Mathematics Sample Program: Prep



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Abbreviations

ABS Australian Bureau of Statistics

AMSI Australian Mathematical Sciences Institute

CIMT Centre for Innovation in Mathematical Teaching (Plymouth, United Kingdom)

DET Department of Education and Training

ESA Educational Services Australia

NCTM National Council Teachers of Mathematics

NLVM National Library of Virtual Manipulatives

MAV Mathematical Association of Victoria

Hyperlinks

At the time of publication the URLs (website addresses) cited were checked for accuracy and appropriateness of content. However, due to the transient nature of material placed on the web, their continuing accuracy cannot be verified. Teachers are strongly advised to prepare their own indexes of sites that are suitable and applicable to the courses they teach, and to check these addresses prior to allowing student access.

Overview

This Mathematics Sample Program: Prep Year is an example of how the Mathematics curriculum could be organised into a teaching and learning program.

This sample program provides comprehensive coverage of content descriptions from the three strands of the mathematics curriculum and is sequenced to develop knowledge and skills; however, there are many other ways that the curriculum content can be arranged to suit the learning needs of students.

Topics, suggested time allocations and sequencing

|  |  |  |
| --- | --- | --- |
| **Week\*** | **Semester 1** | **Semester 2** |
| 1 | *0.1.1: Understanding Language and Process of Counting*Strand: Number and AlgebraSub-strand: Number and Place Value | *0.2.1: Patterns with Numbers*Strand: Number and AlgebraSub-strand: Number and Place Value |
| 2 |
| 3 | *0.1.2: Direct and Indirect Comparisons of Length, Mass and Capacity*Strand: Measurement and GeometrySub-strand: Using Units of Measurement | *0.2.2: Revisiting Measurement- Comparisons of Lengths, Masses and Capacities*Strand: Measurement and GeometrySub-strand: Using Units of Measurement |
| 4 |
| 5 | *0.1.3: Collecting Data*Strand: Statistics and ProbabilitySub-strand: Data Representation and Interpretation  | *0.2.3: Interpreting Data*Strand: Statistics and ProbabilitySub-strand: Data Representation and Interpretation  |
| 6 | *0.1.4: Teen Numbers*Strand: Number and AlgebraSub-strand: Number and Place Value | *0.2.4: Sharing Objects into Fair Groups*Strand: Number and AlgebraSub-strand: Number and Place Value  |
| 7 | *0.1.5: Features of 2D Shapes*Strand: Measurement and GeometrySub-strand: Shape | *0.2.5: Comparing Features of 2D and 3D Shapes*Strand: Measurement and GeometrySub-strand: Shape |
| 8 | *0.1.6: Connect Numbers to Quantities and Subitising*Strand: Number and AlgebraSub-strand: Number and Place Value | *0.2.6: Counting Forwards and Backwards*Strand: Number and AlgebraSub-strand: Number and Place Value |
| 9 | *0.1.7: Days of the Week and Sequencing Daily Events.*Strand: Measurement and GeometrySub-strand: Using Units of Measurement |
| 10 |
| 11 | *0.1.8: Recognising, Creating and Continuing*Strand: Number and AlgebraSub-strand: Patterns and Algebra |
| 12 | *0.2.7: Ordinal Numbers*Strand: Number and AlgebraSub-strand: Number and Place Value |
| 13 | *0.1.9: Language of Position and Movement*Strand: Measurement and GeometrySub-strand: Location and Transformation | *0.2.8: Revisiting Time to the Hour and Duration of Time* Strand: Measurement and GeometrySub-strand: Using Units of Measurement |
| 14 | *0.1.10: Adding and Sharing Groups*Strand: Number and AlgebraSub-strand: Number and Place Value  | *0.2.9: Informal Skip counting* Strand: Number and AlgebraSub-strand: Number and Place Value  |
| 15 |
| 16 | *0.1.11: Describe, Sort and Name 3D Shapes*Strand: Measurement and GeometrySub-strand: Shape  | *0.2.10: Revisiting Language of Position and Movement* Strand: Number and AlgebraSub-strand: Number and Place Value  |
| 17 | *0.1.12: Time to the Hour and Duration of time.*Strand: Measurement and GeometrySub-strand: Using Units of Measurement  | *0.2.11: Strategies for Adding*Strand: Number and AlgebraSub-strand: Number and Place Value  |
| 18 | *0.1.13: Make, Name and Order Numbers Beyond 20*Strand: Number and AlgebraSub-strand: Number and Place Value |

\* Based on 3 hours teaching time per week

Content descriptions coverage within each topic

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| --- | --- |
| **Level Foundation content descriptions** | **Topic/s** |
| **Strand: Number and Algebra** |
| **Sub-strand: Number and Place Value** |
| Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point [(VCMNA069)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA069) | 0.1.40.2.60.2.70.2.11 |
| Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond [(VCMNA070)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA070) | 0.1.10.1.40.1.60.1.13 |
| Subitise small collections of objects [(VCMNA071)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA071) | 0.1.10.1.60.2.9 |
| Compare, order and make correspondences between collections, initially to 20, and explain reasoning [(VCMNA072)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA072) | 0.1.40.1.60.1.130.2.7 |
| Represent practical situations to model addition and subtraction [(VCMNA073)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA073) | 0.1.100.2.11 |
| Represent practical situations to model sharing [(VCMNA074)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA074) | 0.2.40.2.9 |
| **Sub-strand: Money and Financial Mathematics** |
| Represent simple, everyday financial situations involving money [(VCMNA075)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA075) | 0.2.4 |
| **Sub-strand: Patterns and Algebra** |
| Sort and classify familiar objects and explain the basis for these classifications, and copy, continue and create patterns with objects and drawings [(VCMNA076)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA076) | 0.1.80.2.1 |
| Follow a short sequence of instructions [(VCMNA077)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA077) | 0.1.9 |

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| **Strand: Measurement and Geometry** |
| **Sub-strand: Using Units of Measurement** |
| Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language [(VCMMG078)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG078) | 0.1.20.2.2 |
| Compare and order the duration of events using the everyday language of time [(VCMMG079)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG079) | 0.1.70.1.120.2.8 |
| Connect days of the week to familiar events and actions [(VCMMG080)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG080) | 0.1.7 |
| **Sub-strand: Shape** |
| Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment [(VCMMG081)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG081) | 0.1.50.1.110.2.5 |
| **Sub-strand: Location and Transformation** |
| Describe position and movement [(VCMMG082)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG082) | 0.1.90.2.10 |
| **Strand: Statistics and Probability** |
| **Sub-strand: Data Representation and Interpretation** |
| Answer yes/no questions to collect information [(VCMSP083)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMSP083) | 0.1.30.2.3 |
| Organise answers to yes/no questions into simple data displays using objects and drawings [(VCMSP084)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMSP084) | 0.1.30.2.3 |
| Interpret simple data displays about yes/no questions [(VCMSP085)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMSP085) | 0.2.3 |

Achievement standards (for three levels to support planning for a continuum of learning)

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| Foundation Level | Level 1 | Level 2 |
| **Number and algebra**Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. They develop an understanding of the concepts of number and numeral, count, order, add and share using small sets of objects. They create and continue simple patterns. | **Number and algebra**Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | **Number and algebra**Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |
| **Measurement and geometry**Students compare common objects with respect to length, mass and capacity, and order events and compare their duration. They make rough estimates and simple measurements with respect to informal units. Students name, sort and describe familiar everyday shapes and objects, and describe position and movement in their immediate environment. | **Measurement and geometry**Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | **Measurement and geometry**Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |
| **Statistics and probability**Students investigate situations requiring data collection and presentation in simple displays, and recognise unpredictability and uncertainty in some events. | **Statistics and probability**Students use one-to-one correspondences to display categorical data obtained from a simple investigation. They identify chance events in familiar contexts and use everyday language such as ‘will happen’, won’t happen’ or ‘might happen’ in relation to these. | **Statistics and probability**Students use questions of interest to gather and display data for a single categorical variable and interpret it. They identify chance in a range of activities and describe related outcomes as ‘likely’ or ‘unlikely’. |

Learning in Mathematics

The proficiencies of Understanding, Fluency, Problem Solving and Reasoning are fundamental to learning mathematics and working mathematically, and are applied across all three strands Number and Algebra, Measurement and Geometry, and Statistics and Probability.

