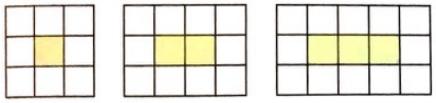
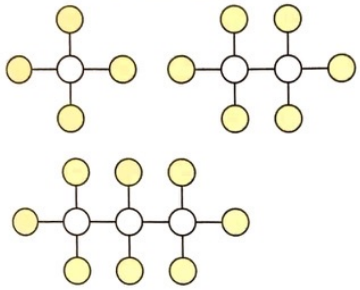
Exercise 21.1A

1 Derive your own formulae for these patterns and explain why they work.

a Connect the number of coloured tiles (B) and the number of white tiles (W).



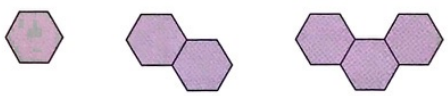
b i Connect the number of white circles (W) with the number of coloured circles (B).



ii Use the same pattern to connect the number of white circles (W) with the number of lines (L).

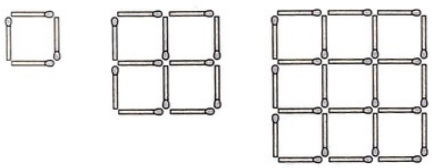
2 By considering the sequence of patterns, write a formula to connect the quantities given.

a



Relate the number of edges E to the number of hexagons H.

b



Relate the number of matches M with the length of the square L.

1a)

Pattern	1	2	3
B	1	2	3
W	8	10	12

$W = 2B + 6$

b i)

Pattern	1	2	3
W	1	2	3
B	4	6	8

$B = 2W + 2$

ii)

Whites	1	2	3
Lines	4	7	10

$L = 3W + 1$

---

2 a)

H	1	2	3
E	6	10	14

$E = 4H + 2$

2b)

L	1	2	3	4
M	4	12	24	40
1st		8	12	16
2nd			4	4

	4	12	24	40
$2L^2$	2	8	18	32
$2L$	2	4	6	8

$M = 2L^2 + 2L$

4a

Term	5	6	7
	20	28	36

n^{th} term $= 8n - 20$

(Since $8(5) = 40$

$40 - 20 = 20$)