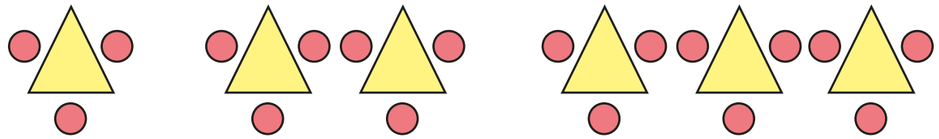
Formulae

1 Scott builds a pattern using triangles and circles.



a) Draw the next diagram in the pattern.

b) Scott records the number of triangles and circles in a table.

Complete the table.

Number of triangles	1	2	3	4	5
Number of circles	3	6	9	12	15

c) c = number of circles and t = number of triangles

Circle the formula that describes the pattern.

$c = t + 3$ | $c = 3t$ | $t = 3c$ | $t = 3 + c$

d) How many circles will there be with 10 triangles? 30

Show your working.

$3 \times 10 = 30$

2 **a)** Complete the table.

Number of weeks	1	2	3	5	10
Number of days	7	14	21	35	70

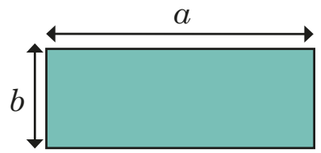
b) Complete the formula to show the relationship between days (d) and weeks (w).

$d =$ 7 w

c) How many days are there in 32 weeks?

224

3 **a)** Write a formula for the area and perimeter of the rectangle.



area = ab

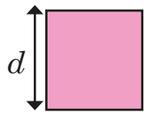
perimeter = $2a + 2b$

b) Work out the area and perimeter of the rectangle if a = 17 cm and b = 8 cm

Show your workings.

area = 136 cm² perimeter = 50 cm

4 **a)** Write a formula for the area and perimeter of the square.



area = d^2

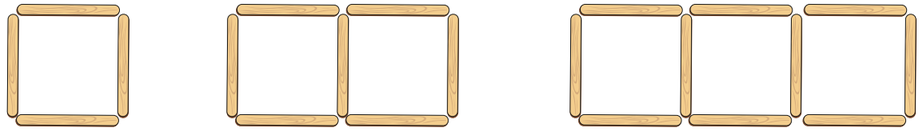
perimeter = $4d$

b) Work out the area and perimeter of the square if d = 8.5 cm

Show your workings.

area = 72.25 cm² perimeter = 34 cm

5 Dora makes a square pattern using lolly sticks.

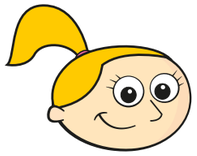


She records the number of squares and sticks in a table.

a) Continue the pattern and complete the table.

Number of squares, s	1	2	3	4	5
Number of lolly sticks, l	4	7	10	13	16

b)



Eva

You need 35 lolly sticks to make 10 squares. I multiplied the number needed for 2 squares by 5

Show that Eva is wrong.

How many sticks are needed to make 10 squares?

31

c) Circle the formula that describes the pattern.

$l = 3s + 1$ ✓

$l = 4s + 1$

$l = 3(s + 1)$

6 Here are a dog walker's prices.

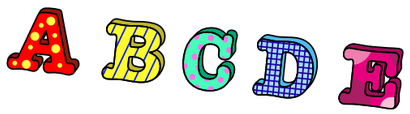
a) How much does the dog walker charge for a 2-hour job?

£29

b) Write a formula to show the cost (c) for (h) hours.

$c = 12h + 5$

7 The Wooden Letter Company sells wooden letters for £2 each, plus £1.50 for delivery of each order.



a) Whitney places an order for the letters to spell out her name.

How much does it cost?

£ 15·50

b) Write a formula to show the cost (c) for the number of letters (n).

$c = 2n + 1.5$