Understanding refers to students building a robust knowledge of adaptable and transferable mathematical concepts and structures. Students make connections between related concepts and progressively apply the familiar to develop new ideas. They develop an understanding of the relationship between the ‘why’ and the ‘how’ of mathematics. Students build understanding when they:

* Connect related ideas
* Represent concepts in different ways
* Identify commonalities and differences between aspects of content
* Describe their thinking mathematically
* Interpret mathematical information.

Fluency describes students developing skills in choosing appropriate procedures, carrying out procedures flexibly, accurately, efficiently and appropriately, and recalling factual knowledge and concepts readily. Students are fluent when they:

* Make reasonable estimates
* Calculate answers efficiently
* Recognise robust ways of answering questions
* Choose appropriate methods and approximations
* Recall definitions and regularly use facts,
* Can manipulate expressions and equations to find solutions.

Problem solving is the ability of students to make choices, interpret, formulate, model and investigate problem situations, select and use technological functions and communicate solutions effectively. Students pose and solve problems when they:

* Use mathematics to represent unfamiliar or meaningful situations
* Design investigations and plan their approaches
* Apply their existing strategies to seek solutions
* Verify that their answers are reasonable.

Reasoning refers to students developing an increasingly sophisticated capacity for logical, statistical and probabilistic thinking and actions, such as conjecturing, hypothesising, analysing, proving, evaluating, explaining, inferring, justifying, refuting, abstracting and generalising. Students are reasoning mathematically when they:

* Explain their thinking
* Deduce and justify strategies used and conclusions reached
* Adapt the known to the unknown
* Transfer learning from one context to another
* Prove that something is true or false
* Make inferences about data or the likelihood of events
* Compare and contrast related ideas and explain their choices.

Prep Year Semester 1



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| Topic 0.1.1 Understanding Language and Process of Counting |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond [(VCMNA070)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA070)
* Subitise small collections of objects [(VCMNA071)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA071)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. **They develop an understanding of the concepts of number and numeral, count, order, add** and share using small sets of objects. They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Make, recognise and name initially numbers 1 to 5
* Compare and order according to size, e.g. which is bigger/smaller or more/less
* Write numerals to 5
* Recognise cardinality (how many) of numbers 1 to 5
* Match collections to 5
* Count to 5 using one-to-one correspondence
* Match numerals 1 to 5 to the written number words one to five
* Extend to 10
* Include 0
* investigate number names and representations of zero and the first ten counting numbers in different languages
* Count backwards from 5 initially, then 10
* Use subitising to recognise and compare small collections of numbers
 | * **Understanding** that collections of objects are named according to the size of the collection and can be ordered according to size
* **Fluency** through counting forwards and backwards from any number between 0 and 10
* **Problem solving** through counting objects to solve everyday problems, e.g. These five people have blue eyes. How many blue eyes do they have in our class altogether?
* **Reasoning** through explaining comparisons of quantity
 |
| **Considering different levels** |
| Level 1Students who are working at this level could:* Count to and from 100
* Match, order and name numerals from 0 to 100.
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| **Assessment ideas** |
| Students:* Match, order and name numerals from 0 to 10
* Count and compare various small size sets using one-to-one correspondence
* Investigate different words associated with a number, for example zero (null, nothing), one (unit, single, whole), two (twin, pair, duo, brace)
* Count backwards and forwards from any number between 0 and 10.
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| **Resources** |
| **FUSE**[Counting Sequences and Numeral Identification](http://fuse.education.vic.gov.au/?BC7SLX)[Ladybirds](http://fuse.education.vic.gov.au/?99HXW7)[Teddy Numbers](http://fuse.education.vic.gov.au/?7YSDSJ)***Other FUSE resources*:** for [VCMNA070](http://fuse.education.vic.gov.au/VCAA/VCMNA070) and [VCMNA071](http://fuse.education.vic.gov.au/VCAA/VCMNA071)**NZ Maths**[Number: Early Learning Concepts](http://nzmaths.co.nz/number-early-learning-progression)[Using Tens Frames](http://www.nzmaths.co.nz/resource/using-tens-frames-one-one-counting)[5 Little Ducks](http://www.nzmaths.co.nz/resource/five-little-ducks)**nRich**[Number Sense Series: Developing Early Number Sense](http://nrich.maths.org/2477)**DET (Victoria)** [Counting up to 20 Objects](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/countingobj10.aspx)[One to One Correspondence](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/onetoone.aspx) |

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| **Notes** |
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| Topic 0.1.2 Direct and Indirect Comparisons of Length, Mass and Capacity  |
| Strand: Measurement and Geometry | Sub-strand: Using Units of Measurement | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language [(VCMMG078)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG078)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| **Students compare common objects with respect to length, mass and capacity**, and order events and compare their duration. **They make rough estimates and simple measurements with respect to informal units**. Students name, sort and describe familiar everyday shapes and objects, and describe position and movement in their immediate environment. | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| **Length*** Estimate before measuring
* Use direct measures to determine which objects are long, taller, smaller, shorter etc.
* Align objects to determine orders of heights or length
* Determine how to include part of a unit of measure
* Determine rules for accurate measuring such as starting at the end of the objects
* Use same size units to compare objects
* Use indirect measures to determine length, e.g. string, paper tape, paper clips, etc.

**Capacity*** Estimate before measuring
* Use a direct measure such as pouring from one container to another to compare contents
* Recognise that different shaped containers may yield same measures, i.e. tall and thin, short and wide
* Determine rules for accuracy, such as ensuring no liquid lost
* Use indirect measures to determine capacity, e.g. how many cups of water, how many blocks, to full the jar?

**Mass*** Estimate before measuring
* Heft two tins of food (direct measurement)
* Recognise that same sized containers may not weigh the same
 | * **Understanding** that units for measurement must be consistent
* **Fluency** through comparing lengths of objects
* **Problem solving** through using materials to solve authentic problems
* **Reasoning** through explaining comparisons of quantities and processes for indirect comparison of length
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Order objects using hefting, and describing outcomes using words, for example, heavier, lighter, same
* Measuring the capacity of containers using cups or buckets.
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| **Assessment ideas** |
| Students:* Construct play dough snakes that are long and short
* Compare objects directly, by placing one object against another to determine which is longer.
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| **Resources** |
| **DET (Victoria)** [Comparison of Length](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/complength10.aspx)**FUSE**[Teaching Measurement K-6](http://fuse.education.vic.gov.au/?B2Q9Y2)[Measuring Familiar Things](http://fuse.education.vic.gov.au/?NN8TJH)**NZ Maths**[Length – Units of Work](http://www.nzmaths.co.nz/length-units-work)[Volume and Capacity – Units of Work](http://www.nzmaths.co.nz/volume-and-capacity-units-work)[Mass – Units of Work](http://www.nzmaths.co.nz/mass-units-work)**nRich**[Can You Do It Too?](http://nrich.maths.org/8327/note)[Little Man](http://nrich.maths.org/4789/note) |

