

Creating algorithms to investigate number patterns

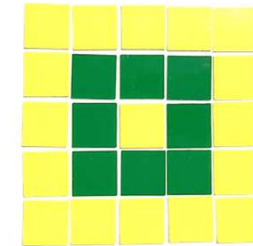
Tierney Kennedy

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How many do you see in the outside layer?
How do you see them? How did you work it out?



What would come next?
How did you work it out?
What is the number pattern?



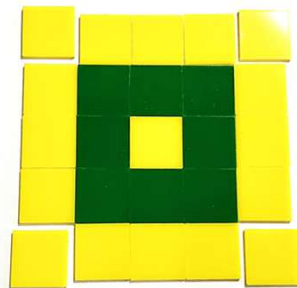
Algorithm: systematic set of steps, instructions or decisions for a task

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How do you see them now?
What has changed?

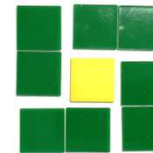


How might your algorithm change?

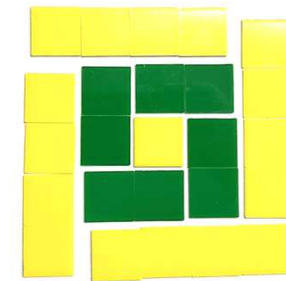


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How do you see them now?
What has changed?



How might your algorithm change?



4

How different are they *really*?

Algorithm: systematic set of steps, instructions or decisions for a task... that always work

This means that because all of our different algorithms will always work, they have to be actually the same mathematically.

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What does the curriculum say kids have to do?

Early years

Foundation: recognise, copy and continue repeating patterns represented in different ways

Year 1: recognise, continue and create pattern sequences with numbers... formed by skip counting, initially by twos, fives and tens

Recognise, continue and create repeating patterns with numbers... identifying the repeating unit

Year 2: recognise, describe and create additive patterns that increase or decrease by a constant amount, using numbers... and identify missing elements in the pattern

From other statements involving multiplication and division of single-digit numbers: Doubling and halving, repeated addition, equal grouping, arrays

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What do kids have to do with number patterns?

Year 3:

- follow and create algorithms involving a sequence of steps and decisions
- to investigate numbers;
- describe any emerging patterns

Year 4:

- follow and create algorithms involving a sequence of steps and decisions
- that use addition or multiplication to generate sets of numbers;
- identify and describe any emerging patterns

Explain and use the properties of odd and even number

Year 5:

- create and use algorithms involving a sequence of steps and decisions and digital tools
- to experiment with factors, multiples and divisibility;
- identify, interpret and describe emerging patterns

Express natural numbers as products of their factors, recognise multiples and determine if one number is divisible by another

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What do kids have to do with number patterns?

Year 6:

- create and use algorithms involving a sequence of steps and decisions
- that use rules to generate sets of numbers;
- identify, interpret and explain emerging patterns

Identify and describe the properties of prime, composite and square numbers and use these properties to solve problems and simplify calculations

Recognise and use rules that generate visually growing patterns and number patterns involving rational numbers

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Let's try it - exploring factors and multiples

What we will do: follow algorithms, create algorithms, investigate numbers, describe patterns

Try the following and describe any patterns you can find in the answers. Choose any two-digit number...

1. Double it... what patterns can you find in the answers?
2. Multiply it by 5... what patterns can you find in the answers?
3. Thinking logically... 10 is a multiple of both 2 and 5, so if we multiply a number by 10 it should fit both patterns.
What should be true?

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Let's try it – more steps for our algorithms

Try the following and describe any patterns you can find in the answers. Choose any two-digit number...

1. Triple it... what patterns can you find in the answers?
2. 6 is a multiple of both 2 and 3... what patterns should be true if a number is multiplied by 6? Try it and check.
3. 4 is a multiple of 2, and then 2 again... how might a multiple of 4 fit the 2s pattern twice? Try it and check.
4. How could you use your patterns so far for multiples of 12, 25...?

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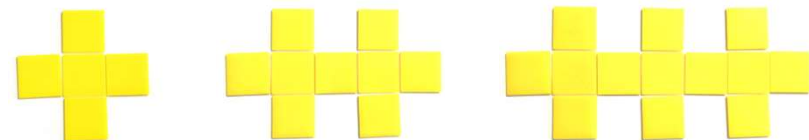
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151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220

Find a number that is divisible by...

- 18
- 15
- 20
- 36

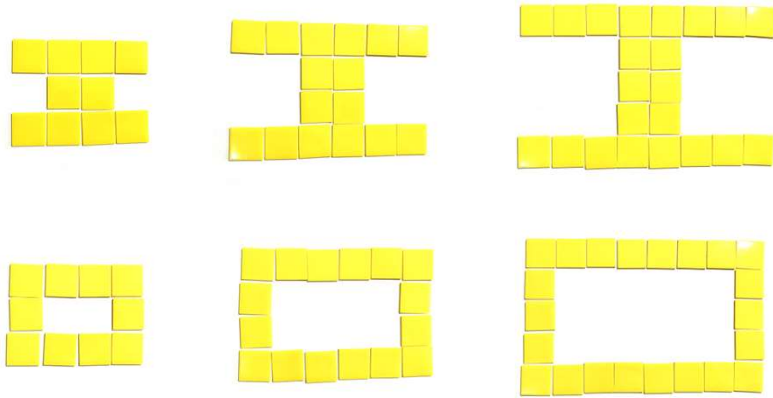
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What is the number pattern?



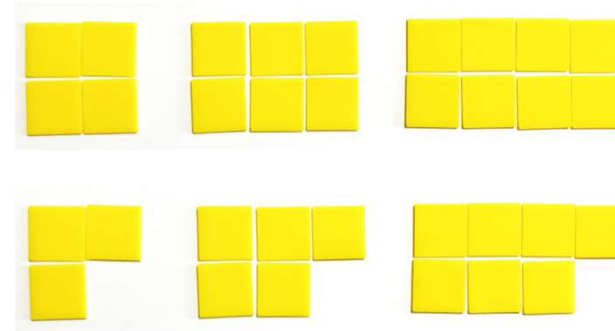
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What is the number pattern?



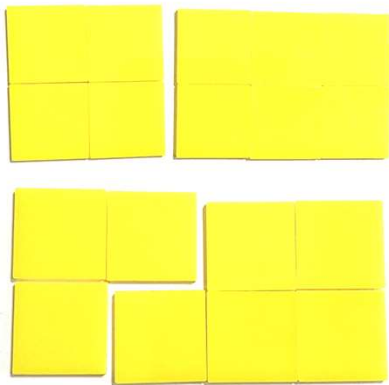
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What is the number pattern?



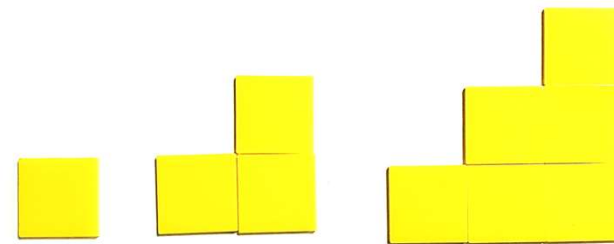
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What happens if we join...?



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What is the number pattern?



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What happens if we join...?



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Thanks and please fill in your surveys

Tierney Kennedy

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