

Making connections to the Week of Inspirational Math lessons

Resource 4: Mapping to Week 4 2018 lessons

Each year the team at youcubed design a [Week of inspirational Math](#) (WIM) with activities for a range of grades. They have now design three ‘weeks’ of tasks over the last three years. Teachers in NSW (and Australia) have been getting hooked on Jo Boaler, her research into [Mathematical Growth Mindsets](#) and also the wonderful lesson resources developed by Boaler and her colleagues at www.youcubed.org

This fourth resource maps the lessons from the [Week of Inspirational Math](#) Week 4 in 2018 to the [NSW mathematics K-10 syllabus](#) outcomes. I have mapped to the overarching outcomes, sub strands and general content links, not necessarily to the dot point level for all lesson activities. Many of the WIM bring together a number of concepts, these concept connections should also be reflected in your programming, not teaching the concepts in isolation. The lessons in this resource are the primary to middle school level lessons (up to grades 6-8), I have not mapped the lessons that link to upper secondary (grades 9-12).

Note: I have linked the tasks directly to the outcomes where that concept or content is addressed. You as the teacher may feel that your students are ready to tackle some of these activities in earlier grades, this decision is up to you.

Boaler, J. (2013). Ability and Mathematics: the mindset revolution that is reshaping education. FORUM, 55, 1, 143-152.

Board of Studies NSW. (2012). Mathematics K-6 syllabus. Sydney, NSW.: Author.

Lessons from the Week of Inspirational Math <https://www.youcubed.org/week-inspirational-math/>

See further papers here <https://www.youcubed.org/resource/short-impact-papers/>

Week of Inspirational Math 2017

Grade Kindergarten <https://www.youcubed.org/weeks/week-4-grade-k/>

You may want to visit the website link above to access any videos and PowerPoint presentations that accompany the lessons. The links within this table link directly to the lesson plans.

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 1 Finger trails	MAe-1WM	<i>Communicating</i> Communicate the use of numbers through everyday language, actions, materials and informal recordings
(may also link with measuring length)	MAe-2WM	<i>Problem solving</i> Apply counting strategies to solve simple everyday problems and justify answers
	MAe3-WM	<i>Reasoning</i> Apply counting strategies to solve simple everyday problems and justify answers
	MAe4NA (ACMNA001) (ACMNA002) (ACMNA003) (ACMNA289)	<i>Whole Numbers</i> Counts forwards from a given number Reads numbers to at least 20 Recognise the number of objects or dots in a pattern of objects or dots instantly Count with one-to-one correspondence
Day 2 Estimating dots	MAe-1WM	<i>Communicating</i> Communicate the use of numbers through everyday language, actions, materials and informal recordings Explain or demonstrate how an answer was obtained
	MAe-2WM	<i>Problem solving</i> Apply counting strategies to solve simple everyday problems and justify answers Determine whether two groups have the same number of objects



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 2 Estimating dots cont.	MAe3-WM	<i>Reasoning</i> Apply counting strategies to solve simple everyday problems and justify answers Recognise that the way objects are arranged affects how easy it is to subitise
	MAe4NA (ACMNA001) (ACMNA002) (ACMNA003) (ACMNA289)	<i>Whole numbers</i> Count forwards to 30 from a given number Estimate the number of objects in a group of up to 20 objects, and count to check Instantly recognise (subitise) different arrangements for the same number Make correspondences between collections (e.g. that side has more counters) Compare and order numbers and groups of objects Use the term 'is the same as' to express equality of groups
	MAe-5NA (ACMNA004)	<i>Addition and subtraction</i> Combine two or more groups of objects to model addition Use concrete materials or fingers to model and solve simple addition and subtraction problems Compare two groups of objects to determine 'how many more' Use visual representations of numbers to assist with addition
Day 3 Building trains Flexible number trains resource required: Cuisenaire rods	MAe-1WM	<i>Communicating</i> Explain or demonstrate how an answer was obtained
	MAe-2WM	<i>Problem solving</i> Apply strategies that have been demonstrated by other students
	MAe3-WM	<i>Reasoning</i> Explain or demonstrate how an answer was obtained