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| **Notes** |
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| Topic 0.1.3 Collecting Data |
| Strand: Statistics and Probability | Sub-strand: Data Representation and Interpretation | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Answer yes/no questions to collect information [(VCMSP083)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMSP083)
* Organise answers to yes/no questions into simple data displays using objects and drawings [(VCMSP084)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMSP084)
 |
| **Achievement standard (excerpt in bold)** |
| Foundation Level | Level 1 | Level 2 |
| **Students investigate situations requiring data collection and presentation in simple displays**, and recognise unpredictability and uncertainty in some events. | Students use one-to-one correspondences to display categorical data obtained from a simple investigation. They identify chance events in familiar contexts and use everyday language such as ‘will happen’, won’t happen’ or ‘might happen’ in relation to these. | Students use questions of interest to gather and display data for a single categorical variable and interpret it. They identify chance in a range of activities and describe related outcomes as ‘likely’ or ‘unlikely’. |

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| **Activities** | **Proficiencies** |
| * Ask questions to collect data
* Use everyday contexts to collect and examine data, e.g. what pets do we have in our class; which is the most popular
* Construct simple representations of data to enable ease of reading, e.g. use 10cm x 10cm squares for students to draw their family, determining which family has the most / least members
 | * **Understanding** that data helps us to answer questions, e.g. more people have brown hair than blonde hair
* **Fluency** in collecting data using questions requiring yes/no answers
* **Problem solving** through using information to solve problems such as “who can eat pizza on Pizza Day?”
* **Reasoning** through using information to determine further questions or to solve problems
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Devise their own questions of interest about peers (not just yes/no questions) and gather this data.
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| **Assessment ideas** |
| Students:* Collect data from peers using yes/no questions, e.g. do you have a teddy bear?
* Sort and classify information (e.g. about teddy bears) to group with like attributes (e.g. by colours).
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| **Resources** |
| **ABC Splash**[What is a Monster's Favourite Food?](http://abcspla.sh/m/29610)**FUSE**[Using Data About Favourite Foods](http://fuse.education.vic.gov.au/?F2FKKF)**NZ Maths**[I like Trucks](http://nzmaths.co.nz/resource/i-trucks)[Match Ups](http://nzmaths.co.nz/resource/match-ups) |

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| Topic 0.1.4 Teen Numbers |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point [(VCMNA069)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA069)
* Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond [(VCMNA070)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA070)
* Compare, order and make correspondences between collections, initially to 20, and explain reasoning [(VCMNA072)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA072)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| **Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another.** **They develop an understanding of the concepts of number and numeral, count, order, add** and share using small sets of objects. They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Identify teen numbers on the number chart
* Partition teen numbers to identify as 10 and \_\_
* Identify teen numbers composed of 10 and single digit, e.g. 5 is 15 using ten frames
* Associate naming to collection
* Order numbers with collections from biggest to smallest and vice-versa
* Record numbers in sequence
* Identify place value of teen numbers as 1 ten and \_\_\_ ones
* Apply forwards and backwards counting in meaningful contexts, including stories and rhymes
 | * **Understanding** through connecting names, numerals and quantities, and [partitioning](http://www.australiancurriculum.edu.au/Glossary?a=M&t=Partitioning) numbers in various ways
* **Fluency** through [counting number](http://www.australiancurriculum.edu.au/Glossary?a=M&t=Counting%20number) in sequences readily forward and backwards, locating numbers on a line and 120 chart
* **Problem solving** through using materials to model authentic problems, using familiar counting sequences to solve unfamiliar problems and discussing the reasonableness of the answer
* **Reasoning** though explaining patterns that have been created
 |
| **Considering different levels** |
| Level 1Students who are working at this level could:* Locate a series of numbers between 0 and 100 on a number line
* Skip count by 2s, 5s and 10s.
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| **Assessment ideas** |
| Students:* Identify collections of objects and name, and place in order of size on a number line
* Investigate and compare way teen numbers are spoken and represented in different languages.
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| **Resources** |
| **DET (Victoria)** [Counting up to 20 Objects](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/countingobj10.aspx)**FUSE*****Various FUSE resources***: for [VCMNA069](http://fuse.education.vic.gov.au/VCAA/VCMNA069), [VCMNA070](http://fuse.education.vic.gov.au/VCAA/VCMNA070) and [VCMNA072](http://fuse.education.vic.gov.au/VCAA/VCMNA072)**NZ Maths**[Teen Numbers - Building with 10](http://nzmaths.co.nz/resource/teen-numbers-building-ten)[Ty Number](http://www.nzmaths.co.nz/resource/ty-number)[Teenagers](http://www.nzmaths.co.nz/resource/teenagers)**nRich**[Ten-ness of Ten](http://nrich.maths.org/10738) |

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| Topic 0.1.5 Features of 2D Shapes |
| Strand: Measurement and Geometry | Sub-strand: Shape | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment [(VCMMG081)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG081)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students compare common objects with respect to length, mass and capacity, and order events and compare their duration. They make rough estimates and simple measurements with respect to informal units. **Students name, sort and describe familiar everyday shapes and objects**, and describe position and movement in their immediate environment. | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| * Sort objects using common attributes
* Describe features of 2D shapes
* Recognise and name 2D shapes
* Recognise and name familiar shapes in the environment
 | * **Understanding** that shapes in different orientations are still the same shape
* **Fluency** through recognising and naming simple shapes such as circles, triangles and squares
* **Problem solving** through sorting objects
* **Reasoning** through explaining why an object or shape has been sorted into a group
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Identify a range of two-dimensional shapes in the environment, and identify common geometrical features of these shapes using works such as 'corners' and 'edges'.
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| **Assessment ideas** |
| Students:* Sort 2D shapes and objects according to attributes.
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| **Resources** |
| **FUSE**[Learn to Draw Shapes with Ziggy](http://fuse.education.vic.gov.au/?B2RCR2)**nRich**[Sorting Shapes](http://nrich.maths.org/5997)[Jig Shapes](http://nrich.maths.org/6886)[Chain of Changes](http://nrich.maths.org/221)**NZ Maths**[Shape Units of Work](http://www.nzmaths.co.nz/shape-units-work)[And the Twelfth One is...](http://www.nzmaths.co.nz/resource/and-twelfth-one)[Arty Shapes](http://www.nzmaths.co.nz/resource/arty-shapes) |

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| Topic 0.1.6 Connecting Numbers to Quantities and Subitising |
| Strand: Number and Algebra | Sub-strands: Number and Place Value | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond [(VCMNA070)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA070)
* Subitise small collections of objects [(VCMNA071)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA071)
* Compare, order and make correspondences between collections, initially to 20, and explain reasoning [(VCMNA072)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA072)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| **Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. They develop an understanding of the concepts of number and numeral, count, order, add** and share using small sets of objects. They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Connect collections of objects, dots, etc. to numbers visually
* Connect number names to collections of objects or visual representations either in arrays, die format or random collections
* Order subitised collections according from largest to smallest and vice-versa
 | * **Understanding** that collections don’t always have to be counted and can be identified
* **Fluency** through recognising the value contained in a collection of objects instantly
* **Problem solving** through using easily recognised collections to count on from
* **Reasoning** through explaining comparisons of quantities
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Count collections to 100 by partitioning numbers using place value.
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| **Assessment ideas** |
| Students:* Identify the size of small sets by sight, for example, a group of three students
* Use dice games to identify recognition of dot patterns to 6 as numbers
* Use subitising cards to identify ways students count or identify collections.
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| **Resources** |
| **DET (Victoria)**[Subitising Materials](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/assessment/Pages/resourcelibrary.aspx#4)**FUSE*****Various FUSE resources*:** for [VCMNA070](http://fuse.education.vic.gov.au/VCAA/VCMNA070), [VCMNA071](http://fuse.education.vic.gov.au/VCAA/VCMNA071) and [VCMNA072](http://fuse.education.vic.gov.au/VCAA/VCMNA072)**nRich**[Number Sense Series: Developing Early Number Sense](http://nrich.maths.org/2477)[How Can I Support the Development of Early Number Sense and Place Value?](http://nrich.maths.org/10739)**NZ Maths**[Jumping Beans](http://www.nzmaths.co.nz/resource/jumping-beans)[Blast Off in Five](http://www.nzmaths.co.nz/resource/blast-5)[Party Time](http://www.nzmaths.co.nz/resource/party-time)[Doubling Using Finger Patterns](http://www.nzmaths.co.nz/doubling-using-finger-patterns) |

