

# Content Clusters - Stage 1

### Scope and sequencing by conceptual understanding

This is the scope... you create the sequence.

In this resource I provide possible ways of how groups of outcomes and their key ideas can be sequenced together based on the concepts they address. These are just examples and is not an exhaustive list of the clusters you can use to make connections across mathematics. I have used



the syllabus outcomes, sub strands and the mathematics key ideas document. When teaching for conceptual understanding (not just the knowledge of each sub strand) we need to make clear how the pieces of the mathematical puzzle fit together. To do this, our planning needs to reflect this belief - that mathematics is a complex web of interrelated ideas. For ideas on what these links are, see my Linkages across the syllabus document on the resources section of our website.

The scope of what we teach is described in the syllabus (this is the constant), the sequence of what and how we teach mathematics is a decision for individual teachers (this is the variable). These clusters can be used to create meaningful sequences of learning that focus on concepts and programs that still address common sub strands (across grades or classes) but allow for individual teachers to add additional key ideas or focus on specific aspects of the cluster that students either have misconceptions around or are developing conceptual understanding in. The clusters are numbered but are not written in teaching order. These clusters may be added to or updated in the future and newer versions will be released.



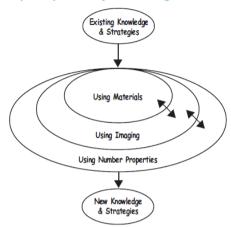
These clusters highlight the concept or main idea that ties each group of outcomes together, assisting teachers in making sense and meaning of the mathematics to students. When we think about the concepts or understandings first, we can think about what misconceptions students may have or what aspects of that concept they need next to connect their prior knowledge (the known) to create new knowledge (the unknown). The image to the right sourced from NZMaths, is based on Pirie and Kieren's growth in understanding model of the 'back and forth' nature of how students develop understanding from the known to the unknown.

#### A (scope and) sequence should:

- reflect the conceptual needs of your students at this point in time (they need to be evaluated and changed constantly)
- show evidence of connections across sub strands
- address connected content strands that deal with similar concepts within a lesson or within a sequence of lessons (e.g. over a few weeks)
- give teachers an overarching structure to guide immediate planning
- where possible, be written to address the upcoming half- term or term teaching and learning cycle

NESA states that for their registration process as evidence of compliance schools need to provide "scope and sequence of learning/units of work in relation to outcomes of NESA syllabus for each KLA for each Year" (page 10). **Note:** Most schools have a set, wider grade or school-based scope and sequence, you can use the content clusters within those parameters to guide what conceptual understandings you focus on for your students. They show where you can make connections between the sub strands that are listed in the school's scope and sequence.

### https://primarylearning.com.au



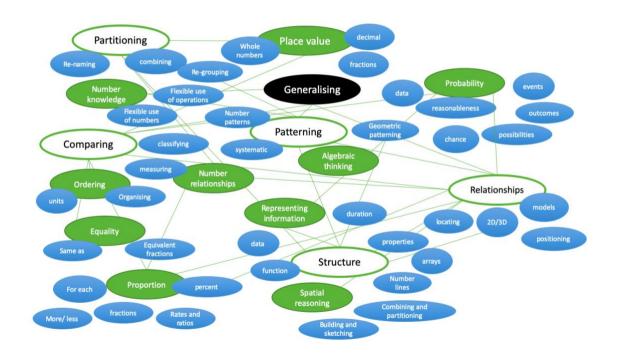




### Mind map of big ideas and smaller concept connections

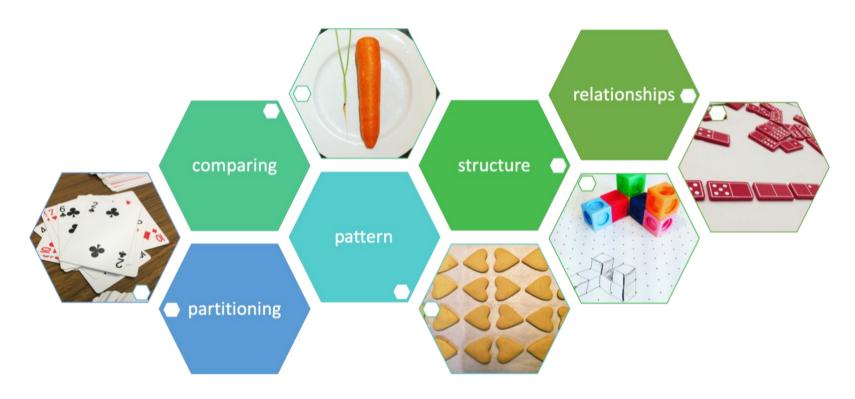
To assist with how these clusters fit into the larger picture of mathematics, what many researchers refer to as 'Big ideas' or important concepts (Askew, 2013; Boaler, 2017; Charles, 2005; Clarke, Clarke & Sullivan, 2012; Hurst & Hurrell, 2014; Siemon, Bleckly & Neal, 2012; Tout & Spithill, 2015), I had a go at thinking holistically about *"What are the main concepts or 'knowledge actions' students need?"* Here is my 'messy' thinking, then a more organised way of linking these ideas together are illustrated on the following pages.