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 3 Building trains Flexible number trains cont.	MAe-5NA (ACMNA004)	<i>Addition and Subtraction</i> Combine two or more groups of objects to model addition Use concrete materials or fingers to model and solve simple addition and subtraction problems Use visual representations of numbers to assist with addition Create and recognise combinations for numbers to at least 10 Describe the action of combining, separating and comparing using everyday language Record addition and subtraction informally using drawings, words and numerals
	MAe-8NA	<i>Patterns and algebra</i> Recognise, copy, continue and create repeating patterns using shapes, objects or pictures
Day 4 Show me	MAe-1WM	<i>Communicating</i> Recognise numbers in a variety of contexts Communicate the use of numbers through everyday language, actions, materials and informal recordings Recognise that the last number name represents the total number in the collection when counting
	MAe-2WM	<i>Problem solving</i> Apply counting strategies to solve simple everyday problems and justify answers
	MAe3-WM	<i>Reasoning</i> Apply counting strategies to solve simple everyday problems and justify answers
	MAe4NA (ACMNA001) (ACMNA002) (ACMNA003) (ACMNA289)	<i>Addition and subtraction</i> Count forwards to 30 from a given number Read numbers to at least 20, including zero, and represent these using objects (such as fingers), pictures, words and numerals Count with one-to-one correspondence Make correspondences between collections Compare and order numbers and groups of objects



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 5 Foot parade	MAe-1WM	<i>Communicating</i> Explain or demonstrate how an answer was obtained
(could be combined with reading of the book <i>One is a snail, Ten is a crab</i> by April Pulley Sayre and Jeff Sayre)	MAe-2WM	<i>Problem solving</i> Apply strategies that have been demonstrated by other students
	MAe3-WM	<i>Reasoning</i> Explain or demonstrate how an answer was obtained
	MAe-5NA (ACMNA004)	<i>Addition and Subtraction</i> Combine two or more groups of objects to model addition Use concrete materials or fingers to model and solve simple addition and subtraction problems Use visual representations of numbers to assist with addition Create and recognise combinations for numbers to at least 10 Describe the action of combining, separating and comparing using everyday language Record addition and subtraction informally using drawings, words and numerals

Week of Inspirational Math 2017

Grades 1-2 <https://www.youcubed.org/weeks/week-4-grade-1-2/>

You may want to visit the website link above to access any videos and PowerPoint presentations that accompany the lessons. The links within this table link directly to the lesson plans.

Note: Some of these Grade 1-2 lessons are extensions of the Kindergarten lessons. The syllabus links below are additional Stage 1 links (if not linked above) and links for any additional extension tasks included in these lessons.

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 1 Finger Trails (linked to Kindergarten lesson)	MA1-1WM	<i>Communicating</i> Describe the number before as 'one less than' and the number after as 'one more than' a given number Use objects to represent counting patterns
	MA1-2WM	<i>Problem solving</i> Choose an appropriate strategy to solve problems, including trial-and-error and drawing a diagram Investigate and solve problems based on number patterns
	MA1-3WM	<i>Reasoning</i> Supports conclusions by explaining or demonstrating how answers were obtained
	MA1-4NA (ACMNA012) (ACMNA013) (ACMNA027) (ACMNA026)	<i>Whole numbers 1</i> Count forwards and backwards by ones from a given two-digit number Use number lines and number charts to assist with counting <i>Whole numbers 2</i> Use the terms 'more than' and 'less than' to compare numbers Investigate number sequences