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| Topic 0.1.7 Days of the Week and Sequencing Daily Events |
| Strand: Measurement and Geometry | Sub-strand: Using Units of Measurement | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Compare and order the duration of events using the everyday language of time [(VCMMG079)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG079)
* Connect days of the week to familiar events and actions [(VCMMG080)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG080)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students compare common objects with respect to length, mass and capacity, and **order events and compare their duration**. They make rough estimates and simple measurements with respect to informal units. Students name, sort and describe familiar everyday shapes and objects, and describe position and movement in their immediate environment. | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| * Set up a daily timetable
* Identify and sequence daily events (home and school)
* Look for patterns that occur daily
* Sequence pictures of familiar daily events
* Use a class calendar to count down to dates, referring to day names, and count how many days since an event
* Identify names of days of the week
* Identify activities that occur specifically on one day of the week, e.g. music on Wednesdays
* Sequence days of the week in relation to the order of familiar events
* Refer daily to familiar events and the order of days
* Discuss terms such as *last night*, *tomorrow*, *today*
* Construct stories based on students’ experience using the sequence of the days of the week
 | * **Understanding** that some familiar events occur on the same day each week
* **Fluency** through naming the days of the week in sequence
* **Problem solving** using the cyclical nature of days of the week before and after today or on a given day
* **Reasoning** through predicting events due to the predictability of a timetable
 |
| **Considering different levels** |
| Level 1Students who are working at this level could:* Identify typical activities in a day in way that references half-hours.
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| **Assessment ideas** |
| Students:* Identify events on days of the week by drawing events that relate to the day, e.g. on Mondays we come back to school after the weekend.
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| **Resources** |
| **DET (Victoria)**[Awareness of Time](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/awaretime.aspx)**FUSE**[Farm Diaries](http://fuse.education.vic.gov.au/?8NWJ7C)**nRich**[Snap (Days of the Week)](http://nrich.maths.org/6082)**NZ Maths**[Passing Time](http://www.nzmaths.co.nz/resource/passing-time) |

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| Topic 0.1.8 Recognising, Creating and Continuing |
| Strand: Number and Algebra | Sub-strand: Patterns and Algebra | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Sort and classify familiar objects and explain the basis for these classifications, and copy, continue and create patterns with objects and drawings [(VCMNA076)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA076)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. They develop an understanding of the concepts of number and numeral, count, order, add and share using small sets of objects. **They create and continue simple patterns.** | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Recognise patterns in everyday objects, e.g. fabric, wall paper, etc.
* Use familiar materials to construct patterns
* Use pattern blocks to make and continue patterns
 | * **Understanding** that patterns are made up of repeating units
* **Fluency** through recognising and continuing patterns
* **Problem solving** through using familiar patterns to solve problems
* **Reasoning** through creating patterns that recognise the repeat in the pattern
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| **Considering different levels]** |
| Level 1Students who are working at this level could:* Use digitial technology to continue simple and more complex patterns involving numbers and objects.
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| **Assessment ideas** |
| Students:* Use materials to create, make and continue a pattern, recognising the unit for repeats.
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| **Resources** |
| **DET (Victoria)**[Simple Patterns](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/simpattern05.aspx)**FUSE**[Patterns around us](http://fuse.education.vic.gov.au/?RKWL5K)**nRich**[Mobile Numbers](http://nrich.maths.org/5781)**NZ Maths**[Algebra – Units of Work](http://www.nzmaths.co.nz/algebra-units-work)[Pattern Makers](http://nzmaths.co.nz/resource/pattern-makers)[Counting on Counting](http://nzmaths.co.nz/resource/counting-counting)[Mary, Mary Quite Contrary](http://nzmaths.co.nz/resource/mary-mary-quite-contrary) |

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| Topic 0.1.9 Language of Position and Movement |
| Strand: Measurement and Geometry | Sub-strand: Location and Transformation | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Describe position and movement [(VCMMG082)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG082)
* Follow a short sequence of instructions [(VCMNA077)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA077)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students compare common objects with respect to length, mass and capacity, and order events and compare their duration. They make rough estimates and simple measurements with respect to informal units. Students name, sort and describe familiar everyday shapes and objects, and **describe position and movement in their immediate environment.** | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| * Identify purposes for instructions in everyday situations, e.g. getting to school from home
* List suitable terms for directions, for identifying landmarks and for describing routes
* Introduce a bird’s eye view
* Give oral instructions using appropriate terms for moving from one location to another, e.g. over, under, forwards, backwards
* Follow instructions to move from one location to another
* Follow other short sequences of instructions
* Identify differences between 3D and 2D spaces, e.g. a hedge maze and a maze on paper
 | * **Understanding** how to interpret and follow given instructions
* **Fluency** through using terms such as *between*, *near*, *next to*, *forwards*, *towards*, *backwards*, *over*, *under*, etc.
* **Problem solving** through using information to describe how to get from point A to point B
* **Reasoning** that includes following directions logically to solve problems, e.g. a treasure hunt
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Use the language of distance and direction to support a peer to move from one place to another, including words such as ‘clockwise’, ‘anticlockwise’, ‘forward’ and ‘under’ when giving directions.
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| **Assessment ideas** |
| Students:* Take turns to wear a blindfold: one student wears the blindfold and the other gives instructions so that their peer can safely make their way through an obstacle course.
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| **Resources** |
| **FUSE**[Bee-Bot](http://fuse.education.vic.gov.au/?Q42SH2)**nRich**[Turning Man](http://nrich.maths.org/5560/note)**NZ Maths**[Position and Orientation Units of Work](http://www.nzmaths.co.nz/position-and-orientation-units-work)[Blindfolds](http://www.nzmaths.co.nz/resource/blindfolds)[Circles and Oblongs](http://www.nzmaths.co.nz/resource/circles-and-oblongs) |

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| Topic 0.1.10 Adding and Sharing Groups |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Represent practical situations to model addition and subtraction [(VCMNA073)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA073)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. **They decide when two sets are of equal size, or one is smaller or bigger than another. They develop an understanding of the concepts of number and numeral, count, order, add and share using small sets of objects.** They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Review subitising and numbers to 20
* Add small groups of numbers either visually or with concrete materials
* Find basic facts for addition through partitioning up to and including 10
* Use dice games for combining numbers
* Make stories that involve adding and sharing to 20
* Use materials to divide into equal groups
* Combine equal groups within story situations, e.g. three cows came to a party, how many cow legs were there?
 | * **Understanding** through sharing fairly
* **Fluency** through recognising that numbers are made up of smaller groups
* **Problem solving** through applying understanding that many variations of numbers can combine to make a single number
* **Reasoning** through assuming that in solving problems, understanding of ‘fair share’ can be applied
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Use Aboriginal and Torres Strait Islander methods of adding and subtracting, including spatial patterns and reasoning.
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| **Assessment ideas** |
| Students:* Use farm animals to solve problems, e.g. how many legs there might be for 3 cows, two hens and a dog?
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| **Resources** |
| **FUSE**[Exploring Addition and Subtraction](http://fuse.education.vic.gov.au/?9GMM2K)[Counting and Representing Numbers 1–20](http://fuse.education.vic.gov.au/?PLGL2J)**nRich**[Ladybirds in the Garden](http://nrich.maths.org/1816)[Playing with Numbers](http://nrich.maths.org/8636)[Adding and Taking Away (Various Activities)](http://nrich.maths.org/9283)[Pairs of Legs](http://nrich.maths.org/7462)[Lots of Biscuits!](http://nrich.maths.org/6883)**NZ Maths**[Lollies](http://www.nzmaths.co.nz/resource/lollies) |