## Big ideas simplified



I then thought about these important concepts 'big ideas', the smaller 'knowledge actions' within them, and how the Content Clusters fit under each of these concepts, noting that some clusters align with more than one big idea.



### Big ideas and smaller 'knowledge actions'

Partitioning	Pattern	Comparing	Structure	Relationships
<ul> <li>Combining</li> <li>Part-whole</li> <li>Place value</li> <li>Modelling</li> <li>Whole numbers</li> <li>Decimals</li> <li>Fractions</li> </ul>	<ul> <li>Geometric</li> <li>Number</li> <li>Algebraic</li> <li>Generalising</li> <li>Predicting</li> </ul>	<ul> <li>Equality (with numbers and measurement)</li> <li>Ordering</li> <li>Proportion (fractions, percent, rates, ratios)</li> <li>Magnitude</li> <li>Estimating</li> </ul>	<ul> <li>Number</li> <li>Arrays</li> <li>Shape</li> <li>Measuring</li> <li>Spatial</li> <li>Building and sketching</li> <li>Representing features (shape, data)</li> </ul>	<ul> <li>Number</li> <li>Additive and multiplicative</li> <li>2D and 3D</li> <li>Probability</li> <li>Possibilities (chance)</li> <li>Data</li> <li>Locating, positioning</li> <li>Part-whole</li> </ul>

These are just my ideas, Charles (2005) in his paper recognises that in developing deeper understanding of big ideas it might be helpful for teachers to "decide to modify or build your own" (p. 11). He also stated that:

"In working with colleagues on the development of this paper I am rather certain that it is not possible to get one set of Big Ideas and Understandings that all mathematicians and mathematics educators can agree on. Fortunately, I do not think it's necessary to reach a consensus in this regard. Use the Big Mathematical Ideas and Understandings presented here as a starting point for the conversations they are intended to initiate" (p. 9)



### Organisation of Stage 1 clusters (updated)

In this update I have reduced the repetition of clusters and now simply have all the clusters included once (they are no longer repeated under substrand headings). A few clusters have been revised (Cluster 10 and 31) to add in other connections that have arisen. Where appropriate, clusters have been given the same or similar names as concepts from other Stages to help make connections, show concepts that develop, and to assist with multi-stage planning. This version also includes a visual overview of the clusters mapped to the NSW outcomes they address to assist with planning and programming. A list of cluster titles is also included so teachers can see 'at a glance' the types of concepts the clusters explore. There is no set time for how long each cluster may take to explore with students, it could be 2 weeks per cluster or 3-4 weeks. Clusters may be repeated, merged or omitted (please see these are examples). Decisions about how the clusters are arranged and implemented should be made by teachers at a school/grade/classroom level based on students' needs, abilities, and interests.

### References

Askew, M. (2013). Big ideas in primary mathematics: Issues and directions. Perspectives in Education, 31(3), 5-18.

Charles, R. I., & Carmel, C. A. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. Journal of Mathematics Education, 7(3), 9-24.

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Hurst, C., & Hurrell, D. (2014). Developing the big ideas of number. International Journal of Educational Studies in Mathematics, 1(2), 1-18.

Mathematics K-10 Syllabus outcomes © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2012.

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Tout, D. & Spithill, J. (2015). Big Ideas in Mathematics Teaching. The Research Digest, QCT, 2015 (11)

What is mathematical beauty Jo Boaler (Youcubed)



# Clusters mapped to big ideas

**Primary Learning** 

Partitioning	Pat
Cluster 2: Visual representation of collections Cluster 6: Partitioning Cluster 7: Place Value Cluster 8: Applies non-count-by-ones Cluster 9: One ten is ten ones Cluster 10: One hundred can be regrouped Cluster 23: A fraction is a number that represents a relationship Cluster 24: Fractions are created through sharing - division	Cluster 1: Conumbers Cluster 5: Non Representat Cluster 11: Acan be a cool Cluster 12: Non be represen pairs Cluster 13: For repeat or gr Cluster 28: For be created to

- counting
- umber tions
- Any number untable unit
- Numbers can nted using
- Patterns row
- Patterns can using shapes

- Cluster 2: Visual representation of collections
- Cluster 3: Comparing quantities
- Cluster 14: The 'equals sign' means 'the same as'
- · Cluster 17: Quantities can be estimated
- Cluster 18: Benchmarks can be used to estimate quantity
- Cluster 21: Objects can be ordered
- Cluster 22: Objects can be measured and compared
- Cluster 30: Time can be measured
- Content Cluster 34: Events can be measured and predicted based on chance

#### Structure

- · Cluster 4: Trusting the count
- Cluster 5: Number Representations
- · Cluster 11: Any number can be a countable unit
- Cluster 12: Numbers can be represented using pairs
- Cluster 15: Array structure
- Cluster 16: The 'for each' concept
- Cluster 19: An object has attributes that can be measured
- Cluster 20: Repeated units provide structure
- Cluster 25: A fraction can be represented in many ways
- Cluster 26: Shape properties remain constant
- · Cluster 27: Shapes and objects are classified
- Cluster 31: Time (duration) can be visually represented

