7.3 Content for Stage 1

✍ Consult

Mathematics • Stage 1

Number and Algebra

Whole Numbers 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.2 investigates and describes methods to solve problems

1.3 supports conclusions by explaining or demonstrating how answers were obtained

1.4 counts, represents and uses numbers in a range of mental strategies involving the four operations

Students:

Count collections to 100 by partitioning numbers using place value

- count and represent large sets of objects by systematically grouping in tens [N]
- use and explain mental grouping to count and to assist with estimating the number of items in large groups [N] [CCT]
- state the place value of digits in two-digit numbers, eg 'in the number 32, the 3 represents 30 or 3 tens' [N] [L]

Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line

- apply an understanding of place value and the role of zero to read, write and order two-digit numbers [N]
- write and solve simple everyday problems with two-digit numbers (Problem Solving) [L] [N]
  - choose an appropriate strategy to solve problems, including trial and error and drawing a diagram (Fluency) [CCT]
- use a number line or hundreds chart to assist with counting and ordering [N]
  - give reasons for placing a set of numbers in a particular order (Reasoning) [N] [CCT]
- uses standard decomposition of two-digit numbers, eg 32 as three groups of 10 and two ones [N]
- use non-standard decomposition of two-digit numbers, eg 32 as 32 ones [N] [CCT]
- round numbers to the nearest ten when estimating [N]

Recognise, describe and order Australian coins according to their value

- recognise, sort, order and count money and use the appropriate language in everyday contexts, eg coin, note, cents, dollars [N] [L]
  - exchange money for goods in a play situation (Understanding, Fluency) [N] [PSC]
  - compare coins from other countries, eg from students' cultural backgrounds (Understanding) [N] [IU]

Mathematics • Stage 1

Number and Algebra

Whole Numbers 1

- recognise the symbols for dollars ($) and cents (c)

Background Information:

The needs of students are to be considered when determining the appropriate range of two- and three-digit numbers.

By developing a variety of counting strategies and ways to combine quantities, students recognise that using strategies other than counting by ones is more efficient to count collections.

Language:

Students should be made aware that bus and telephone numbers are said differently from *ordinary* numbers. Ordinal names may be confused with fraction names, eg ‘the third’ relates to order but ‘a third’ is a fraction.

The word ‘round’ has different meanings in different contexts and some students may confuse it with the word ‘around’.

Mathematics • Stage 1

Number and Algebra

Whole Numbers 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols
1.2 investigates and describes methods to solve problems
1.3 supports conclusions by explaining or demonstrating how answers were obtained
1.4 counts, represents and uses numbers in a range of mental strategies involving the four operations

Students:

Recognise, model, represent and order numbers to at least 1000

- count forwards or backwards by ones, from a given three-digit number [N]
- identify the number before and after a given three-digit number [N]
- represent three-digit numbers using numerals, words and objects [L]
- use number lines and number charts beyond 100 to assist with counting and ordering [N] [CCT]
  - give reasons for placing a set of numbers in a particular order (Reasoning) [N] [CCT]

Investigate number sequences, initially those increasing and decreasing by twos, threes, fives and ten from any starting point, then moving to other sequences.

- use the terms ‘more than’ and ‘less than’ to compare numbers [N] [L]
- count forwards and backwards by twos, fives and tens [N]
- count forwards and backwards by tens, on and off the decade, with two and three digit numbers,
  eg 40, 30, 20, … (on the decade) 427, 437, 447, … (off the decade) [N]
- use a hundreds chart to identify number patterns [N] [CCT]

Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting

- apply an understanding of place value and the role of zero to read, write and order three-digit numbers [N] [L]
  - make the largest and smallest number from three given digits (Understanding, Fluency) [N] [CCT]
- write and solve simple everyday problems with three-digit numbers (Problem Solving) [N]
  - choose an appropriate strategy to solve problems, including trial and error and drawing a diagram (Fluency) [CCT]
- uses standard decomposition of three-digit numbers,
  eg 326 as three groups of 100, two groups of 10 and six ones [N]
- use a variety of non-standard decomposition of three-digit numbers,
  eg 326 can be 32 tens and six ones [N] [CCT]
- count and represent large sets of objects by systematically grouping in tens and hundreds [N]

Mathematics • Stage 1

Number and Algebra

Whole Numbers 2

  - use models such as linking blocks, sticks in bundles and place-value blocks to explain grouping (Understanding, Reasoning) [N]
- use and explain mental grouping to count and to assist with estimating the number of items in large groups [N] [CCT]
- round numbers to the nearest hundred when estimating [N]

Count and order small collections of Australian coins and notes according to their value

- use the face value of notes and coins to sort, order and count money [N]
  - determine whether there is enough money to buy a particular item (Reasoning) [N]
- recognise that there are: 100 cents in $1; 200 cents in $2, … [N]

Background Information:

Students need to learn correct rounding of numbers based on the convention of rounding up if the last digit is five or more and leaving the number if the last digit is zero to four.