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| Topic 0.1.11 Describe, Sort and Name 3D Shapes |
| Strand: Measurement and Geometry | Sub-strand: Shape | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment [(VCMMG081)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG081)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students compare common objects with respect to length, mass and capacity, and order events and compare their duration. They make rough estimates and simple measurements with respect to informal units. **Students name, sort and describe familiar everyday shapes and objects**, and describe position and movement in their immediate environment. | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| * Use materials such as clay to explore different shapes
* Find 3D shapes and objects in the environment, such as boxes and balls
* Describe differences and similarities between different objects
* Use Venn diagrams to sort geometrical objects according to different categories
* Explore different geometric shapes within the environment
* Use terms such as spheres, cubes, and cones
* Use blocks to create 3D shapes and describe views from different perspectives
* Use box construction to develop visual concepts of 3D objects
* Name 3D shapes and use attributes to describe each shape
* Collect everyday 3D shapes (e.g. empty food packets) and explore nets when opened
* Use terms such as edges, corners and faces
 | * **Understanding** including that 3D shapes can be sorted according to common attributes
* **Fluency** through naming 3D shapes such as spheres and cubes
* **Problem solving** through determining ways to sort objects and shapes
* **Reasoning** that 3D shapes may appear different with different perspectives
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Identify a range of three-dimensional objects in the environment, and identify common geometrical features of these shapes using works such as 'corners,' 'edges’ and ‘faces’.
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| **Assessment ideas** |
| Students:* Classify 3D shapes and objects according to a common attribute.
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| **Resources** |
| NZ Maths[New Kids on the Block](https://nzmaths.co.nz/resource/new-kids-block)[Shape – Units of Work](http://nzmaths.co.nz/shape-units-work)nRich[Building with Solid Shapes](http://nrich.maths.org/239) |

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| **Notes** |
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| Topic 0.1.12 Time to the Hour and Duration of Time |
| Strand: Measurement and Geometry | Sub-strand: Using Units of Measurement | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Compare and order the duration of events using the everyday language of time [(VCMMG079)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG079)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students compare common objects with respect to length, mass and capacity, and **order events and compare their duration**. They make rough estimates and simple measurements with respect to informal units. Students name, sort and describe familiar everyday shapes and objects, and describe position and movement in their immediate environment. | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| * Match digital and analogue times to o’clock times
* Sequence digital and analogue time
* Match significant daily events to o’clock times, e.g. recess time finishes at 11 o’clock
* Construct clocks, having students determine major features and ensuring long thin hand for minutes and short fat hand for hours
* Use timers to develop concepts of different lengths of time, e.g. 1 minute, 10 minutes, 1 hour
* Use timers as countdown to events, e.g. 5 mins until lunch time
* Compare how time can appear to move faster or slower by giving different activities in a specific time-period, e.g. reading a book for 5 minutes compared to playing a game on an iPad or computer for 5 minutes
* Discuss time periods until an event occurs, such as 4 days or a week
 | * **Understanding** including that the same time-period may seem to pass at a slower of faster rate
* **Fluency** through recognising that different time periods have different names, e.g. seconds, minutes, hours
* **Problem solving** through using known time periods to determine the time spent on a task, e.g. recess, how long to eat before playing?
* **Reasoning** through being able to order different activities according to time periods, e.g. brushing teeth is shorter than eating dinner
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Select an upcoming event (e.g. birthday) and explain the key time durations in the lead up to the event.
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| **Assessment ideas** |
| Students:* Name the different hands on a clock and order o’clock time on a time line
* Make a timetable of their usual day through drawing pictures, where smaller pictures represent smaller blocks of time.
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| **Resources** |
| **AMSI**[Time – Teacher Guide](http://www.amsi.org.au/teacher_modules/time.html)**DET (Victoria)** [Awareness of Time](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/awaretime.aspx)**FUSE**[Time: Match Clocks](http://fuse.education.vic.gov.au/?NWW4CX)[Measuring Time Informally and Reading Clocks](http://fuse.education.vic.gov.au/?J8G49K)[Clockface](http://fuse.education.vic.gov.au/?2ZWQWJ)**NZ Maths**[Time – Units of Work](http://www.nzmaths.co.nz/time-units-work) |

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| Topic 0.1.13 Make, Name and Order Numbers beyond 20 |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond [(VCMNA070)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA070)
* Compare, order and make correspondences between collections, initially to 20, and explain reasoning [(VCMNA072)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA072)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. **They develop an understanding of the concepts of number and numeral, count, order, add** and share using small sets of objects. They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| *Note: These lessons are more about exploring the* ty *numbers than formal lessons. It is important to show the link between the* ty *in names and the decade number names.** Explore place value of the decades through use of popsticks, bead strings and tens frames
* Name decades, noting that all decades except 10 end in *ty* not *teen*
* Identify decades after 90 and to 120
* Identify 100 as 10 tens and as a new unit
* Order decades to 120: what goes before what, what comes after?
* Make, name and record (e.g. photograph) symbols and diagrams for each decade, e.g. 40 is 4 bundles of popsticks
* Place decades on a number line
* Explore ways to name 10s and 1s
* Cut a 120 number grid into strips and order sequentially
 | * **Understanding** that numbers are attached to a constant value
* **Fluency** through naming the decades as indicated by the number of 10s
* **Problem solving** through ordering numbers to 100 by the value of the tens
* **Reasoning** through using the concept that numbers are cyclical when counting to 100 and beyond
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Use a flip counter to explore (and predict) bridging decades over 10, 100 and 1000.
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| **Assessment ideas** |
| Students:* Compare and categorise *teen* numbers and *ty* numbers
* Investigate how counting in groups of tens is described in different languages and cultures.
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| **Resources** |
| **DET (Victoria)**[Counting with Two Digit Numbers](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/countingtwo125.aspx)**FUSE**[Number Line](http://fuse.education.vic.gov.au/?YCF2BM)***Other FUSE resources*:** for [VCMNA070](http://fuse.education.vic.gov.au/VCAA/VCMNA070) and [VCMNA072](http://fuse.education.vic.gov.au/VCAA/VCMNA072)**NZ Maths**[Ty Numbers](http://nzmaths.co.nz/resource/ty-number)[100 Things](http://www.nzmaths.co.nz/resource/100-things)[Make a 100](http://www.nzmaths.co.nz/resource/make-100)**Other***The Most Amazing Hide-and-Seek Numbers Book*, by Crowther, R. |

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Prep Year Semester 2



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| Topic 0.2.1 Exploring Pattern with Numbers |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Sort and classify familiar objects and explain the basis for these classifications, and copy, continue and create patterns with objects and drawings [(VCMNA076)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA076)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. They develop an understanding of the concepts of number and numeral, count, order, add and share using small sets of objects. **They create and continue simple patterns.** | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Explore the continuity of patterns in nature, e.g. numbers of legs, snails shells, etc.
* Look at ABA patterns in nature, e.g. zebra; repeat with manipulatives then replace with numbers
* Explore everyday patterns that use ABC, AABB, AAB, ABB and ABCD (e.g.), such as those found in wallpaper, clothing etc.
* Represent picture patterns with numbers such as 1,1,2,2,1,1,2,2,1,1,2,2, etc.
* Explore patterns in everyday events, e.g. a set of phone numbers with a pattern like (--) -885 8850
* Use numbers on number boxes to explore how streets have numbers opposites but cul-de-sacs are sequential
 | * **Understanding** that patterns can be found all around us and we can substitute colours and shapes for numbers
* **Fluency** through continuing patterns
* **Problem solving** through identifying, creating and making patterns
* **Reasoning** through creating patterns using an identified repeat section
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| **Considering different levels** |
| Level 1Students who are workng at this level could:* Make, name and continue their own patterns (simple and more complex) using technology.
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| **Assessment ideas** |
| Students:* Make, name and continue their own patterns using everyday objects.
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| **Resources** |
| **FUSE**[Monster Choir: Look and Listen](http://fuse.education.vic.gov.au/?59THTP)[Monster Choir: Making Patterns](http://fuse.education.vic.gov.au/?MZ867K)**nRich**[Mobile Numbers](http://nrich.maths.org/5781)[Cube Bricks and Daisy Chains](http://nrich.maths.org/7043/note)**NZ Maths**[Pattern Makers](http://www.nzmaths.co.nz/resource/pattern-makers) |

