
MONDAY
MON

Place Value, Sequences and Coordinates

Vocabulary

sequence, step size, integer, decimal, power of 10, generate, describe, extend, linear, non-linear, constant, inconsistent, alternating, formula, formulae, coordinate, x-axis, y-axis, quadrant, term, algebra

L.O. Generate and describe number sequences.

_____ has £3462 in his bank account and receives £1000 every month from a rich uncle. Work out the new bank balances.

Every 6 months _____ gets a 5% saving bonus from the bank. How much is in the account after 6 months? 12 months? 18 months?

L.O. Generate and describe number sequences.

A

Write the first six numbers in each sequence.

	Start at	Rule		Start at	Rule		Start at	Rule
1	4	+10	6	65	−7	11	26	+9
2	38	−2	7	15	+20	12	30	−3
3	7	+3	8	110	−11	13	$\frac{1}{2}$	$+\frac{1}{2}$
4	29	−4	9	21	+2	14	80	−5
5	0·5	+1	10	948	−101	15	25	+25

B

Complete these sequences by filling in the boxes. Write the rule each time.

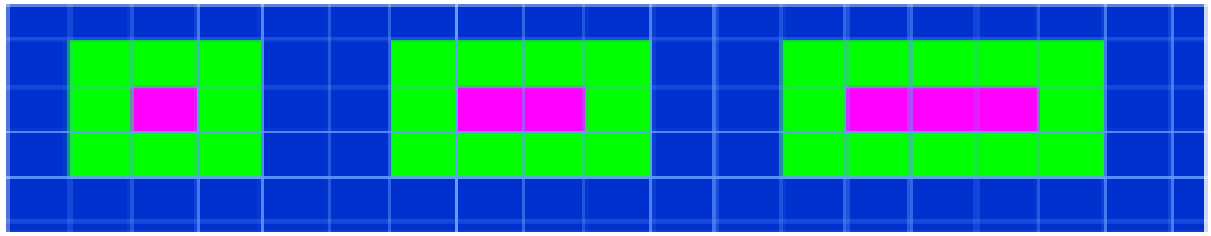
1. 44 47 50 53 ☐ ☐ ☐
2. 89 85 81 77 ☐ ☐ ☐
3. 115 140 165 190 ☐ ☐ ☐
4. 0·5 0·6 0·7 0·8 ☐ ☐ ☐
5. −2 −4 −6 ☐ ☐ ☐ −14
6. 119 114 ☐ ☐ ☐ 94 89
7. −9 −6 ☐ ☐ ☐ 6 9
8. $\frac{1}{5}$ $\frac{2}{5}$ $\frac{3}{5}$ $\frac{4}{5}$ ☐ ☐ ☐
9. 5 3 1 ☐ ☐ ☐ −7
10. 37 ☐ 55 ☐ 73 ☐ 91
11. 366 316 ☐ 216 ☐ ☐ 66
12. ☐ −15 −10 ☐ ☐ 5 10
13. $1\frac{6}{7}$ ☐ $1\frac{2}{7}$ 1 ☐ ☐ $\frac{1}{7}$
14. ☐ ☐ 4·5 5 ☐ 6 6·5
15. ☐ 182 ☐ 380 ☐ 578 677
16. 10 6 ☐ ☐ ☐ −10 −14

C

Copy these sequences and write the next three numbers. What is the rule for each sequence? Can you write the rule for the *n*th term?

1. 84 72 60 48
2. 64 71 78 85
3. 1·1 1·07 1·04 1·01
4. 4 $3\frac{5}{8}$ $3\frac{2}{8}$ $2\frac{7}{8}$
5. 165 146 127 108
6. −9 −7 −5 −3
7. 75 67 59 51
8. 0·02 0·04 0·06 0·08
9. 15 11 7 3
10. 43 55 67 79
11. −20 −14 −8 −2
12. 5 4·5 4 3·5
13. 135 156 177 198
14. 36 28 20 12
15. 50 175 300 425
16. 1·25 1·5 1·75 2
17. 10 $8\frac{3}{4}$ $7\frac{1}{2}$ $6\frac{1}{4}$
18. −11 −8 −5 −2

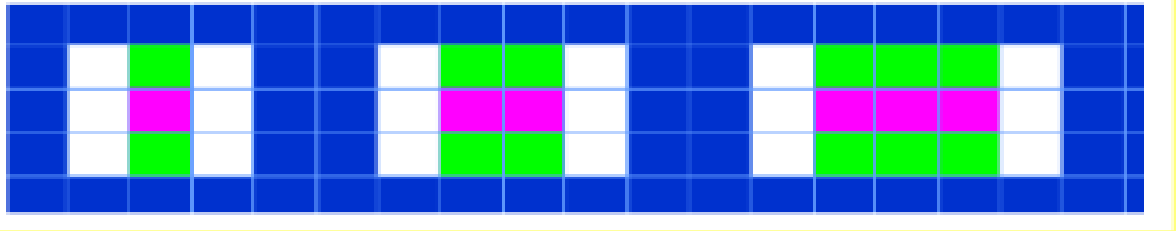
Cows in a Field



- One cow [pink/centre square] needs to be kept in a field – green squares. Hence one cow needs 8 pieces of fence to stay in the field.

