Developing Formulae
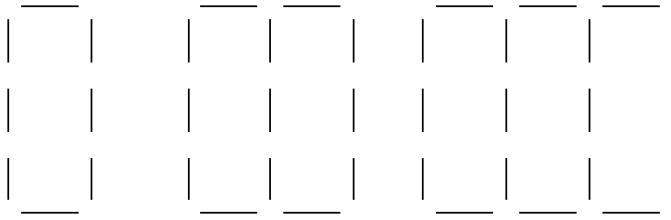
1. Matches are arranged as shown below.
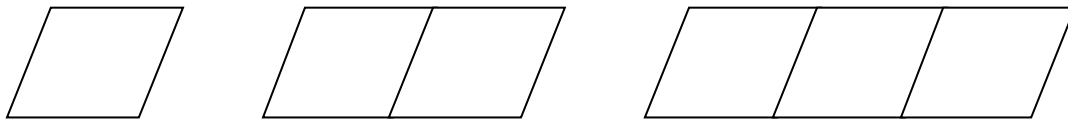

    (a) Copy and complete the table below.

Number of rectangles (R)	1	2	3	4	5	6	30
Number of Matches (M)							

    (b) Write down the rule for finding the number of matches if you know the number of rectangles.
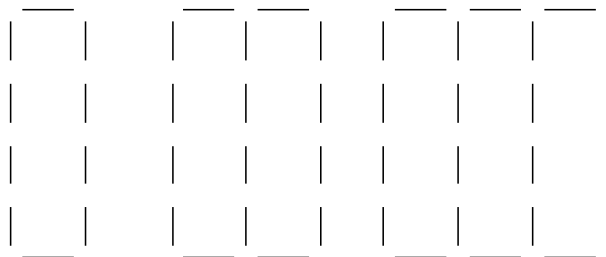
2. Matches are arranged as shown below

    (a) Copy and complete the table

No. of parallelograms	1	2	3	4	5	20
No. of matches	4	7				

    (b) Write down a rule for finding the number of matches, M, needed to make P parallelograms.
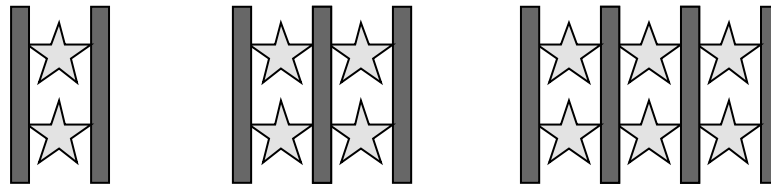
3. Matches are arranged as shown below.

    (a) Complete the table below.

Number of rectangles (R)	1	2	3	4	5	6	30
Number of Matches (M)							

    (b) Write down the rule for finding the number of matches, M, if you know the number of rectangles, R

    (c) How many rectangles could be made using 58 matches?

4. A pattern is constructed using rectangles and stars.

(a) Copy and complete the table below for this pattern.

Number of rectangles (R)	2	3	4	5	6	25
Number of stars (S)	2	4	6			

(b) Write down a formula for finding the number of stars, S, if you know the number of rectangles, R.

(c) How many rectangles would be needed for 78 stars?

5. Sidra is working on the design for a bracelet.
She is using matches to make each shape.
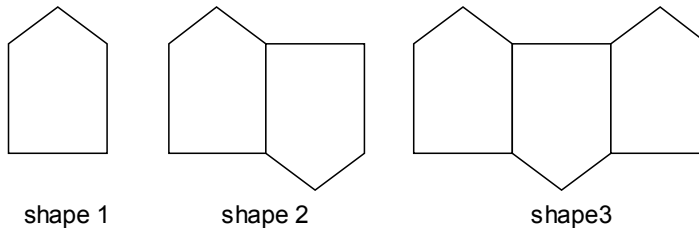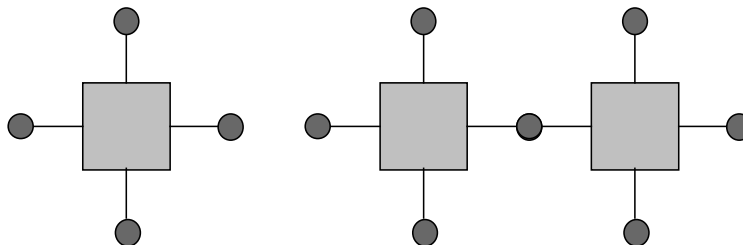
shape 1   shape 2   shape3

(a) Copy and complete the following table.

Shape number (s)	1	2	3	4	5	13
No. of matches (m)	5	9				

(b) Find a formula for calculating the number of matches, (m), when you know
The shape number, (s).

6. The diagram below shows an arrangement of squares and circles.
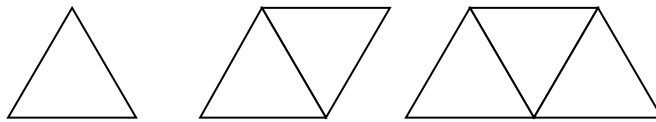
(a) Copy and complete the table for this arrangement.

