20<sup>th</sup> figure

Number of matchsticks in 20<sup>th</sup> figure =  $2 \times 20 = 40$

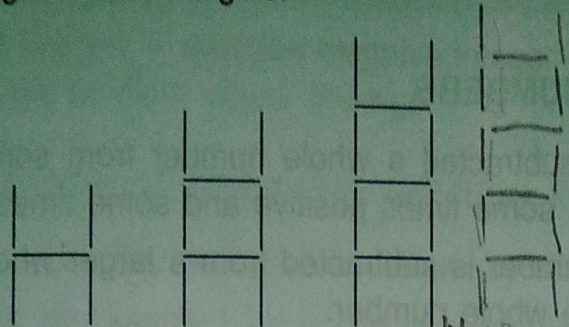


5. In each of the following patterns, construct the next figure.

(i) In each case, if  $n$  denotes the number of figures and  $F$  denotes the number of matchsticks used, find  $F$  in terms of  $n$ .

(ii) Also find, in each case, how many matchsticks are required to make the :  
16<sup>th</sup> figure and 30<sup>th</sup> figure.

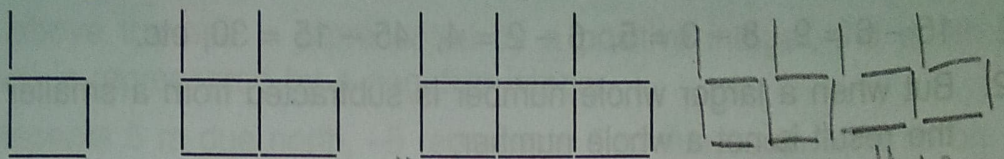
(a)



$F = 3n + 2$

16<sup>th</sup> figure = 50m 30<sup>th</sup> figure = 92m

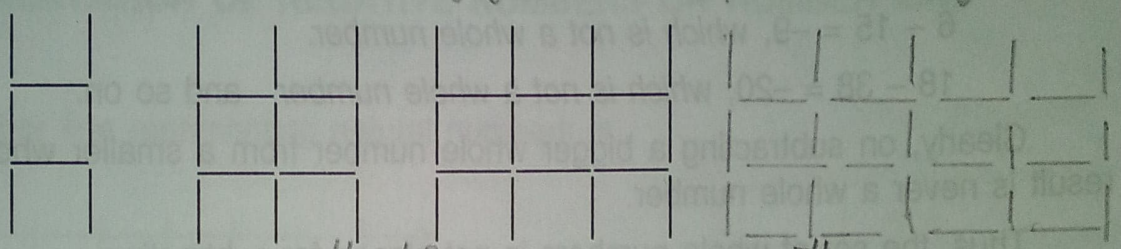
(b)



$F = 4n + 1$

16<sup>th</sup> figure = 65m 30<sup>th</sup> figure = 121m

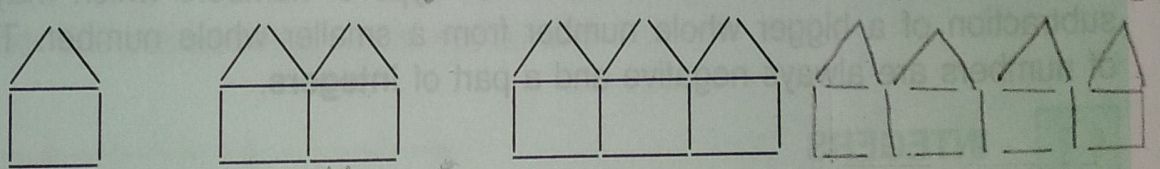
(c)



$F = 5n + 3$

16<sup>th</sup> figure = 83m 30<sup>th</sup> figure = 153m

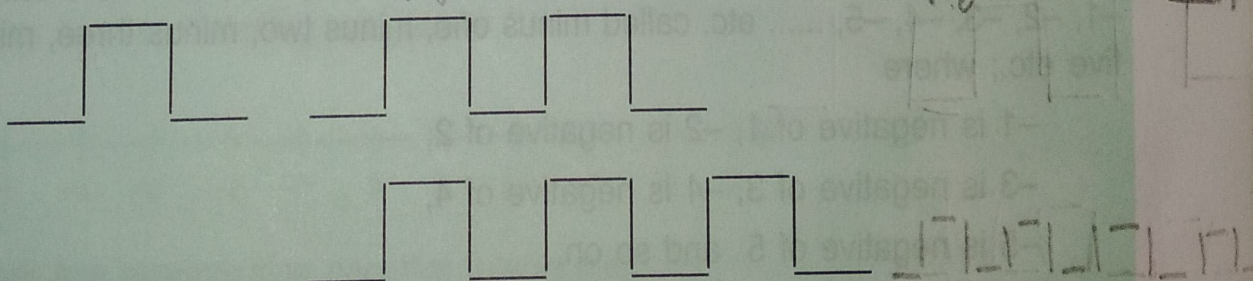
(d)



$F = 5n + 1$

16<sup>th</sup> figure = 81m 30<sup>th</sup> figure = 151m

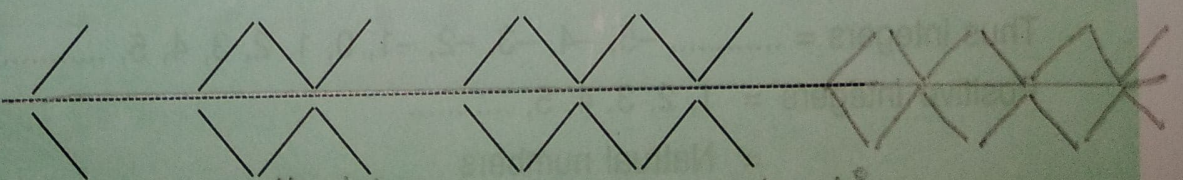
(e)



$F = 4n + 1$

16<sup>th</sup> figure = 65m 30<sup>th</sup> figure = 121m

(f)



$F = 4n - 2$

16<sup>th</sup> figure = 62m 30<sup>th</sup> figure = 118m