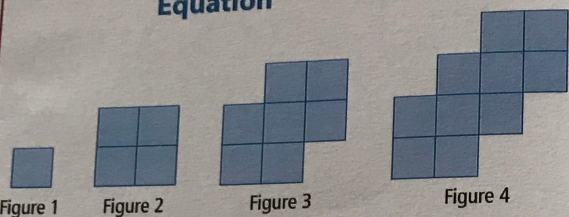


Example 1: Describe a Pictorial Pattern Using a Linear Equation



- Describe the pattern.
- Create a table of values to represent the linear relation between the number of squares and the figure number for the first four figures.
- Write a linear equation to represent this pattern.
- How many squares are in Figure 12?
- Which figure number has 106 squares? Verify your answer.

a) Add 3 squares to the top right.

b) X - figure # (f) y = # of Squares (s)

0	-2
1	1
2	4
3	7
4	10

c) $y = mx + b$
 $s = 3f - 2$

$m =$ rate of change / "slope"
 $b =$ y value when $x = 0$ / y-intercept

d) $s = 3f - 2$
 $s = 3(12) - 2$
 $= 36 - 2$
 $= 34$

There are 34 squares in figure 12

e) $s = 3f - 2$
 $106 = 3f - 2$
 $+2 \quad +2$
 $\frac{108}{3} = \frac{3f}{3} + 0$

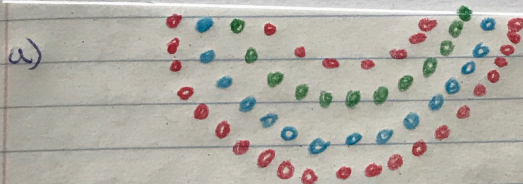
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$f = 36$

Example 2: Describe a Written Pattern Using a Linear Equation

A bead design for a necklace has an arc shape:

- Row 1 has seven red beads.
 - Row 2 has five additional beads and all the beads are green.
 - Row 3 has five additional beads and all the beads are blue.
 - The pattern repeats. Five beads are added to each successive row.
- Draw the pattern for the first four rows.
 - Make a table of values showing the number of beads in relation to the row number.
 - What equation shows the pattern between the row number and the number of beads in the row?
 - How many beads are in Row 4? Explain how to check your answer.
 - How many beads are in Row 38?
 - If the bead pattern were continued, which row number would have 92 beads? How did you determine the answer?



b)

Colour	Row	# of Beads
	0	2
Red	1	7
Green	2	12
Blue	3	17
Red	4	22

c) $y = mx + b$
 $b = 5r + 2$

e) $b = 5r + 2$
 $b = 5(38) + 2$
 $= 192$

d) $b = 5r + 2$
 $b = 5(4) + 2$
 $= 22$

f) $b = 5r + 2$
 $92 = 5r + 2$
 $-2 \quad -2$
 $\frac{90}{5} = \frac{5r}{5}$
 $r = 18$