Number of squares (S)	1	2	3	4	5	20
Number of Circles (C)			10			

(b) Write down a formula for finding the number of circles, C, if you know the number of squares, S.
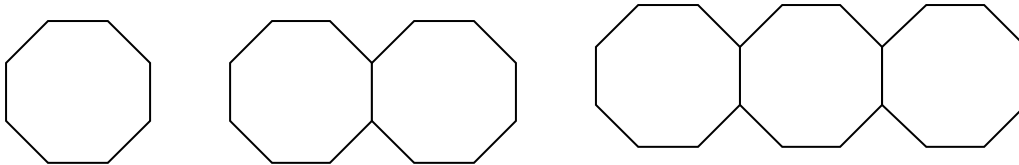
7. Matchsticks are arranged as shown below.

(a) Copy and complete the table

No. of triangles (T)	1	2	3	4	5	25
No. of matches (M)	3	5				

(b) Find a rule connecting T and M.
(c) How many triangles can be made using 101 matches?
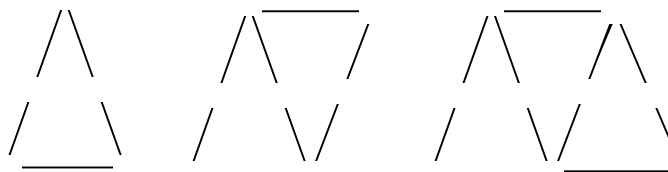
8. Matchsticks are arranged in the pattern shown below

(a) Copy and complete the table below

No. of octagons (P)	1	2	3	4	5	6	20
No. of matches (Q)	8	15	22				

(b) Write down a formula connecting P and Q.
(c) How many octagons can be made using 106 matches?
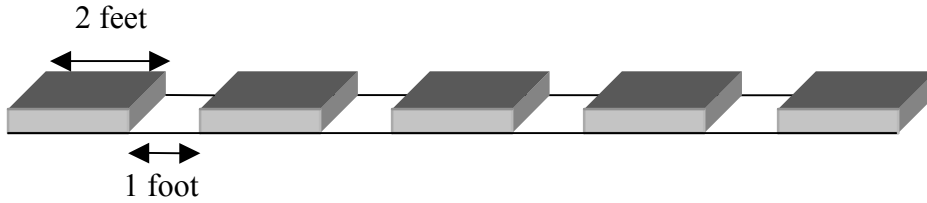
9. Matches are arranged as shown below.

(a) Copy and complete the table below.

Number of Triangles(T)	1	2	3	4	5		50
Number of Matches (M)	5	8					

(b) Write down a formula for finding the number of matches, M, if you know the number of triangles, T.

10. A garden path is made from concrete slabs each 2 foot long.
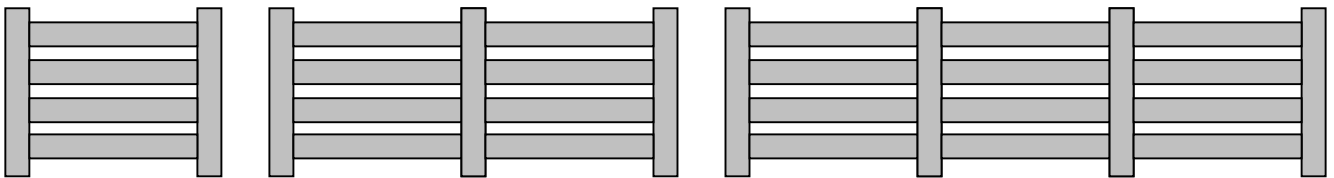A gap of one foot is left between each slab to give a stepping stone effect.

2 feet

1 foot

(a) Copy and complete the table below.

No. of slabs (S)	1	2	3	4	5	20
Length of path (L)	2	5				

(b) Write down a formula for calculating the length of path (L) when you know the number of slabs (S).

11. A children's play area is to be fenced.
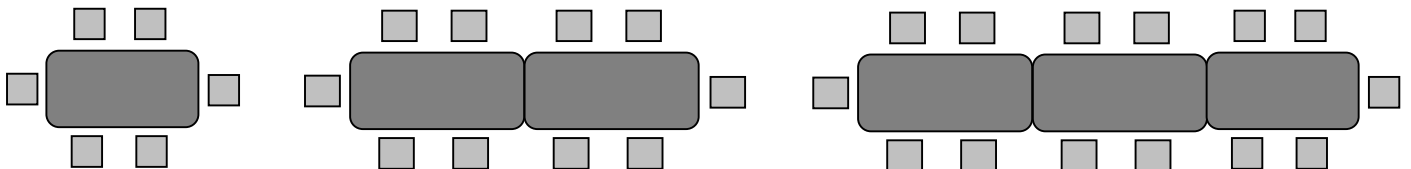The fence is made in sections using lengths of wood, as shown below.

(a) Copy and complete the table below.

No. of sections (s)	1	2	3	4	5	20
No. of lengths of wood(w)	6	11				

(b) Write down a formula for calculating the number of lengths of wood (w), when you know the number of sections (s).

12. A restaurant organises tables as shown below.

(a) Copy and complete the table below.

No. of Tables (T)	1	2	3	4	5	16
No. of Chairs (C)	6	10				

(b) Write down a formula for finding the number of chair (C) if you know number of tables (T).
(c) How many tables would be needed if 82 chairs were used?