#### Relationships

- Cluster 8: Applies noncount-by-ones
- Cluster 9: One ten is ten ones
- Cluster 10: One hundred can be regrouped
- · Cluster 23: A fraction is a number that represents a relationship
- Cluster 29: Locating: Your position can be described
- Cluster 30: Time can be measured
- Cluster 32: Information can be collected
- Cluster 33: Information can be presented visually



### **Stage 1 Overview of Content Clusters**

Content Cluster 1: Counting numbers (follow a pattern to develop number sense and place value)

Content Cluster 2: Visual representation of collections allows us to compare quantities

Content Cluster 3: Comparing quantities (using numbers, symbols and words)

Content Cluster 4: Trusting the count: Counting can start from numbers other than one (as a starting point for addition and subtraction)

Content Cluster 5: Number Representations: Numbers can be represented by words/language, images/drawings, number

Content Cluster 6: Partitioning: Numbers can be partitioned in multiple ways (part-whole number knowledge)

Content Cluster 7: Place Value: A number can be regrouped or renamed to aid in operating with the number (partitioning to operate with numbers)

Content Cluster 8: Applies non-count-by-ones (as flexible arithmetic strategies)

Content Cluster 9: One ten is ten ones (number relationships, place value)

Content Cluster 10: One hundred can be regrouped as ten tens, or, one hundred ones (number relationships, place value)

Content Cluster 11: Any number can be a countable unit e.g. counting by fives off the decade (e.g. relate to money)

Content Cluster 12: Numbers can be represented using pairs to show odd and even

Content Cluster 13: Patterns repeat or grow and the next number can be predicted (number structure)

Content Cluster 14: The 'equals sign' means 'the same as' (equality and inequality)

Content Cluster 15: Array structure: Multiples can be visually represented in an array (structure of number)

Content Cluster 16: The 'for each' concept: For each one of these (how many rows) there are some of those (how much in each row) - multiplicative thinking

Content Cluster 17: Quantities can be estimated (how much/ how many) using counting

Content Cluster 18: Benchmarks can be used to estimate quantity (how much/ how many)

Content Cluster 19: An object has attributes that can be measured using different processes

Content Cluster 20: Repeated units provide structure: Units of measurement can be iterated (no gaps or overlaps)

Content Cluster 21: Objects can be ordered based on (informal) units of measurement (e.g. size, quantity/number of cubes a container can hold)





## **Stage 1 Overview of Content Clusters cont.**

Content Cluster 22: Objects can be measured and compared using formal units

Content Cluster 23: A fraction is a number that represents a relationship between parts and the whole (number relationships)

Content Cluster 24: Fractions are created through sharing - division (a fraction is less than one whole and that fractions are the result of dividing e.g sharing 2

biscuits among 4 people)

Content Cluster 25: A fraction can be represented in many ways e.g as length, area, or a collection (continuous and discrete representations)

Content Cluster 26: Shape properties remain constant even when they are moved or reorientated (transforming shapes)

Content Cluster 27: Shapes and objects are classified based on properties (describing and comparing features)

Content Cluster 28: Patterns can be created using shapes (copying, turning, flipping, sliding)

Content Cluster 29: Locating: Your position can be described in relation to other objects or landmarks

Content Cluster 30: Time can be measured in minutes and hours

Content Cluster 31: Time (duration) can be visually represented in multiple ways e.g. calendars, clocks, timetables

Content Cluster 32: Information can be collected and represented using numbers

Content Cluster 33: Information can be presented visually to convey meaning (data representations)

Content Cluster 34: Events can be measured and predicted based on chance



## **Stage 1 Content Cluster outcome mapping**

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	1 Counting numbers	2 Visual representation of collections	3 Comparing quantities	4 Trusting the count	5 Number Representations	6 Partitioning: Numbers can be	7 Place Value	8 Applies non-count-by-ones	9 One ten is ten ones	10 One hundred can be regrouped as ten	11 Any number can be a countable unit	12 Numbers can be represented using	13 Patterns repeat or grow	14 The equals sign means 'the same as'	15 Array structure	16 The 'for each' concept	17 Quantities can be estimated	18 Benchmarks can be used to estimate	19 An object has attributes that can be	20 Repeated units provide structure	21 Objects can be ordered	22 Objects can be measured and	23 A fraction is a number	24 Fractions are created through sharing	25 A fraction can be represented in many	26 Shape properties remain constant	27 Shapes and objects are classified	28 Patterns can be created using shapes	29 Locating: Your position can be	30 Time can be measured in minutes and	31 Time (duration)	32 Information can be collected	33 Information can be presented visually	34 Events can be measured (chance)
Whole Number MA1-4NA																																		
Add & Sub																																		
MA1-5NA Multi & Division																																	<u> </u>	
MA1-6NA																																	<u> </u>	
Frac & Dec MA1-7NA																																	'	
Pat & Algebra																																		
MA1-8NA																																	<u> </u>	
Length MA1-9MG																																		
Area MA1-10MG																																		
Vol & Cap																																		
MA1-11MG Mass																																	<u> </u>	
MA1-12MG																																		
Time MA1-13MG																																		
<b>3D Space</b> MA1-14MG		-																																
2D Space MA1-15MG																																		
Position																																		
MA1-16MG Data																																		$\vdash$
MA1-17SP																																		
Chance MA1-18SP																																	'	