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
	MA1-6NA (ACMNA012)	<i>Multiplication and division 1</i> Count by twos, fives and tens using rhythmic counting and skip counting from zero
	MA1-8NA (ACMNA018)	<i>Patterns and algebra 1</i> Identify and describe patterns when skip counting forwards or backwards by ones, twos, fives Represent number patterns on number lines and number charts
Day 2 Placing chips	MA1-1WM	<i>Communicating</i> Give reasons for placing a set of numbers in a particular order
(could be extended to using a 1 - 120 chart)	MA1-2WM	<i>Problem solving</i> Choose an appropriate strategy to solve problems Use combinations for numbers up to 10 to assist with combinations for numbers beyond 10
	MA1-3WM	<i>Reasoning</i> Give reasons for placing a set of numbers in a particular order
	MA1-4NA (ACMNA013) (ACMNA027) (ACMNA026)	<i>Whole numbers 1</i> Use place value to partition two-digit numbers Partition two-digit numbers in non-standard forms Represent two-digit numbers using objects, pictures, words and numerals Apply an understanding of place value and the role of zero to read, write and order two-digit numbers Use number lines and number charts to assist with counting and ordering <i>Whole numbers 2</i> Identify number sequences on number charts
	MA1-5NA (ACMNA015)	<i>Addition and subtraction 1</i> Record number sentences in a variety of ways using drawings, words, numerals and mathematical symbols Create, record and recognise combinations of two numbers that add to numbers from 11 up to and including 20

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 3 Flexible number trains	MA1-1WM	<i>Communicating</i> Model and record patterns for individual numbers by making all possible whole-number combinations Describe combinations for numbers using words such as 'more', 'less' and 'double'
(linked to Kindergarten lesson Building number trains)	MA1-2WM	<i>Problem solving</i> Model and record patterns for individual numbers by making all possible whole-number combinations Describe combinations for numbers using words such as 'more', 'less' and 'double'
resource required: Cuisenaire rods	MA1-3WM	<i>Reasoning</i> Check given number sentences to determine if they are true or false and explain why
	MA1-5NA (ACMNA015)	<i>Addition and subtraction 1</i> Use the terms 'add', 'plus', 'equals', 'is equal to' Use concrete materials to model addition problems involving one-digit numbers Record number sentences in a variety of ways using drawings, words, numerals and mathematical symbols Recognise, recall and record combinations of two numbers that add to 10 Create, record and recognise combinations of two numbers that add to numbers up to and including 9 Use concrete materials to model the commutative property for addition and apply it to aid the recall of addition facts Use the equals sign to record equivalent number sentences involving addition, and to mean 'is the same as'
Day 4 Toppings	MA1-1WM	<i>Communicating</i> Use patterns on a number chart to assist in counting by twos, fives or tens Use empty number lines and number charts to record repeated addition Support answers by demonstrating how an answer was obtained Recognise which strategy worked and which did not work and explain why Use objects to represent counting patterns Describe how number patterns are made and how they can be continued



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 4 Toppings cont.	MA1-2WM	<i>Problem solving</i> Investigate and solve problems based on number patterns Describe how number patterns are made and how they can be continued
	MA1-3WM	<i>Reasoning</i> Recognise which strategy worked and which did not work and explain why Recognise when an error occurs in a pattern and explain what is wrong
	MA1-6NA (ACMNA012) (ACMNA032)	<i>Multiplication and division 1</i> Count by twos, fives and tens using rhythmic counting and skip counting from zero <i>Multiplication and division 2</i> record answers to multiplication and division problems using drawings, words and numerals
	MA1-8NA (ACMNA018)	<i>Patterns and algebra 1</i> Identify and describe patterns when skip counting forwards or backwards by ones, twos, fives and tens from any starting point Represent number patterns on number lines and number charts Recognise, copy and continue patterns with objects or symbols Describe a repeating pattern of objects or symbols in terms of a 'number' pattern
Day 5 Foot Parade (links to Kindergarten lesson Foot parade)	MA1-1WM	<i>Communicating</i> Model and record patterns for individual numbers by making all possible whole-number combinations Describe combinations for numbers using words such as 'more', 'less' and 'double' Check given number sentences to determine if they are true or false and explain why



