**PATTERNS AND ALGEBRA 1 – STAGE 2**

**OUTCOMES**

A student:

* MA2-1WM - uses appropriate terminology to describe, and symbols to represent, mathematical ideas
* MA2-2WM - selects and uses appropriate mental or written strategies, or technology, to solve problems
* MA2-3WM - checks the accuracy of a statement and explains the reasoning used
* MA2-8NA - generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values

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| **CONTENT** | **plan** |
| **Describe, continue and create number patterns resulting from performing addition or subtraction (ACMNA060)** |  |
| identify and describe patterns when counting forwards or backwards by threes, fours, sixes, sevens, eights and nines from any starting point | 1 & 2 |
| model, describe and then record number patterns using diagrams, words or symbols http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 1 & 2 |
| ask questions about how number patterns have been created and how they can be continued (Communicating) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.pngCT | 1 & 2 |
| create and continue a variety of number patterns that increase or decrease, and describe them in more than one way http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 1 & 2 |
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| **Investigate the conditions required for a number to be [even](http://syllabus.bos.nsw.edu.au/glossary/mat/even-number/?ajax" \t "_blank" \o "Click for more information about 'even') or [odd](http://syllabus.bos.nsw.edu.au/glossary/mat/odd-number/?ajax" \t "_blank" \o "Click for more information about 'odd') and identify even and odd numbers (ACMNA051)** |  |
| model even and odd numbers of up to two digits using [arrays](http://syllabus.bos.nsw.edu.au/glossary/mat/array/?ajax" \t "_blank" \o "Click for more information about 'arrays') with two rows | 3 |
| compare and describe the difference between models of even numbers and models of odd numbers (Communicating) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 3 |
| recognise the connection between even numbers and the [multiplication](http://syllabus.bos.nsw.edu.au/glossary/mat/multiplication/?ajax" \t "_blank" \o "Click for more information about 'multiplication') facts for two (Reasoning) | 3 |
| describe and generalise the conditions for a number to be even or odd http://syllabus.bos.nsw.edu.au/wsimages/cca/l.pngCT | 3 |
| recognise the significance of the final digit of a [whole number](http://syllabus.bos.nsw.edu.au/glossary/mat/whole-number/?ajax" \t "_blank" \o "Click for more information about 'whole number') in determining whether a given number is even or odd (Reasoning) | 3 |
| identify even or odd numbers of up to four digits | 3 |

**PATTERNS AND ALGEBRA 2**

**OUTCOMES**

#### A student:

* MA2-1WM - uses appropriate terminology to describe, and symbols to represent, mathematical ideas
* MA2-2WM - selects and uses appropriate mental or written strategies, or technology, to solve problems
* MA2-3WM - checks the accuracy of a statement and explains the reasoning used
* MA2-8NA - generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values

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| **CONTENT** | **plan** |
| **Use equivalent number sentences involving addition and subtraction to find unknown quantities (ACMNA083)** |  |
| complete number sentences involving addition and subtraction by calculating missing numbers | 4 |
| use inverse [operations](http://syllabus.bos.nsw.edu.au/glossary/mat/operation/?ajax" \t "_blank" \o "Click for more information about 'operations') to complete number sentences (Problem Solving) CT | 4 |
| justify solutions when completing number sentences (Communicating, Reasoning) CT | 5 |
| find the missing number in a number sentence involving operations of addition or subtraction on both sides of the equals sign, | 5 |
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| **Investigate and use the properties of [even](http://syllabus.bos.nsw.edu.au/glossary/mat/even-number/?ajax" \t "_blank" \o "Click for more information about 'even') and [odd](http://syllabus.bos.nsw.edu.au/glossary/mat/odd-number/?ajax" \t "_blank" \o "Click for more information about 'odd') numbers (ACMNA071)** |  |
| investigate and generalise the result of adding, subtracting and [multiplying](http://syllabus.bos.nsw.edu.au/glossary/mat/multiplication/?ajax" \t "_blank" \o "Click for more information about 'multiplying') pairs of even numbers, pairs of odd numbers, or one even and one odd number, eg even + odd = odd, odd × odd = odd | 6 |
| explain why the result of a calculation is even or odd with reference to the properties of the numbers used in the calculation (Communicating, Reasoning) CT | 6 |
| predict whether the answer to a calculation will be even or odd by using the properties of the numbers in the calculation (Reasoning) | 6 |

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| **Investigate number sequences involving [multiples](http://syllabus.bos.nsw.edu.au/glossary/mat/multiple/?ajax" \t "_blank" \o "Click for more information about 'multiples') of 3, 4, 6, 7, 8 and 9 (ACMNA074)** |  |
| generate number patterns using multiples of 3, 4, 6, 7, 8 and 9, eg 3, 6, 9, 12, ... | 7 |
| investigate visual number patterns on a number chart (Problem Solving) CT | 7 |
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| **Explore and describe number patterns resulting from performing multiplication (ACMNA081)** |  |
| use the word 'term' when referring to numbers in a number pattern http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 8 |
| describe the position of each term in a given number pattern, eg 'The first term is 6' (Communicating) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.png | 8 |
| find a higher term in a number pattern resulting from performing multiplication, given the first few terms, eg determine the next term in the pattern 4, 8, 16, 32, 64, … | 8 |
| describe how the next term in a number pattern is calculated, eg 'Each term in the pattern is double the previous term' (Communicating) CT | 8 |
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| **Solve word problems by using number sentences involving multiplication or division where there is no [remainder](http://syllabus.bos.nsw.edu.au/glossary/mat/remainder/?ajax" \t "_blank" \o "Click for more information about 'remainder')(ACMNA082)** |  |
| complete number sentences involving multiplication and division by calculating missing numbers | 9 |
| represent and solve multiplication and division word problems using number sentences, eg 'I buy six pens and the total cost is $24. What is the cost of each pen? | 9 |
| discuss whether it is more appropriate to represent the problem using multiply or divide in order to calculate the solution (Communicating, Reasoning) CT | 10 |
| pose a word problem based on a given number sentence: a problem could be: 'I have 28 cans of drink and stack them into rows of 4. How many rows will there be?' (Communicating, Problem Solving, Reasoning) http://syllabus.bos.nsw.edu.au/wsimages/cca/l.pngCT | 10 |