Content Cluster 1: Counting numbers (follow a pattern to develop number sense and place value)						
Whole Numbers 1 MA1-4NA	Whole Numbers 2 MA1-4NA	Multiplication and Division 1 MA1-6NA	Patterns and Algebra 1 MA1-8NA			
Read, write and order two-digit	Read, write and order three-	Rhythmic and skip count by twos, fives	Recognise, copy, continue, create and describe			
numbers	digit numbers	and tens from zero	increasing and decreasing number patterns			
Read and use ordinal names to at			Patterns and Algebra 2 MA1-8NA			
least 'thirty-first'			Describe patterns with numbers and identify			
			missing elements			

Content Cluster 2: Visual representation of collections allows us to compare quantities						
Addition and Subtraction 1	Whole Numbers 1 MA1-	Addition and Subtraction 2	Multiplication and Division 1 MA1-6NA			
MA1-5NA	4NA	MA1-5NA	Model and use equal 'groups of' objects as a strategy for			
Model addition and subtraction	Partition two-digit	Make connections between	multiplication			
using concrete materials	numbers using place	addition and subtraction	Multiplication and Division 2 MA1-6NA			
Model and apply the	value		Model and use arrays described in terms of 'rows' and 'columns' as a			
commutative property			strategy for multiplication			
for addition			Model and use groups, arrays and repeated subtraction as strategies			
Use the equals sign to record			for division			
equivalent number sentences			Record using drawings, words and numerals			



Content Cluster 3: Comparing quantities (using numbers, symbols and words)						
Addition and Subtraction 1 MA1-5NA	Addition and Subtraction 2	Multiplication and Division 1 MA1-6NA	Fractions and Decimals 1			
Model addition and subtraction using	MA1-5NA	Model division by sharing a collection equally into a given	MA1-7NA			
concrete materials	Use and record a range of	number of groups to determine the number in each group	Use fraction notation 1/2			
Model and apply the commutative	mental strategies for addition	Model division by sharing a collection equally into groups	Fractions and Decimals 2			
property for addition	and subtraction of two-digit	of a given size to determine the number of groups	MA1-7NA			
Record number sentences using	numbers	Multiplication and Division 2 MA1-6NA	Use fraction notation 1/4 and			
drawings, words, numerals and the	Make connections between	Record using drawings, words and numerals	1/8			
symbols +, - and =	addition and subtraction					
		Record using drawings, words and numerals	1/8			

Content Cluster 4: Trusting the count: Counting can start from numbers other than one (as a starting point for addition and subtraction)						
Whole Numbers 1 MA1-4NA	Addition and Subtraction 1 MA1-5NA	Multiplication and Division 1 MA1-6NA	Patterns and Algebra 2 MA1-8NA			
Count forwards and backwards by	Model addition and subtraction using	Rhythmic and skip count by twos, fives	Describe patterns with numbers and			
ones from a two-digit number	concrete materials	and tens from zero	identify missing elements			
Whole Numbers 2 MA1-4NA						
Count forwards and backwards by						
twos, threes, fives and tens from any						
starting point						



# **Stage 1 Overview Clusters**

Content Cluster 5: Number Representations: Numbers can be represented by words/language, images/drawings, number							
Whole Numbers 1 MA1-4NA	Addition and Subtraction 1 MA1-5NA	Multiplication and Division 2 MA1-6NA	Patterns and Algebra 1 MA1-8NA				
Read, write and order two-digit	Model addition and subtraction using concrete materials	Model and use groups, arrays and	Recognise, copy, create, continue and				
numbers	Record number sentences using drawings, words,	repeated subtraction as strategies for	describe repeating patterns of objects				
Read and use ordinal names to	numerals and the symbols +, - and =	division	or symbols				
at least 'thirty-first'	Use the equals sign to record equivalent number	Record using drawings, words and	Model and describe odd and even				
	sentences	numerals	numbers				
	Addition and Subtraction 2 MA1-5NA						
	Use and record a range of mental strategies for addition						
	and subtraction of two-digit numbers						

Content Cluster 6: Partitioning: Numbers can be partitioned in multiple ways (part-whole number knowledge)					
Whole Numbers 1 MA1-	Addition and Subtraction 1 MA1-5NA	Multiplication and Division 1 MA1-6NA	Fractions and Decimals 1 MA1-7NA		
4NA	Model addition and subtraction using concrete	Model division by sharing a collection equally into a given	Recognise, describe and represent		
Partition two-digit numbers	materials	number of groups to determine the number in each group	one-half as one of two equal parts of		
using place value	Recognise and recall combinations of numbers	Model division by sharing a collection equally into groups	whole objects, shapes and collections		
Whole Numbers 2 MA1-	that add to numbers up to 20	of a given size to determine the number of groups	Fractions and Decimals 2 MA1-7NA		
4NA	Model and apply the commutative property	Multiplication and Division 2 MA1-6NA	Recognise, describe and represent		
Partition numbers of up to	for addition	Model and use arrays described in terms of 'rows' and	halves, quarters and eighths of whole		
three digits using place	Addition and Subtraction 2 MA1-5NA	'columns' as a strategy for multiplication	objects, shapes and collections		
value	Use and record a range of mental strategies	Model and use groups, arrays and repeated subtraction			
	for addition and subtraction of two-digit numbers	as strategies for division			