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 5 Foot Parade (links to Kindergarten lesson Foot parade) cont. (could be combined with reading of the book <i>One is a snail, Ten is a crab</i> by April Pulley Sayre and Jeff Sayre)	MA1-2WM	<i>Problem solving</i> Model and record patterns for individual numbers by making all possible whole-number combinations Describe combinations for numbers using words such as 'more', 'less' and 'double' Use combinations for numbers up to 10 to assist with combinations for numbers beyond 10 Use concrete materials to model the commutative property for addition and apply it to aid the recall of addition facts Use the equals sign to record equivalent number sentences involving addition, and to mean 'is the same as'
	MA1-3WM	<i>Reasoning</i> Check given number sentences to determine if they are true or false and explain why
	MA1-5NA (ACMNA015)	<i>Addition and subtraction 1</i> Use concrete materials to model addition problems involving one- and two-digit numbers Recognise and use the symbols for plus (+), minus (-) and equals (=) Record number sentences in a variety of ways using drawings, words, numerals and mathematical symbols Recognise, recall and record combinations of two numbers that add to 10 Create, record and recognise combinations of two numbers that add to numbers up to and including 9 Create, record and recognise combinations of two numbers that add to numbers from 11 up to and including 20

Week of Inspirational Math 2017

Grades 3-5 <https://www.youcubed.org/weeks/week-4-grade-3-5/>

You may want to visit the website link above to access any videos and PowerPoint presentations that accompany the lessons. The links within this table link directly to the lesson plans.

Note: Day 1 in the Grade 3-5 days is an extension of the Kindergarten and Grade 1-2 lesson Finger Trails. The syllabus links below are additional Stage 2 and Stage 3 links and links for this lesson.

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 1 Finger trails (this lesson builds on from the Grade 1-2 and Kindergarten versions)	MA2-1WM	<i>Communicating</i> Explain how an answer was obtained and compare their own method of solution with the methods of other students Explain problem-solving strategies using language, actions, materials and drawings Describe methods used in solving multiplication problems Connect number relationships involving multiplication to factors of a number Make generalisations about numbers and number relationships Describe the position of each term in a given number pattern
	MA2-2WM	<i>Problem solving</i> Explain problem-solving strategies using language, actions, materials and drawings Investigate visual number patterns on a number chart
	MA2-3WM	<i>Reasoning</i> Explain how an answer was obtained and compare their own method of solution with the methods of other students Connect number relationships involving multiplication to factors of a number Make generalisations about numbers and number relationships



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 1 Finger trails cont.	MA2-5NA (ACMNA055)	<i>Addition and subtraction 1</i> Add three or more single-digit numbers
	MA2-6NA (ACMNA056)	<i>Multiplication and division 1</i> Count by twos, threes, fives or tens using skip counting Select, use and record a variety of mental strategies to solve simple multiplication problems
	MA2-8NA (ACMNA060) (ACMNA074)	<i>Patterns and algebra 1</i> Identify and describe patterns when counting forwards or backwards by threes, fours ... Model, describe and then record number patterns using diagrams, words or symbols <i>Patterns and algebra 2</i> Generate number patterns using multiples
	MA3-1WM	<i>Communicating</i> Recognise and explain the relationship between the way each pattern of numbers is created and the name of the number group Use appropriate language to compare quantities, eg 'twice as much as', 'half as much as' Explain why it is useful to describe the rule for a pattern by describing the connection between the 'position in the pattern' and the 'value of the term'
	MA3-2WM	<i>Problem solving</i> Use inverse operations to justify solutions to problems
MA3-3WM	<i>Reasoning</i> Recognise and explain the relationship between the way each pattern of numbers is created and the name of the number group Use inverse operations to justify solutions to problems Explain why it is useful to describe the rule for a pattern by describing the connection between the 'position in the pattern' and the 'value of the term'	

