

Maths - Year 5

Pattern and Algebra 6: Logic and reasoning

Key Vocabulary

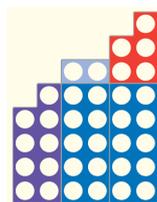
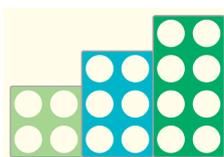
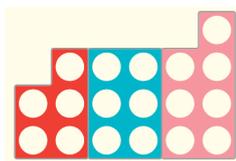
Term	One of the numbers in a sequence.
Step	The calculation that takes you from one number to the next in a number sequence.
Sequence	An ordered list of numbers, shapes or objects.

Mathematical Skills

- Persevere in investigating a problem.
- Confident in trying different strategies for solving a problem.
- Notice and explain patterns and use them to come up with general rules.
- Explain their reasoning.
- Keep systematic records.
- Relate problems to similar examples they have attempted in the past.

Mathematical Methods

- Finding a general rule to total a sequence of consecutive numbers.

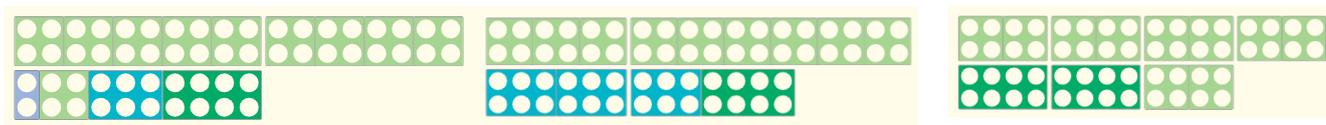


Numbers	Total
1, 2, 3	6
2, 3, 4	9
3, 4, 5	12
4, 5, 6	15
5, 6, 7	18
6, 7, 8	21

- Recognising and testing general statements e.g.

- If you halve a multiple of 10 you get a multiple of 10.
- The product of two numbers is greater than either of the two starting numbers.
- When you square an even number, the result is divisible by 4.
- A pyramid has the same number of faces as vertices.
- The number of edges of a prism is a multiple of 3.
- A trapezium has one line of symmetry.
- $5\% = \frac{1}{20}$
- A square is bigger than a rectangle.

- Reasoning about multiples of 4.

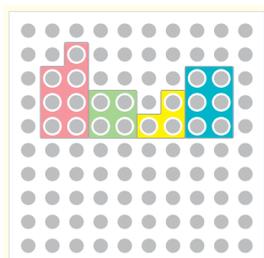


2 4 6 8 10 12 14 16 18 20

- Using trial and improvement methods and reasoning in problem solving e.g.

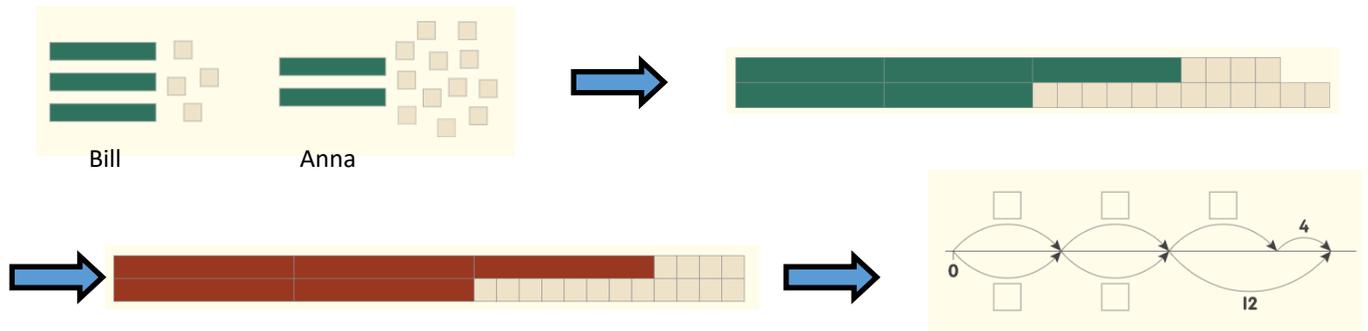
There are four Numicon shapes on the Baseboard and together they equal 20. The first shape is 3 more than the second shape. The third shape is 1 less than the second shape. The fourth shape is twice the size of the third shape. What are the shapes?

1st shape	2nd shape	3rd shape	4th shape	Total
5	2	1	2	10
6	3	2	4	15
7	4	3	6	20



1st shape	2nd shape	3rd shape	4th shape	Total
5	2	1	2	10
6	3	2	4	15
7	4	3	6	20
8	5	4	8	25
9	6	5	10	30
10	7	6	12	35

- Reasoning about numbers to solve a mathematical problem e.g. Bill has 3 boxes of cakes and 4 loose cakes. Anna has 2 boxes of cakes and 12 loose cakes. All full boxes have the same number of cakes. They both have the same number of cakes. How many cakes are in each box?



Can you..?

- 'The more digits a number has, the larger it is in value'. Is this statement always, sometimes or never true? Explain your reasoning.
- Think of three different Numicon shapes, where two add up to the third and whose total is 14?. How many solutions can you find?
- Toy cars cost £4.00. Toy lorries cost £9.00. Chi spends exactly £48.00. How many cars and how many lorries does Chi buy?