Content Cluster 7: Place Value: A number can be regrouped or renamed to aid in operating with the number (partitioning to operate with numbers) Whole Numbers 1 MA1-4NA Addition and Subtraction 1 MA1-5NA Multiplication and Division 1 MA1-6NA Partition two-digit numbers Model addition and subtraction using concrete Model and use equal 'groups of' objects as a strategy for multiplication using place value Model division by sharing a collection equally into a given number of groups to materials Model and apply the commutative property for addition Whole Numbers 2 MA1-4NA determine the number in each group Partition numbers of up to Model division by sharing a collection equally into groups of a given size to Addition and Subtraction 2 MA1-5NA determine the number of groups three digits using place Use and record a range of mental strategies for addition and subtraction of two-digit numbers Multiplication and Division 2 MA1-6NA value Solve word problems involving addition and subtraction Model and use groups, arrays and repeated subtraction as strategies for division

Content Cluster 8: Applies non-count-by-ones (as flexible arithmetic strategies)						
Addition and Subtraction 1 MA1-5NA  Model addition and subtraction using	Whole Numbers 1 MA1-4NA	Addition and Subtraction 2 MA1- 5NA	Multiplication and Division 2 MA1-6NA	Patterns and Algebra 2 MA1-8NA		
concrete materials	Partition two-digit	Make connections between addition	Model and use repeated	Find missing numbers in		
Recognise and recall combinations of	numbers using place	and subtraction	addition as a strategy for	number sentences involving		
numbers that add to numbers up to 20	value	Use and record a range of mental	multiplication	one operation of addition or		
Model and apply the commutative		strategies for addition and		subtraction		
property for addition		subtraction of two-digit numbers				
Use and record a range of mental		Solve word problems involving				
strategies for addition and subtraction		addition and subtraction				
of one- and two-digit numbers						





Content Cluster 9: One ten is ten ones (number relationships, place value)						
Whole Numbers 1	Addition and Subtraction 1 MA1-5NA	Addition and Subtraction 2 MA1-5NA	Patterns and Algebra 2 MA1-8NA			
MA1-4NA	Recognise and recall combinations of numbers that add	Use and record a range of mental	Find missing numbers in number			
Partition two-digit	to numbers up to 20	strategies for addition and subtraction	sentences involving one operation of			
numbers using place	Use and record a range of mental strategies for addition	of two-digit numbers	addition or subtraction			
value	and subtraction of one- and two-digit numbers					

Content Cluster 10: One hundred can be regrouped as ten tens, or, one hundred ones (number relationships, place value)					
Whole Numbers 2 MA1-4NA	Length 2 MA1-9MG	Position 2 MA1-16MG			
Partition numbers of up to three digits using	Recognise the need for formal units to measure length	Represent the position of objects in models,			
place value	Use metres and centimetres to measure and estimate lengths	photographs and drawings			
Read, write and order three-digit numbers	and distances				
	Record lengths using the abbreviations m and cm				

Content Cluster 11: Any number can be a countable unit e.g. counting by fives off the decade (e.g. relate to money)					
Whole Numbers 1 MA1-4NA	Whole Numbers 2 MA1-4NA	Multiplication and Division 1	Patterns and Algebra 2 MA1-8NA		
Recognise, describe and order	Count forwards and backwards by twos,	MA1-6NA	Describe patterns with numbers and		
Australian coins according to their	threes, fives and tens from any starting point	Rhythmic and skip count by twos,	identify missing elements		
value	Recognise, count and order Australian coins	fives and tens from zero			
	and notes according to their value				





Content Cluster 12: Numbers can be represented using pairs to show odd and even			
Patterns and Algebra 1 MA1-7NA Whole Numbers 2 MA1-4NA			
Model and describe odd and even numbers	Count forwards and backwards by twos, threes, fives and tens from any starting point		

Content Cluster 13: Patterns repeat or grow and the next number can be predicted (number structure)					
Whole Numbers 1 MA1-4NA	Multiplication and Division 1	Patterns and Algebra 1 MA1-8NA	Patterns and Algebra 2 MA1-		
Read, write and order two-digit numbers	MA1-6NA	Recognise, copy, continue, create and describe	8NA		
Read and use ordinal names to at least 'thirty-first'	Rhythmic and skip count by	increasing and decreasing number patterns	Describe patterns with numbers		
Whole Numbers 2 MA1-4NA	twos, fives and tens from zero	Recognise, copy, create, continue and describe	and identify missing elements		
Count forwards and backwards by twos,		repeating patterns of objects or symbols			
threes, fives and tens from any starting point					