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 1 Finger trails cont.	MA3-4NA (ACMNA098)	<i>Whole numbers 1</i> Solve problems using knowledge of factors and multiples
	MA3-6NA (ACMNA101) (ACMNA123)	<i>Multiplication and division 1</i> Show the connection between division and multiplication <i>Multiplication and division 2</i> Solve word problems involving multiplication and division
	MA3-8NA (ACMNA107) (ACMNA133)	<i>Patterns and algebra 1</i> Identify, continue and create simple number patterns involving addition <i>Patterns and algebra 2</i> Make generalisations about numbers and number relationships
Day 2 Hide the pixel	MA2-1WM	<i>Communicating</i> Explain how an answer was obtained and compare their own method of solution with the methods of other students Explain problem-solving strategies using language, actions, materials and drawings Explain why a rectangular array can be read as a division in two ways by forming vertical or horizontal groups Describe methods used in solving multiplication problems Connect number relationships involving multiplication to factors of a number
	MA2-2WM	<i>Problem solving</i> Explain problem-solving strategies using language, actions, materials and drawings
	MA2-3WM	<i>Reasoning</i> Explain how an answer was obtained and compare their own method of solution with the methods of other students Connect number relationships involving multiplication to factors of a number Make generalisations about numbers and number relationships



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 2 Hide the pixel cont.	MA2-6NA (ACMNA056) (ACMNA075)	<i>Multiplication and division 1</i> Count by twos, threes, fives or tens using skip counting Use mental strategies to recall multiplication facts for multiples of two, three, five and ten Link multiplication and division facts using groups or arrays Model and apply the commutative property of multiplication <i>Multiplication and division 2</i> Use mental strategies to build multiplication facts to at least 10×10 Use doubling and repeated doubling as a strategy to multiply by 2, 4 and 8 Record mental strategies used for multiplication and division
	MA2-10MG (ACMMG087)	<i>Area 1</i> Measure the areas of rectangles (including squares) <i>Area 2</i> Measure the areas of common two-dimensional shapes
	MA3-1WM	<i>Communicating</i> Explain that the area of a rectangle can be found by multiplying the length by the width Explore square numbers using arrays, grid paper
	MA3-2WM	<i>Problem solving</i> Explore square numbers using arrays, grid paper
	MA3-3WM	<i>Reasoning</i> Explain that the area of a rectangle can be found by multiplying the length by the width Recognise that rectangles with the same area may have different dimensions Connect factors of a number with the whole-number dimensions of different rectangles with the same area
	MA3-4NA (ACMNA122)	<i>Whole numbers 2</i> Model square numbers and record each number group in numerical and diagrammatic form



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 2 Hide the pixel cont.	MA3-6NA (ACMNA100) (ACMNA101)	<i>Multiplication and division 1</i> Apply appropriate mental and written strategies, and digital technologies, to solve multiplication word problems Show the connection between division and multiplication
	MA3-10MG (ACMMG109)	<i>Area 1</i> Establish the relationship between the lengths, widths and areas of rectangles Record, using words, the method for finding the area of any rectangle
Day 3 Crossing a rectangle	MA2-1WM	<i>Communicating</i> Describe how a length or distance was measured Use and follow positional and directional language
	MA2-9MG (ACMMG061)	<i>Length 1</i> Measure lengths and distances Record lengths and distances Compare and order lengths and distances
	MA2-16MG (ACMMG064)	<i>Angles 1</i> Identify 'perpendicular' lines in pictures, designs and the environment Use the term 'right angle' to describe the angle formed when perpendicular lines meet
	MA2-17MG (ACMMG065)	<i>Position 1</i> Draw and describe routes or paths (on grid-referenced maps and plans)
	MA3-1WM	<i>Communicating</i> describe how a length or distance was estimated and measured
	MA3-2WM	<i>Problem solving</i> Describe how a length or distance was estimated and measured