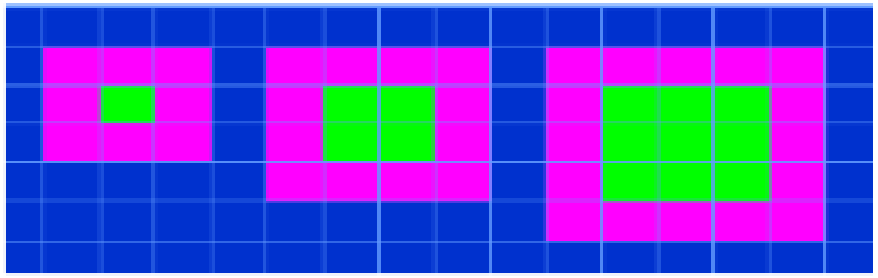
What if there were 128 cows? Is there a rule?

- What is the same in each 'field' even though they have a different number of cows in them?



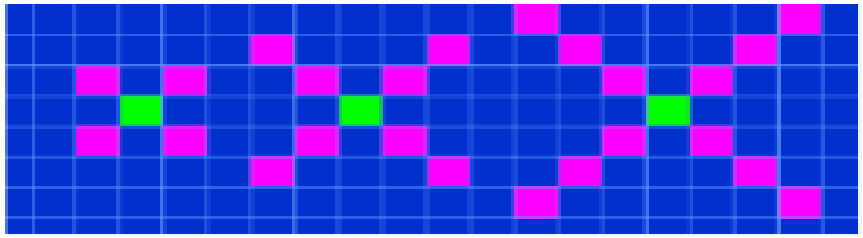
- Does this help to predict how many pieces of fence is required for 128 cows?

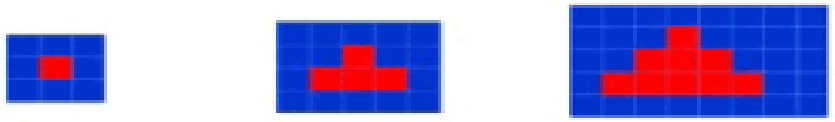
Window Frames – what length of frame would be required for a window that was 60 x 60?



Cross Patterns

How many squares would be in the 12th cross in the sequence?





Stairs

The first stair is made from one square, the second from adding a row of 3 more, giving a total of 4. The next in the sequence would have a row of 5 added requiring a total of 9. What is the next 3 in the sequence? What would the nth stair look like?

ANSWERS

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A

1 4 14 24 34 44 54
2 38 36 34 32 30 28
3 7 10 13 16 19 22
4 29 25 21 17 13 9
5 0·5 1·5 2·5 3·5 4·5 5·5
6 65 58 51 44 37 30
7 15 35 55 75 95 115
8 110 99 88 77 66 55
9 21 23 25 27 29 31
10 948 847 746 645 544 443
11 26 35 44 53 62 71
12 30 27 24 21 18 15
13 $\frac{1}{2}$ 1 $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3
14 80 75 70 65 60 55
15 25 50 75 100 125 150

B

1 ... 56 59 62 (add 3)
2 ... 73 69 65 (take 4)
3 ... 215 240 265 (add 25)
4 ... 0·9 1·0 1·1 (add 0·1)
5 ... −8 −10 −12 −14 (take 2)
6 ... 109 104 99 94 89 (take 5)
7 ... −3 0 3 6 9 (add 3)
8 ... 1 $1\frac{1}{5}$ $1\frac{2}{5}$ (add $\frac{1}{5}$)
9 ... 5 3 1 −1 −3 −5 −7 (take 2)
10 ... 37 46 55 64 73 82 91 (add 9)
11 ... 366 316 266 216 166 116 66 (take 50)
12 ... −20 −15 −10 −5 0 5 10 (add 5)
13 ... $1\frac{6}{7}$ $1\frac{4}{7}$ $1\frac{2}{7}$ 1 $\frac{5}{7}$ $\frac{3}{7}$ $\frac{1}{7}$ (take $\frac{2}{7}$)
14 ... 3·5 4 4·5 5 5·5 6 6·5 (add 0·5)
15 ... 83 182 281 380 479 578 677 (add 99)
16 ... 10 6 2 −2 −6 −10 −14 (take 4)

C

1 ... 36 24 12 $96 - 12n$
2 ... 92 99 106 $7n + 57$
3 ... 0·98 0·95 0·92 $1{\cdot}13 - \frac{3n}{100}$
4 ... $2\frac{4}{8}$ $2\frac{1}{8}$ $1\frac{6}{8}$ $4\frac{3}{8} - \frac{3n}{8}$
5 ... 89 70 51 $184 - 19n$
6 ... −1 1 3 $2n - 11$
7 ... 43 35 27 $83 - 8n$
8 ... 0·1 0·12 0·14 $\frac{2n}{100}$
9 ... −1 −5 −9 $19 - 4n$
10 ... 91 103 115 $12n + 31$
11 ... 4 10 16 $6n - 26$
12 ... 3 2·5 2 $5{\cdot}5 - \frac{5n}{10}$
13 ... 219 240 261 $21n + 114$
14 ... 4 −4 −12 $44 - 8n$
15 ... 550 675 800 $125n - 75$
16 ... 2·25 2·5 2·75 $\frac{n}{4} + 1$
17 ... 5 $3\frac{3}{4}$ $2\frac{1}{2}$ $11\frac{1}{4} - \frac{5n}{4}$
18 ... 1 4 7 $3n - 14$