Content Cluster 14: The 'equals sign' means 'the same as' (equality and inequality)					
Addition and Subtraction 1 MA1-5NA	Addition and Subtraction 2	Patterns and Algebra 2 MA1-8NA	Mass 1 MA1-12MG		
Record number sentences using drawings, words,	MA1-5NA	Find missing numbers in number	Place objects on either side of a pan		
numerals and the symbols +, - and =	Make connections between	sentences involving one	balance to obtain a level balance		
Use the equals sign to record equivalent number	addition and subtraction	operation of addition or	Use a pan balance to compare two		
sentences		subtraction	objects based on mass		
Model and apply the commutative property for addition					



Content Cluster 15: Array structure: Multiples can be visually represented in an array (structure of number)					
Multiplication and Division 1 MA1-6NA	Multiplication and Division 2 MA1-6NA	Patterns and Algebra 1	Area 1 MA1-10MG		
Rhythmic and skip count by twos, fives and tens from zero	Model and use repeated addition as a	MA1-8NA	Use uniform informal units		
Model and use equal 'groups of' objects as a strategy for	strategy for multiplication	Recognise, copy,	to measure and estimate		
multiplication	Multiplication and Division 2 MA1-6NA	create, continue and	areas		
Model division by sharing a collection equally into a given	Model and use arrays described in terms	describe repeating	Record areas by referring to		
number of groups to determine the number in each group	of 'rows' and 'columns' as a strategy for	patterns of objects	the number and type of		
Model division by sharing a collection equally into groups	multiplication	or symbols	uniform informal unit used		
of a given size to determine the number of groups	Model and use groups, arrays and repeated				
	subtraction as strategies for division				

Content Cluster 16: The 'for each' concept: For each one of these (how many rows) there are some of those (how much in each row) - multiplicative thinking					
Multiplication and Division 1 MA1-6NA	Multiplication and Division 2 MA1-6NA	Patterns and Algebra 1	Whole Numbers 2 MA1-		
Rhythmic and skip count by twos, fives and tens from zero	Model and use repeated addition as a strategy	MA1-8NA	4NA		
Model and use equal 'groups of' objects as a strategy for	for multiplication	Recognise, copy, create,	Count forwards and		
multiplication	Model and use arrays described in terms	continue and describe	backwards by twos,		
Model division by sharing a collection equally into a given	of 'rows' and 'columns' as a strategy for	repeating patterns of	threes, fives and tens from		
number of groups to determine the number in each group	multiplication	objects or symbols	any starting point		
Model division by sharing a collection equally into groups of a	Model and use groups, arrays and repeated				
given size to determine the number of groups	subtraction as strategies for division				



Content Cluster	Content Cluster 17: Quantities can be estimated (how much/ how many) using counting						
Length 1 MA1-	Area 1 MA1-	Volume and Capacity 1	Mass MA1-12MG	Multiplication and Division 2	Addition and		
9MG	10MG	MA1-11MG	Place objects on either side of a pan balance	MA1-6NA	Subtraction 1 MA1-5NA		
Use uniform	Use uniform	Use uniform informal units	to obtain a level balance	Model and use repeated addition	Use and record a range		
informal units to	informal	to measure, compare and	Use a pan balance to compare two objects	as a strategy for multiplication	of mental strategies		
measure,	units to	estimate capacities	based on mass	Model and use arrays described	for addition and		
compare and	measure and	Use uniform informal units	Mass 2 MA1-12MG	in terms of 'rows' and 'columns'	subtraction of one- and		
estimate lengths	estimate	to measure and estimate	Use uniform informal units to measure,	as a strategy for multiplication	two-digit numbers		
	areas	volumes	compare and estimate the masses of objects				

Content Cluster 18: Benchmarks can be used to estimate quantity (how much/ how many)				
Length 2 MA1-9MG	Time 2 MA1-13MG	Fractions and Decimals 1 MA1-7NA	Addition and Subtraction 1 MA1-	
Compare and order	Experience activities with	Recognise, describe and represent one-half as one of two equal parts	5NA	
shapes/objects based on	duration of one hour,	of whole objects, shapes and collections	Use and record a range of mental	
length measured using	half/quarter of an hour, one	Use fraction notation 1/2	strategies for addition and	
uniform informal units	minute and a few seconds	Fractions and Decimals 2 MA1-7NA	subtraction of one- and two-digit	
		Recognise, describe and represent halves, quarters and eighths of	numbers	
		whole objects, shapes and collections		
		Use fraction notation 1/4 and 1/8		



Content Cluster 19: An object has attributes that can be measured using different processes							
Length 1 MA1-9MG	Area 1 MA1-10MG	Volume and Capacity 1 MA1-	Mass 2 MA1-12MG	Addition and Subtraction	Multiplication and	Three-Dimensional	
Use uniform informal	Use uniform	11MG	Use uniform informal	1 MA1-5NA	Division 2 MA1-6NA	Space 2 MA1-14MG	
units to measure,	informal units to	Use uniform informal units to	units to measure,	Model addition and	Model and use	Represent three-	
compare and estimate	measure and	measure, compare and estimate	compare and estimate	subtraction using concrete	arrays described in	dimensional objects	
lengths	estimate areas	capacities	the masses of objects	materials	terms of 'rows' and	in models and	
Length 2 MA1-9MG	Record areas by	Use uniform informal units to	Record masses by	Use and record a range of	'columns' as a	drawings	
Record lengths by	referring to the	measure and estimate volumes	referring to the	mental strategies	strategy for		
referring to the number	number and	Record capacities and volumes	number and type of	for addition and	multiplication		
and type of uniform	type of uniform	by referring to the number and	uniform informal unit	subtraction of one- and			
informal unit used	informal unit used	type of uniform informal unit used	used	two-digit numbers			