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 3 Crossing a rectangle cont.	MA3-3WM	<i>Reasoning</i> Gives a valid reason for supporting one possible solution over another
	MA3-9MG (ACMMG137)	<i>Length 2</i> Solve a variety of problems involving length
	MA3-17MG (ACMMG113)	<i>Position</i> Describe a route taken on a map using landmarks and directional language
Day 4 Penny collection Note: this task uses pennies, may need to use alternate image representing AUD coins, or explain what pennies are.	MA2-1WM	<i>Communicating</i> Explain how an answer was obtained and compare their own method of solution with the methods of other students Explain problem-solving strategies using language, actions, materials and drawings Describe methods used in solving multiplication problems Connect number relationships involving multiplication to factors of a number Make generalisations about numbers and number relationships Explain why a remainder is obtained in answers to some division problems
	MA2-2WM	<i>Problem solving</i> Explain problem-solving strategies using language, actions, materials and drawings
	MA2-3WM	<i>Reasoning</i> Explain how an answer was obtained and compare their own method of solution with the methods of other students Connect number relationships involving multiplication to factors of a number Make generalisations about numbers and number relationships Explain why a remainder is obtained in answers to some division problems



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 4 Penny collection cont.	MA2-6NA (ACMNA056) (ACMNA075) (ACMNA076)	<i>Multiplication and division 1</i> Count by twos, threes, fives or tens using skip counting Select, use and record a variety of mental strategies to solve simple multiplication problems <i>Multiplication and division 2</i> Count by fours, sixes, sevens, eights and nines using skip counting Use mental strategies to build multiplication facts to at least 10×10 Relate multiplication facts to their inverse division facts Record mental strategies used for multiplication and division Model division, including where the answer involves a remainder, using concrete materials Interpret the remainder in the context of a word problem
	MA2-8NA (ACMNA060) (ACMNA074)	<i>Patterns and algebra 1</i> Identify and describe patterns when counting forwards or backwards by threes, fours ... Model, describe and then record number patterns using diagrams, words or symbols <i>Patterns and algebra 2</i> Generate number patterns using multiples
	MA3-1WM	<i>Communicating</i> Use appropriate language to compare quantities, eg 'twice as much as', 'half as much as' Use selected words to describe each step of the solution process Use a table or similar organiser to record methods used to solve problems
	MA3-2WM	<i>Problem solving</i> Use inverse operations to justify solutions to problems Use selected words to describe each step of the solution process Recognise when division is required to solve word problems Estimate solutions to problems and check to justify solutions

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 4 Penny collection cont.	MA3-3WM	<i>Reasoning</i> Estimate solutions to problems and check to justify solutions
	MA3-4NA (ACMNA098)	<i>Whole numbers 1</i> Solve problems using knowledge of factors and multiples
	MA3-6NA (ACMNA101) (ACMNA123)	<i>Multiplication and division 1</i> Show the connection between division and multiplication Record the strategy used to solve multiplication word problems Use and interpret remainders in solutions to division problems <i>Multiplication and division 2</i> Solve word problems involving multiplication and division
	MA3-8NA (ACMNA133)	<i>Patterns and algebra 2</i> Make generalisations about numbers and number relationships
Day 5 Checkerboards and more	MA2-1WM	<i>Communicating</i> Explain how an answer was obtained and compare their own method of solution with the methods of other students Explain problem-solving strategies using language, actions, materials and drawings Describe methods used in solving multiplication problems Connect number relationships involving multiplication to factors of a number Make generalisations about numbers and number relationships Describe how the next term in a number pattern is calculated
	MA2-2WM	<i>Problem solving</i> Explain problem-solving strategies using language, actions, materials and drawings Investigate visual number patterns on a number chart