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| Topic 0.2.2 Revisiting Measurement - Comparisons of Lengths, Masses and Capacities  |
| Strand: Measurement and Geometry | Sub-strands: Using Units of Measurement | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language [(VCMMG078)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG078)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| **Students compare common objects with respect to length, mass and capacity**, and order events and compare their duration. **They make rough estimates and simple measurements with respect to informal units.** Students name, sort and describe familiar everyday shapes and objects, and describe position and movement in their immediate environment. | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| *The goal of this review is to give students a reminder and practice to develop their skills and understandings***Length*** Estimate before measuring
* Use direct measures to determine which objects are long, taller, smaller, shorter etc.
* Align objects to determine orders of heights or length
* Determine how to include part of a unit of measure
* Determine rules for accurate measuring such as starting at the end of the objects
* Use same size units to compare objects
* Use indirect measures to determine length, e.g. string, paper tape, paper clips, etc.

**Capacity*** Estimate before measuring
* Use a direct measure such as pouring from one container to another to compare contents
* Recognise that different shaped containers may yield same measures, i.e. tall and thin, short and wide
* Determine rules for accuracy, such as ensuring no liquid lost
* Use indirect measures to determine capacity, e.g. how many cups of water, how many blocks, to full the jar?

**Mass*** Estimate before measuring
* Heft two tins of food (direct measurement)
* Recognise that same sized containers may not weigh the same
 | * **Understanding** that units for measurement must be consistent
* **Fluency** through comparing lengths of objects
* **Problem solving** through using materials to solve authentic problems
* **Reasoning** through explaining comparisons of quantities and processes for indirect comparison of length
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Order objects using hefting, and describing outcomes using words, for example, heavier, lighter, same
* Measuring the capacity of containers using cups or buckets.
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| **Assessment ideas** |
| Students:* Sequence objects according to one of its attributes (e.g. length, capacity or mass)
* Organise containers in a line from the one that holds least to the one that holds the most.
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| **Resources** |
| **DET (Victoria)**[Three Phases for Teaching Measurement](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/measphese.aspx)**FUSE**[Measuring Familiar Things](http://fuse.education.vic.gov.au/?NN8TJH)**NZ Maths**[The Three Bears](http://www.nzmaths.co.nz/resource/three-bears)[Spoonfuls, Cupfuls and Handfuls](http://www.nzmaths.co.nz/resource/spoonfuls-cupfuls-and-handfuls)[Counting on Measurement](http://www.nzmaths.co.nz/resource/counting-measurement)[Length - Units of Work](http://www.nzmaths.co.nz/length-units-work)[Volume and Capacity – Units of Work](http://www.nzmaths.co.nz/volume-and-capacity-units-work)[Mass – Units of Work](http://www.nzmaths.co.nz/mass-units-work) |

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| Topic 0.2.3 Interpreting Data |
| Strand: Statistics and Probability | Sub-strand: Data Representation and Interpretation | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Answer yes/no questions to collect information [(VCMSP083)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMSP083)
* Organise answers to yes/no questions into simple data displays using objects and drawings [(VCMSP084)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMSP084)
* Interpret simple data displays about yes/no questions [(VCMSP085)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMSP085)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| **Students investigate situations requiring data collection and presentation in simple displays**, and recognise unpredictability and uncertainty in some events. | Students use one-to-one correspondences to display categorical data obtained from a simple investigation. They identify chance events in familiar contexts and use everyday language such as ‘will happen’, won’t happen’ or ‘might happen’ in relation to these. | Students use questions of interest to gather and display data for a single categorical variable and interpret it. They identify chance in a range of activities and describe related outcomes as ‘likely’ or ‘unlikely’. |

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| **Activities** | **Proficiencies** |
| * Pose questions to collect information from others
* Determine criteria for sorting buttons, e.g. 4 holes, 2 holes; blue, green
* Display data in simple ways, such as sorting objects into groups of similar criteria
* Use data to compare information such as which is the most popular pet
* Construct questions to determine ways to categorise data, e.g. what is the most popular food in this class?
 | * **Understanding** that information can be categorised and displayed in different ways
* **Fluency** through determining reasons for grouping
* **Problem solving** through finding answers to problems such as “who has the most sisters in their family?**”**
* **Reasoning** through using information collected to solve problems, e.g. No-one likes pineapple on pizza, so we shouldn’t make pizzas with pineapple
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| **Considering different levels**  |
| Level 1Students who are working at this level could:* Devise their own questions of interest about peers (not just yes/no questions) and gather, display and describe this data.
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| **Assessment ideas** |
| Students:* Collect and display information from peers such as “do you like ice-cream?”
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| **Resources** |
| **FUSE**[Using Data about Favourite Foods](http://fuse.education.vic.gov.au/?F2FKKF)**Illuminations**[Using the Number Line to Compare](http://illuminations.nctm.org/Lesson.aspx?id=321)[Alike and Different](http://illuminations.nctm.org/Lesson.aspx?id=2737)[Bar Graph Investigations](http://illuminations.nctm.org/Lesson.aspx?id=449)**nRich**[Sort the Street](http://nrich.maths.org/5157)[Beads and Bags](http://nrich.maths.org/7374)[Ladybird Count](http://nrich.maths.org/2341) |

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| **Notes** |
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| Topic 0.2.4 Sharing Objects into Fair Groups |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Represent practical situations to model sharing [(VCMNA074)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA074)
* Represent simple, everyday financial situations involving money [(VCMNA075)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA075)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. **They develop an understanding of the concepts of number and numeral, count, order, add and share using small sets of objects.** They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Use everyday contexts to explore sharing fairly
* Use concrete materials to share into equal groups and explain why they are equal or the same
* Practise sharing using arrays and stories
* Establish the concept of fair and unfair through opportunities for students to divide into groups for class tasks

Share play money fairly and in ways that model common everyday financial situations | * **Understanding** that in fair groups, each group must be the same and all groups should be included
* **Fluency** through grouping objects equally groups and realising that there may be left overs
* **Problem solving** through using understanding of equal groups to solve everyday problems
* **Reasoning** through using sorting of objects into categories to support formation of statements about that information
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| **Considering different levels**  |
| Level 1Students who are working at this level could:* Share a set of real objects, such as a packet of sweets, equally between a small group of people using one-to-one correspondence, and ask them to devise fair options when there is a remainder.
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| **Assessment ideas** |
| Students:* Are given a group of 12 objects and asked to sort them into 4 equal groups.
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| **Resources** |
| **FUSE**[MoneySmart: Ava Makes a Difference](http://fuse.education.vic.gov.au/?CCKH7Z)**nRich**[Difficulties with Division](http://nrich.maths.org/5450)[Share Bears](http://nrich.maths.org/2358/note)[Lots of Biscuits](http://nrich.maths.org/6883/note)**NZ Maths**[Buttons and Bears](http://nzmaths.co.nz/resource/buttons-and-bears) |