Content Cluster 20: Repeated units provide structure: Units of measurement can be iterated (no gaps or overlaps)					
Length 1 MA1-9MG	Area 1 MA1-10MG	Addition and Subtraction 1 MA1-5NA	Multiplication and Division 1 MA1-6NA	Whole Numbers 2 MA1-	
Use uniform informal units to	Use uniform informal units	Model addition and subtraction using	Rhythmic and skip count by twos, fives	4NA	
measure, compare and estimate	to measure and estimate	concrete materials	and tens from zero	Count forwards and	
lengths	areas	Use and record a range of mental	Multiplication and Division 2 MA1-6NA	backwards by twos,	
Length 2 MA1-9MG	Record areas by referring	strategies for addition and subtraction of	Model and use repeated addition as a	threes, fives and tens from	
Record lengths by referring to the	to the number and type of	one- and two-digit numbers	strategy for multiplication	any starting point	
number and type of uniform	uniform informal unit used	Addition and Subtraction 2 MA1-5NA	Model and use arrays described in terms		
informal unit used		Use and record a range of mental	of 'rows' and 'columns' as a strategy for		
		strategies for addition and subtraction of	multiplication		
		two-digit numbers			





Content Cluster 21: Objects can be ordered based on (informal) units of measurement (e.g. size, quantity/number of cubes a container can hold)					
Whole Numbers 1 MA1-4NA	Addition and Subtraction 1	Length 2 MA1-9MG	Area 2 MA1-10MG	Volume 2 MA1-11MG	
Read, write and order two-digit	MA1-5NA	Compare and order	Compare and order surfaces	Compare and order objects	
numbers	Model addition and subtraction	shapes/objects based on	based on area measured	based on capacity and volume	
	using concrete materials	length measured using	using uniform informal units	measured using	
		uniform informal units		uniform informal units	

Content Cluster 22: Objects can be measured and compared using formal units			
Length 2 MA1-9MG Addition and Subtraction 1 MA1-5NA			
Recognise the need for formal units to measure length	Use and record a range of mental strategies for addition and subtraction of one-		
Use metres and centimetres to measure and estimate lengths and distances	and two-digit numbers		
Record lengths using the abbreviations m and cm			

Content Cluster 23: A fraction is a number that represents a relationship between parts and the whole (number relationships)				
Fractions and Decimals 1 MA1-7NA Fractions and Decimals 2 MA1-7NA Time 2 MA1-13MG Two-Dimensional Space 2 MA1-15MG				
Recognise, describe and represent	Recognise, describe and represent	Experience activities with duration of	Identify, perform, describe and record	
one-half as one of two equal parts of	halves, quarters and eighths of whole	one hour, half/quarter of an hour, one	the result of full, half and quarter	
whole objects, shapes and collections	objects, shapes and collections	minute and a few seconds	'turns'	



Content Cluster 24: Fractions are created through sharing - division (a fraction is less than one whole and that fractions are the result of dividing e.g sharing 2 biscuits among 4 people)

#### Fractions and Decimals 1 MA1-7NA Multiplication and Division 1 MA1-6NA Multiplication and Division 2 MA1-6NA Fractions and Decimals 2 MA1-7NA Model division by sharing a collection Model and use groups, arrays and Recognise, describe and represent Recognise, describe and represent one-half as one of two equal parts of halves, quarters and eighths of whole equally into a given number of groups repeated subtraction as strategies for whole objects, shapes and collections objects, shapes and collections to determine the number in each group | division Use fraction notation 1/2 Use fraction notation 1/4 and 1/8 Model division by sharing a collection equally into groups of a given size to determine the number of groups

Content Cluster 25: A fraction can be represented in many ways e.g as length, area, or a collection (continuous and discrete representations)				
Fractions and Decimals 1	Fractions and Decimals 2 MA1-	Multiplication and Division 1	Length 2 MA1-9MG	Time 2 MA1-13MG
MA1-7NA	7NA	MA1-6NA	Use metres and centimetres to	Experience activities with
Recognise, describe and	Recognise, describe and	Model division by sharing a	measure and estimate lengths	duration of one hour,
represent one-half as one of	represent halves, quarters and	collection equally into a	and distances	half/quarter of an hour, one
two equal parts of whole	eighths of whole objects, shapes	given number of groups to	Record lengths using the	minute and a few seconds
objects, shapes and	and collections	determine the number in	abbreviations m and cm	
collections	Use fraction notation 1/4 and 1/8	each group		
Use fraction notation 1/2				





### Content Cluster 26: Shape properties remain constant even when they are moved or reorientated (transforming shapes)

#### Three-Dimensional Space 1 MA1-14MG

Identify cones, cubes, cylinders, spheres and prisms presented in different orientations, in pictures and the environment Recognise that three-dimensional objects look different from different vantage-points