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 5 Checkerboards and more cont.	MA2-3WM	<i>Reasoning</i> Explain how an answer was obtained and compare their own method of solution with the methods of other students Connect number relationships involving multiplication to factors of a number Make generalisations about numbers and number relationships
	MA2-6NA (ACMNA056) (ACMNA075) (ACMNA076)	<i>Multiplication and division 1</i> Count by twos, threes, fives or tens using skip counting Select, use and record a variety of mental strategies to solve simple multiplication problems <i>Multiplication and division 2</i> Count by fours, sixes, sevens, eights and nines using skip counting Use mental strategies to build multiplication facts to at least 10×10 Relate multiplication facts to their inverse division facts Record mental strategies used for multiplication and division
	MA2-8NA (ACMNA060) (ACMNA074) (ACMNA081)	<i>Patterns and algebra 1</i> Identify and describe patterns when counting forwards or backwards by threes, fours ... Model, describe and then record number patterns using diagrams, words or symbols Create and continue a variety of number patterns that increase or decrease, and describe them in more than one way <i>Patterns and algebra 2</i> Generate number patterns using multiples Find a higher term in a number pattern resulting from performing multiplication
	MA3-1WM	<i>Communicating</i> Use appropriate language to compare quantities Use selected words to describe each step of the solution process Use a table or similar organiser to record methods used to solve problems Describe how number patterns have been created and how they can be continued



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 5 Checkerboards and more cont.	MA3-2WM	<i>Problem solving</i> Estimate solutions to problems and check to justify solutions Describe how number patterns have been created and how they can be continued
	MA3-3WM	<i>Reasoning</i> Estimate solutions to problems and check to justify solutions
	MA3-4NA (ACMNA098)	<i>Whole numbers 1</i> Solve problems using knowledge of factors and multiples
	MA3-6NA (ACMNA101)	<i>Multiplication and division 1</i> Show the connection between division and multiplication Record the strategy used to solve multiplication word problems
	MA3-8NA (ACMNA133)	<i>Patterns and algebra 2</i> Continue and create number patterns Describe the number pattern in a variety of ways and record descriptions using words Make generalisations about numbers and number relationships

Week of Inspirational Math 2017

Grades 6-8 <https://www.youcubed.org/weeks/week-4-grade-6-8/>

You may want to visit the website link above to access any videos and PowerPoint presentations that accompany the lessons. The links within this table link directly to the lesson plans.

Note: Days 2 and 5 for Grades 6-8 are similar to the lesson activities for Grades 3-5 above therefore have not been repeated here. Links can be extended into Stage 4 outcomes- particularly for working mathematically.

WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 1 Squares and more squares	MA3-1WM	<i>Communicating</i> Describe how number patterns have been created and how they can be continued Explain why it is useful to describe the rule for a pattern by describing the connection between the 'position in the pattern' and the 'value of the term' Interpret explanations written by peers and teachers that accurately describe geometric and number patterns
	MA3-2WM	<i>Problem solving</i> Describe how number patterns have been created and how they can be continued
	MA3-3WM	<i>Reasoning</i> Explain why it is useful to describe the rule for a pattern by describing the connection between the 'position in the pattern' and the 'value of the term'



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 1 Squares and more squares cont.	MA3-8NA (ACMNA107) (ACMNA133)	<i>Patterns and algebra 1</i> Describe patterns using the terms 'increase' and 'decrease' Create, with materials or digital technologies, a variety of patterns using whole numbers Use a number line or other diagram to create patterns <i>Patterns and algebra 2</i> Continue and create number patterns, with and without the use of digital technologies Create simple geometric patterns using concrete materials Describe the number pattern in a variety of ways and record descriptions using words Determine the rule to describe the pattern Make generalisations about numbers and number relationships
	MA4-1WM	<i>Communicating</i> Replace written statements describing patterns with equations written in algebraic symbols Represent the pattern formed by plotting points from a table and suggest another set of points that might form the same pattern Explain why it is useful to describe the rule for a pattern in terms of the connection between the top row and the bottom row of the table Determine a rule in words to describe the pattern by relating the 'position in the pattern' to the 'value of the term'
	MA4-2WM	<i>Problem solving</i> Determine whether a particular pattern can be described using algebraic symbols
	MA4-3WM	<i>Reasoning</i> Check pattern descriptions by substituting further values Replace written statements describing patterns with equations written in algebraic symbols Represent the pattern formed by plotting points from a table and suggest another set of points that might form the same pattern Explain why it is useful to describe the rule for a pattern in terms of the connection between the top row and the bottom row of the table