One-cent and two-cent coins were withdrawn by the Australian Government in 1990. Prices can still be expressed in one-cent increments but the final bill is rounded to the nearest five cents,

eg $5.36, $5.37 round to $5.35

$5.38, $5.39, $5.41, $5.42 round to $5.40

$5.43, $5.44 round to $5.45

Language:

The word ‘and’ is used when reading a number or writing it in words, eg five hundred and sixty-three.

Mathematics • Stage 1

Number and Algebra

Addition and Subtraction 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.4 counts, represents and uses numbers in a range of mental strategies involving the four operations

Students:

Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts

- represent subtraction as the difference between two numbers [N]
- use the terms 'add', 'plus', 'equals', 'is equal to', 'take away', 'minus' and 'the difference between' [L]
- recognise and use the symbols $+$, $-$ and $=$
  eg $4+6=10$ '$=$' indicates 'answer is'
  $4+6=2+8$ '$=$' indicates 'is equal to'
- record number sentences using drawings, numerals, symbols and words [L]
  - use a variety of recording strategies (Fluency) [L]
- use concrete materials to model addition and subtraction problems involving one- and two-digit numbers [N]
- recall addition and subtraction facts for numbers to at least 20 [N]
- use and record a range of mental strategies for addition and subtraction problems [L]
  - choose efficient strategies for addition and subtraction, including:
    - counting on from the larger number to find the total of two numbers
    - counting back from a number to find the number remaining
    - counting on or back to find the difference between two numbers
    - using doubles and near doubles, eg $5+7$; double 5 and add 2 more
    - combining numbers that add to 10, eg $4+7+8+6+3+2$; group 4 and 6, 7 and 3 first
    - bridging to ten, eg $17+5$; 17 and 3 is 20 and add 2 more
    - partitioning numbers to at least 20 in both standard and non-standard form, eg 19 as $10+9$ or $11+8$ or $12+7$ … (Fluency) [N]

Mathematics • Stage 1

Number and Algebra

Addition and Subtraction 1

Background Information:

It is appropriate for students at this Stage to use concrete materials to model and solve problems, for exploration and for concept building. Concrete materials may also help in explanations of how solutions were arrived at.

Addition and Subtraction should move from counting and combining perceptual objects, to using numbers as replacements for completed counts with mental strategies, to recordings that support mental strategies (such as jump or split, partitioning or compensation).

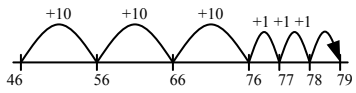
At this Stage, students develop a range of strategies to aid quick recall of number facts and to solve addition and subtraction problems. Students should be encouraged to explain their strategies and invent ways of recording their actions. It is also important to discuss the merits of various strategies in terms of practicality and efficiency.

Subtraction covers two different situations 'taking away' from a group, and 'comparison' (ie determining how many more (or less) when comparing two groups). In performing a subtraction, students could use 'counting on or back' from one number to find the difference. The 'counting on or back' type of subtraction is more difficult for students to grasp. Nevertheless, it is important to encourage students to use the 'counting on' strategy as a method of solving comparison problems after they are confident with the 'take away' type.

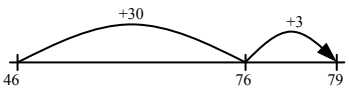
Jump strategy on a number line:
An addition or subtraction strategy in which the student places the first number on an empty number line and then counts forward or backwards firstly by tens and then by ones to perform a calculation. (The number of jumps will reduce with increased understanding.)

eg $46 + 33$

Jump method 1:

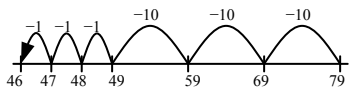


Jump method 2:

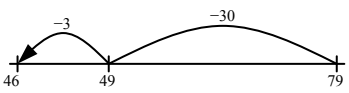


eg $79 - 33$

Jump method 1:



Jump method 2:



Split strategy:
An addition or subtraction strategy in which the student separates the tens from the units and adds or subtracts each separately before combining to obtain the final answer.