#### Two-Dimensional Space 1 MA1-15MG

Identify and name triangles, quadrilaterals, pentagons, hexagons and octagons presented in different orientations, in pictures and the environment

#### Two-Dimensional Space 2 MA1-15MG

Make and draw two-dimensional shapes in different orientations

Identify, perform, describe and record the result of full, half and quarter 'turns'

### Content Cluster 27: Shapes and objects are classified based on properties (describing and comparing features)

### Three-Dimensional Space 1 MA1-14MG

Distinguish between flat and curved surfaces

Use the term 'faces' to describe flat surfaces with straight edges

#### Three-Dimensional Space 2 MA1-14MG

Use the terms 'flat surface', 'curved surface', 'face', 'edge' and 'vertex' appropriately to describe three-dimensional objects

Recognise faces of three-dimensional objects as two-dimensional shapes

Represent three-dimensional objects in models and drawings

Distinguish between three-dimensional objects and two-dimensional shapes

#### Two-Dimensional Space 1 MA1-15MG

Identify horizontal, vertical and parallel lines
Use the terms 'side' and 'vertex' to describe and
compare two-dimensional shapes

### Content Cluster 28: Patterns can be created using shapes (copying, turning, flipping, sliding)

### Two-Dimensional Space 1 MA1-15MG

Identify horizontal, vertical and parallel lines

### Two-Dimensional Space 2 MA1-15MG

Make and draw two-dimensional shapes in different orientations
Identify, perform and record the result of one-step 'slides' and 'flips'
Make symmetrical designs with a variety of materials
Identify, perform, describe and record the result of full, half and quarter 'turns'

#### Patterns and Algebra 1 MA1-8NA

Recognise, copy, create, continue and describe repeating patterns of objects or symbols



Content Cluster 29: Locating: Your position can be described in relation to other objects or landmarks			
Position 1 MA1-16MG	Position 2 MA1-16MG	Two-Dimensional Space 2	Three-Dimensional Space 2 MA1-
Give and follow directions to move to familiar locations and to	Interpret simple maps of familiar	MA1-15MG	14MG
position objects	locations	Make and draw two-	Represent three-dimensional
Use the terms 'left' and 'right' to describe position in relation to self	Represent the position of objects in	dimensional shapes in	objects in models and drawings
and from the perspective of a person facing in the opposite direction	models, photographs and drawings	different orientations	
Describe a path from one location to another			

Content Cluster 30: Time can be measured in minutes and hours			
Time 1 MA1-13MG	Fractions and Decimals 1 MA1-7NA	Chance 1 MA1-18SP	
Tell time to the half-hour	Recognise, describe and represent	Recognise the element of chance in familiar situations	
Time 2 MA1-13MG	one-half as one of two equal parts of	Describe chance events using everyday language	
Experience activities with duration of one hour, half/quarter of an	whole objects, shapes and collections	Chance 2 MA1-18SP	
hour, one minute and a few seconds		Identify practical activities and everyday events that involve chance	
Tell time to the quarter-hour, using the language of 'past' and 'to'		Describe events as 'likely' or 'unlikely'	

Content Cluster 31: Time (duration) can be visually represented in multiple ways e.g. calendars, clocks			
Whole Numbers 1 MA1-4NA	Time 1 MA1-13MG	Time 2 MA1-13MG	
Read and use ordinal names to at least	Name and order months and seasons	Use a calendar to determine duration in months, weeks and days	
'thirty-first'	Use a calendar to identify the date and determine	Use informal units to measure and compare the durations of events	
	the number of days in each month	Experience activities with duration of one hour, half/quarter of an hour, one	
		minute and a few seconds	





Content Cluster 32: Information can be collected and represented using numbers			
Data 1 MA1-17SP	Whole Numbers 1 MA1-4NA	Addition and Subtraction 2 MA1-5NA	Addition and Subtraction 1 MA1-5NA
Collect data and track what has been	Count forwards and backwards by	Solve word problems involving	Model addition and subtraction using
counted	ones from a two-digit number	addition and subtraction	concrete materials
Data 2 MA1-17SP			Record number sentences using
Pose questions and collect categorical			drawings, words, numerals and the
data			symbols +, - and =

Content Cluster 33: Information can be presented visually to convey meaning (data representations)			
Data 1 MA1-17SP	Data 2 MA1-17SP	Two-Dimensional Space 1 MA1-15MG	
Create data displays using objects and pictures (one-to-	Create data displays using lists, tables and picture	Identify horizontal, vertical and parallel lines	
one correspondence) and interpret them	graphs (one-to-one correspondence) and interpret them		

Content Cluster 34: Events can be measured and predicted based on chance			
Chance 1 MA1-18SP	Chance 2 MA1-18SP	Time 2 MA1-13MG	
Recognise the element of chance in familiar	Identify practical activities and everyday events that involve chance	Use informal units to measure and	
situations	Describe events as 'likely' or 'unlikely'	compare the durations of events	
Describe chance events using everyday	Distinguish between 'possible' and 'impossible' events		
language	Identify some events as 'certain' or 'impossible'		