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
	MA4-11NA (ACMNA193)	<i>Linear relationships</i> Use objects to build a geometric pattern, record the results in a table of values, describe the pattern in words and algebraic symbols, and represent the relationship on a number grid
Day 2 Hide the pixel	<i>See Grades 3-5 section for syllabus links.</i>	
Day 3 Packing circles	MA3-1WM	<i>Communicating</i> Describes and represents mathematical situations in a variety of ways using mathematical terminology and some conventions
This task also links to Stage 1 and Stage 2 outcomes regarding tessellating shapes and units and 'best fit' for measuring	MA3-2WM	<i>Problem solving</i> Selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations
	MA3-3WM	<i>Reasoning</i> Recognise that rectangles (or other shapes) with the same area may have different dimensions Gives a valid reason for supporting one possible solution over another
	MA3-10MG (ACMMG109) (ACMMG137)	<i>Area 1</i> Apply measurement skills to solve problems involving the areas of rectangles <i>Area 2</i> Investigate the area of a triangle by comparing the area of a given triangle to the area of the rectangle of the same length and perpendicular height Investigate and compare the areas of rectangles that have the same perimeter Solve a variety of problems involving the areas of rectangles (including squares) and triangles



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 3 Packing circles cont.	MA3-15MG	<i>Two-dimensional space 1</i> Manipulate, identify and name ... triangles Compare and describe features of the sides of triangles Explore by measurement angle properties of squares, rectangles, parallelograms and rhombuses Identify and draw regular and irregular two-dimensional shapes
Day 4 Towers	MA3-1WM	<i>Communicating</i> Describe how number patterns have been created and how they can be continued Explain why it is useful to describe the rule for a pattern by describing the connection between the 'position in the pattern' and the 'value of the term' Interpret explanations written by peers and teachers that accurately describe geometric and number patterns
	MA3-2WM	<i>Problem solving</i> Describe how number patterns have been created and how they can be continued
	MA3-3WM	<i>Reasoning</i> Explain why it is useful to describe the rule for a pattern by describing the connection between the 'position in the pattern' and the 'value of the term'
	MA3-8NA (ACMNA107) (ACMNA133)	<i>Patterns and algebra 1</i> Describe patterns using the terms 'increase' and 'decrease' Create, with materials or digital technologies, a variety of patterns using whole numbers Use a number line or other diagram to create patterns <i>Patterns and algebra 2</i> Continue and create number patterns, with and without the use of digital technologies Create simple geometric patterns using concrete materials Describe the number pattern in a variety of ways and record descriptions using words Determine the rule to describe the pattern Make generalisations about numbers and number relationships



WIM lesson	NSW syllabus outcomes + AC descriptor	Sub strand and content links
Day 4 Towers cont.	MA4-1WM	<i>Communicating</i> Replace written statements describing patterns with equations written in algebraic symbols Represent the pattern formed by plotting points from a table and suggest another set of points that might form the same pattern Explain why it is useful to describe the rule for a pattern in terms of the connection between the top row and the bottom row of the table Determine a rule in words to describe the pattern by relating the 'position in the pattern' to the 'value of the term'
	MA4-2WM	<i>Problem solving</i> Determine whether a particular pattern can be described using algebraic symbols
	MA4-3WM	<i>Reasoning</i> Check pattern descriptions by substituting further values Replace written statements describing patterns with equations written in algebraic symbols Represent the pattern formed by plotting points from a table and suggest another set of points that might form the same pattern Explain why it is useful to describe the rule for a pattern in terms of the connection between the top row and the bottom row of the table
	MA4-11NA (ACMNA193)	<i>Linear relationships</i> Use objects to build a geometric pattern, record the results in a table of values, describe the pattern in words and algebraic symbols, and represent the relationship on a number grid
Day 5 Checkerboards and more	See Grades 3-5 section for syllabus links. This task may also link to Indices and tests of divisibility in Stage 4 (Years 7 and 8).	

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