

Maths - Year 4

Pattern and Algebra 7: Exploring general rules, reasoning and logic

Key Vocabulary

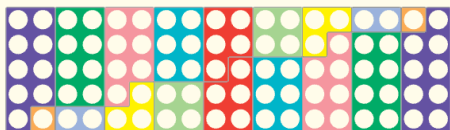
Sequence	An ordered list of numbers, shapes or objects e.g. 20, 25, 30...
Predict	To guess or estimate an outcome or answer.
Term	One of the numbers in a sequence.
Consecutive numbers	Numbers that follow each other immediately in a sequence, e.g. 3, 4, 5, 6.
Multiple	The product of two whole numbers larger than one, e.g. 15 is a multiple of 3 and of 5, $5 \times 3 = 15$.

Mathematical Skills

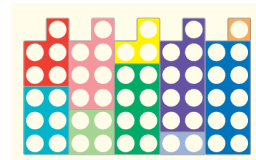
- Persevere in investigating a problem.
- Notice patterns and predict from them to arrive at a general rule.
- Explain their reasoning.
- Keep systematic records.

Mathematical Methods

- Finding a general rule to total a sequence of consecutive numbers, beginning with 1.
E.g. we have made 9 lots of pairs of shapes that make 10. Therefore 9 lots of 10 is equal to 90.



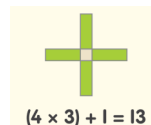
Shapes	2 sets	1 set
1 to 9	$9 \times 10 = 90$	$(9 \times 10) \div 2 = 45$
1 to 10	$10 \times 11 = 110$	$(10 \times 11) \div 2 = 55$



- Finding a general rule for making crosses with number rods e.g.



$(4 \times 2 \text{ cm}) + 1 \text{ cm}$, which is 9 cm.



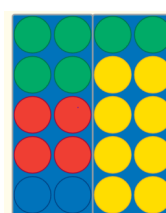
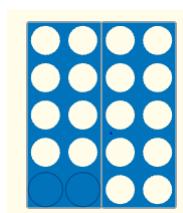
$(4 \times 3) + 1 = 13$

- Reasoning about odd and even multiples e.g. what happens when we multiply two even numbers together or two odd numbers together, or an odd and an even number together.

- Reasoning about general statements e.g. 'all multiples of 3 are odd numbers', 'doubles are even numbers' etc.

- Using clues to solve logic problems e.g.

- There are 20 counters in four colours.
- There are 2 more red than blue counters.
- There are 2 more green than red counters.
- There are 2 more yellow than green counters.
- There are 2 blue counters.



Can you..?

- Can you calculate the total of all the positive whole numbers to 25? How do you know your answer is correct?

$$1 + 2 + 3 + 4 + \dots + 23 + 24 + 25 = ?$$

- Write a number sentence for the total rod length.



- Can you write a statement about positive whole numbers that is always true?
- Use the clues to work out how many counters of each colour there are.
 - There are 20 counters in four colours.
 - There are 2 fewer red than blue counters.
 - There is 1 fewer green than red counters.
 - There are 4 more yellow than green counters.
 - There are 6 blue counters.