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| **Notes** |
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| Topic 0.2.5 Comparing Features of 2D and 3D Shapes |
| Strand: Measurement and Geometry | Sub-strand: Shape | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment [(VCMMG081)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG081)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students compare common objects with respect to length, mass and capacity, and order events and compare their duration. They make rough estimates and simple measurements with respect to informal units. **Students name, sort and describe familiar everyday shapes and objects**, and describe position and movement in their immediate environment. | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| * Revisit 2D and 3D shapes, exploring definitions for each
* Explore terms for each set of shapes and the meaning behind names, e.g. triangle or cube
* Sort and classify shapes in terms of numbers of corners, sides, (edges for 3D) and faces
* Demonstrate 2D and 3D shapes by sectioning
* Classify 2D and 3D shapes using attributes contributed by students
* Identify where we find 2D and 3D shapes in the environment
* Identify that nets of 3D shapes are made up of 2D shapes
* Construct 2D and 3D shapes using commercial kits as well as play dough
* Explore how 2D shapes can be used to construct 3D shapes using commercial materials that lock together
 | * **Understanding** that shapes are made up of sides (edges in 3D shapes), faces, and corners
* **Fluency** through naming 2D and 3D shapes
* **Problem solving** through understanding that 3D shapes can be constructed from 2D shapes
* **Reasoning** through classifying 2D and 3D shapes according to their attributes
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Catalogue a range of two-dimensional and three-dimensional objects in an environment (e.g. classroom, bedroom), and identify some of the common similar and different features of these shapes.
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| **Assessment ideas** |
| Students:* Categorise shapes into two categories: 2D and 3D.
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| **Resources** |
| **DET (Victoria)**[Recognising, Comparing, Sorting and Matching Shapes](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/shapes05.aspx)**FUSE**[Matching Shapes](http://fuse.education.vic.gov.au/?2GRG5Q)**nRich**[A City of Towers](http://nrich.maths.org/183)[Building Blocks](http://nrich.maths.org/2343/index)[Triple Cubes](http://nrich.maths.org/7128)**NZ Maths**[Shape – Units of Work](http://www.nzmaths.co.nz/shape-units-work)[Shape Makers](http://nzmaths.co.nz/resource/shape-makers) |

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| Topic 0.2.6 Counting Forwards and Backwards |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 4 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point ([VCMNA069](http://fuse.education.vic.gov.au/VCAA/VCMNA069))
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. **They develop an understanding of the concepts of number and numeral, count, order, add and share using small sets of objects.** They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Review numbers practiced so far
* Develop counting backward to and from 20, and extend from 20 for able students
* Use familiar nursery rhymes and stories to develop fluency for counting backwards and forwards
* Use tens frames, number beads and arrow cards to support understanding of place value when counting backwards and forwards
* Review *teen* and *ty* numbers to re-enforce ties to place value
* Use games that involve moving forwards and backwards to develop idea of numbers getting bigger and smaller
* Compare numbers: which is bigger, which is smaller?
* Develop awareness of patterns, e.g. 40’s begin with 4 in the tens column
 | * **Understanding** through being able to order two-digit numbers by size
* **Fluency** through counting to and from a number by 1s
* **Problem solving** requiring understanding of the patterns in a number system
* **Reasoning** through using understanding of place value, *teen* and *ty* numbers to decide which is larger smaller
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Create calendars that help them count forwards and backwards up to and including 31, and up to and including 2020.
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| **Assessment ideas** |
| Students:* Write numbers from smallest to largest to as high as they can.
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| **Resources** |
| **FUSE*****Various FUSE resources*** for [VCMNA069](http://fuse.education.vic.gov.au/VCAA/VCMNA069) **nRich**[What Was in the Box?](http://nrich.maths.org/7819)**NZ Maths**[Ordering Fitness Fun](http://www.nzmaths.co.nz/resource/ordering-fitness-fun)[Empty Number Lines](http://www.nzmaths.co.nz/resource/empty-number-lines)[Forwards and Backwards Counting to 100 (Various Units of Work)](http://nzmaths.co.nz/ao/na1-2-know-forward-and-backward-counting-sequences-whole-numbers-100) |

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| **Notes** |
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| Topic 0.2.7 Ordinal Numbers |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point [(VCMNA069)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA069)
* Compare, order and make correspondences between collections, initially to 20, and explain reasoning [(VCMNA072)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA072)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. **They develop an understanding of the concepts of number and numeral, count, order, add** and share using small sets of objects. They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Introduce ordinals through everyday activities such as first in the line, third in the race, days of the month, day their birthday falls on
* Use stories to determine who is first, second third and last , e.g. *Three Little Pigs* or *The Very Hungry Caterpillar*
* Sequence everyday events according to first, second third etc.
* Order teddy bears with an ordinal number according to height and label
 | * **Understanding** through connecting ordinal names to a sequence
* **Fluency** through readily naming the position in a set
* **Problem solving** including using everyday events to solve problems, e.g. who is first in line, who is second in line, who is last?
* **Reasoning** through explaining the reason for identifying an object with an ordinal
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Students order the first 10 elements of a set with personal and/or cultural relevance to them based on a certain charactertisic; they reorder the set based on a different charactertic. In both cases, they explain their reasoning.
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| **Assessment ideas** |
| Students:* Order the first 10 elements of a set based on a chosen characteristic, then repeat for a different characteristic
* Record words and conventions associated with ordinal numbers: one ~ first ~1st ; two ~ second ~2nd ; three ~ third ~ 3rd ; four ~ fourth ~ 4th and so on up to tenth, and give familiar practical examples.
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| **Resources** |
| **ABC Learn Online**[Count Us In – Game 4](http://www.abc.net.au/countusin/games/game4.htm)**DET (Victoria)**[Ordinal Numbers](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/ordinalnum05.aspx)FUSE***Various FUSE resources*:** for [VCMNA069](http://fuse.education.vic.gov.au/VCAA/VCMNA069) and [VCMNA072](http://fuse.education.vic.gov.au/VCAA/VCMNA072)**nRich**[Queuing](http://nrich.maths.org/8281)[Biscuit Decorations](http://nrich.maths.org/154/note) |

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| Topic 0.2.8 Revisiting Time to the Hour and Duration of Time  |
| Strand: Measurement and Geometry | Sub-strand: Using Units of Measurement | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Compare and order the duration of events using the everyday language of time [(VCMMG079)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG079)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students compare common objects with respect to length, mass and capacity, and **order events and compare their duration**. They make rough estimates and simple measurements with respect to informal units. Students name, sort and describe familiar everyday shapes and objects, and describe position and movement in their immediate environment. | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| * Sequence digital and analogue time
* Match significant daily events to o’clock times, e.g. recess time finishes at 11 o’clock
* Construct clocks, having students determine major features and ensuring long thin hand for minutes and short fat hand for hours
* Use timers to develop concepts of different lengths of time, e.g. 1 minute, 10 minutes, 1 hour
* Use timers as countdown to events, e.g. 5 mins until lunch time
* Compare how time can appear to move faster or slower by giving different activities in a specific time-period, e.g. reading a book for 5 minutes compared to playing a game on an iPad or computer for 5 minutes
* Discuss time periods until an event occurs, such as 4 days or a week
 | * **Understanding** including that the same time-period may seem to pass at a slower of faster rate
* **Fluency** through recognising that different time periods have different names, e.g. seconds, minutes, hours
* **Problem solving** through using known time periods to determine the time spent on a task, e.g. recess, how long to eat before playing?
* **Reasoning** through being able to order different activities according to time periods, e.g. brushing teeth is shorter than eating dinner
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| **Considering different levels** |
| Level 1Students who are workng at this level could:* Describe a simple event in half-hour intervals, using pictures to represent each interval, e.g. attending a pinnic, going to see a movie, washing a dog.
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| **Assessment ideas** |
| Students:* Sequence events of the day in order
* Compare and order different time events according to size, e.g. brushing teeth, driving to school and eating dinner.
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| **Resources** |
| **DET (Victoria)** [Awareness of Time](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/continuum/Pages/awaretime.aspx)**NZ Maths**[Time - Units of Work](http://www.nzmaths.co.nz/time-units-work)[Good Morning, Good Night](http://www.nzmaths.co.nz/resource/good-morning-good-night)**AMSI**[Time – Teacher Guide](http://www.amsi.org.au/teacher_modules/time.html)**Other***Diary of a Wombat* by French, J. |

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| **Notes** |
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| Topic 0.2.9 Informal Skip Counting |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Subitise small collections of objects [(VCMNA071)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA071)
* Represent practical situations to model sharing [(VCMNA074)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA074)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. **They develop an understanding of the concepts of number and numeral, count, order, add** and share using small sets of objects. **They create and continue simple patterns.** | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Identify places where number patterns are evident, e.g. letterboxes
* Use concrete or visual materials that represent counting groups, e.g. handprints set in a sequence
* Add groups of numbers together to make sequences, e.g. 2, 4, 6
* Count by 2’s with whisper counting the odd numbers
* Use subitising and tens frames to represent collections of items that add one or more groups
 | * **Understanding** that skip counting is adding or taking away groups to form a pattern
* **Fluency** through readily counting numbers in sequences, continuing patterns
* **Problem solving** through recognising and continuing patterns based on like groups
* **Reasoning** through creating patterns involving numbers
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Use the Korean counting game sam-yuk-gu for skip counting
* Skip count by twos, fives and tens starting from zero.
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| **Assessment ideas** |
| Students:* Use groups of matchsticks to make like groups
* Use counting to work out how many more, after counting the next group in the order
* Recognise the need for the groups to be the same or adding/subtracting the same.
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| **Resources** |
| **FUSE**[Representing Numbers 1 – 5](http://fuse.education.vic.gov.au/?4T5LBP) [Representing Numbers 6 – 10](http://fuse.education.vic.gov.au/?DYJ2DX) **NZ Maths**[Ten in the Bed](http://www.nzmaths.co.nz/resource/ten-bed-0)[The Three Pigs](http://www.nzmaths.co.nz/resource/three-pigs)[Beetle Wheels](http://www.nzmaths.co.nz/resource/beetle-wheels)**nRich**[Domino Sequences](http://nrich.maths.org/241)**AMSI**[Multiplication and Division](http://www.amsi.org.au/teacher_modules/multiplication_and_division.html#Introducing_vocabulary_and_symbols) |

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| Topic 0.2.10 Revisiting Language of Position and Movement  |
| Strand: Measurement and Geometry | Sub-strand: Location and Transformation | Recommended teaching time: 1 week |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Describe position and movement [(VCMMG082)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMMG082)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students compare common objects with respect to length, mass and capacity, and order events and compare their duration. They make rough estimates and simple measurements with respect to informal units. Students name, sort and describe familiar everyday shapes and objects, and **describe position and movement in their immediate environment.** | Students use uniform informal units to measure and compare length and capacity. They tell time to the half-hour and use time and calendar terms such as hours, days, weeks and months to describe duration. Students use terms such as corner, edge and face to classify familiar shapes and objects, and are able to give and follow directions to familiar locations. | Students compare and order sets of shapes and objects based on length, area, volume and capacity using uniform informal units. They compare masses using balance scales, tell the time to the quarter hour, and use months and seasons to describe sequences of events over a longer time frame. Students describe sets of shapes and objects defined in terms of properties, and draw examples of these with and without the use of technology. They use simple maps and identify relative locations, and investigate the effect of simple transformations of slides, flips, half and quarter turns, both by hand and using technology. |

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| **Activities** | **Proficiencies** |
| * Use everyday language to understand and follow directions, e.g., forwards, backwards, towards, up, over, behind, between and near
* Use everyday language to give simple directions to peers
* Describe placements of objects using everyday language of position
 | * **Understanding** the language of direction to follow instructions
* **Fluency** includes using the language of movement to give directions
* **Problem solving** involves using directions to find solutions to problems
* **Reasoning** includes explaining how directions are needed in everyday processes such as telling a friend where they live
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| **Considering different levels** |
| Level 1Students who are workng at this level could:* Use the language of distance and direction, as well as reference to landmarks, to go from one familiar location to another.
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| **Assessment ideas** |
| Students* Draw pictures to illustrate directional words such as *over.*
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| **Resources** |
| **FUSE**[Bee-Bot](http://fuse.education.vic.gov.au/?Q42SH2)**nRich**[Coloured Squares](http://nrich.maths.org/234/note)**NZ Maths**[Position and Orientation – Units of Work](http://www.nzmaths.co.nz/position-and-orientation-units-work)[A Lion in the Night](http://www.nzmaths.co.nz/resource/lion-night) |

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| Topic 0.2.11 Strategies for Adding |
| Strand: Number and Algebra | Sub-strand: Number and Place Value | Recommended teaching time: 2 weeks |

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| **Mapping to F–10 curriculum in Victoria** |
| **Content descriptions** |
| * Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point [(VCMNA069)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA069)
* Represent practical situations to model addition and subtraction [(VCMNA073)](http://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA073)
 |
| **Achievement standard (excerpt in bold)** |
| **Foundation Level** | Level 1 | Level 2 |
| Students classify and sort objects into sets and form simple correspondences between them. They decide when two sets are of equal size, or one is smaller or bigger than another. **They develop an understanding of the concepts of number and numeral, count, order, add and share using small sets of objects.** They create and continue simple patterns. | Students recognise, represent and order numbers to at least 100 using materials, diagrams, words, numerals and a number line, and apply this with respect to the value of Australian coins. They group and skip count by twos, fives and tens, and count to 100 by partitioning and using place value. Students solve simple addition problems, and share into two equal groups or parts to model one-half. | Students recognise, model and order numbers to at least 1000 and use a variety of strategies to count efficiently, including skip counting forwards and backwards by twos threes, fives and tens, with and without the use of technology. They explore the relationship between addition and subtraction, and use a variety of strategies to solve problems, including missing number problems. Students use groups and arrays to represent multiplication and division and solve simple problems, including finding halves, quarters and eighths of sets and shapes. They count and order by value, small collections of Australian coins and notes. |

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| **Activities** | **Proficiencies** |
| * Trusting the count, counting all of a number
* Counting on from a number
* Develop visual images through counting on from an invisible collection
* Basic facts of a number, e.g. all numbers that add to 11
* Strategies to ensure objects are counted once when adding groups together
 | * **Understanding** that once counted a group of objects contents do not change and neither does its name
* **Fluency** includes readily counting numbers in sequences
* **Problem solving** includes using familiar counting sequences to solve unfamiliar problems
* **Reasoning** that once counted you can count on from a number
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| **Considering different levels** |
| Level 1Students who are working at this level could:* Represent and solve simple addition problems using a range of strategies including counting on, partitioning and rearranging parts.
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| **Assessment ideas** |
| Students:* Are given 2 dice and a pile of counters. One die is a dot die and the other has numerals. When dice are thrown student is successful if they can count on from the numeral dice.
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| **Resources** |
| DET (Victoria)[Trusting the Count](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/assessment/Pages/lvl1trust.aspx)NRICH[Incey Wincey Spider](http://nrich.maths.org/8389)NZ Maths[Number Knowledge (Lessons)](http://www.nzmaths.co.nz/number-knowledge-lessons)[Frogs in Ponds](http://www.nzmaths.co.nz/resource/frogs-ponds) |

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