Split method:

$$\begin{aligned} 46 + 33 &= 40 + 6 + 30 + 3 \\ &= 40 + 30 + 6 + 3 \\ &= 70 + 9 \\ &= 79 \end{aligned}$$

Language:

Some students may need assistance when two tenses are used within the one problem, eg 'I had six beans and took away four. So, how many do I have now?'

The word 'difference' has a specific meaning in this context, referring to the numeric value of the group. In everyday language it can refer to any attribute. Students need to understand that the need to carry out subtraction can be indicated by a variety of language structures. The language used in the 'comparison' type of subtraction is quite different to that used in the 'take away' type.

Mathematics • Stage 1

Number and Algebra

Addition and Subtraction 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.2 investigates and describes methods to solve problems

1.3 supports conclusions by explaining or demonstrating how answers were obtained

1.4 counts, represents and uses numbers in a range of mental strategies involving the four operations

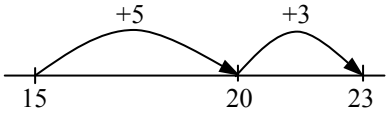
Students:

Explore the connection between addition and subtraction

- use related addition and subtraction number facts to at least 20 [N],
  eg $15+3=18$, so $18-15=3$
- demonstrate how addition and subtraction are inverse (opposite) operations

Solve simple addition and subtraction problems using a range of efficient mental and written strategies

- use bundling of objects to model addition and subtraction [N]
- use a range of strategies for addition and subtraction of two-digit numbers, including the split strategy and the jump strategy, eg as recorded on an empty number line [N]
- select and use a variety of strategies to solve addition and subtraction problems (Problem Solving) [CCT] [N]
  - check solutions using a different strategy (Problem Solving, Fluency) [CCT]
  - recognise which strategy worked and which did not work (Understanding, Reasoning) [CCT]
  - explain or demonstrate how an answer was obtained for addition and subtraction problems,
    eg showing how the answer to $15+8$ was obtained using a jump strategy on an empty number line



(Understanding) [L] [N]

Background Information:

Refer to background information in Addition and Subtraction 1

Language:

Refer to language in Addition and Subtraction

Mathematics • Stage 1

Number and Algebra

Multiplication and Division 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.4 counts, represents and uses numbers in a range of mental strategies involving the four operations

Students:

Develop confidence with number sequences to and from 100 by ones from any starting point. Skip count by twos, fives and tens starting from zero

- count by ones, twos, fives and tens using rhythmic or skip counting [N]
  - use patterns to assist counting by twos, fives or tens (Fluency) [N]
- describe collections of objects as 'rows of' and 'groups of' [L] [N]
- find the total number of objects using rhythmic or skip counting, and repeated addition, eg 5 groups of 4 is the same as $4+4+4+4+4$ [N]
- recognise odd and even numbers by grouping objects into two rows [N]
  - describe the pattern created by modelling odd and even numbers (Understanding) [N]
- use a number line or hundreds chart to solve multiplication and division problems [N]

Background Information:

There are two forms of division:

Sharing – How many in each group?
eg 'If twelve marbles are shared between three students, how many does each get?'

Grouping – How many groups are there?
eg 'If I have twelve marbles and each child is to get four, how many children will get marbles?' This form of division relates to repeated subtraction.

After students have made equal groups (eg 3 groups of 4), the process can be reversed by sharing (eg share 12 between 3), thus linking multiplication and division.

When sharing a collection of objects into two or four groups, students may describe the groups as being one-half or one-quarter of the whole collection.

An array is one of several different arrangements that can be used to model multiplicative situations involving whole numbers. An array is made by arranging a set of objects, such as counters, into columns and rows. Each column must contain the same number of objects as the other columns, and each row must contain the same number of objects as the other rows.

Language:

The term 'lots of' can be confusing to students because of its everyday use and should be avoided, eg 'lots of fish in the sea'.

It is preferable that students use 'groups of' or 'rows of'.

Mathematics • Stage 1

Number and Algebra
Multiplication and Division 2

Outcomes
A student:
1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols
1.2 investigates and describes methods to solve problems
1.3 supports conclusions by explaining or demonstrating how answers were obtained
1.4 counts, represents and uses numbers in a range of mental strategies involving the four operations

Students:

Recognise and represent multiplication as repeated addition, groups and arrays

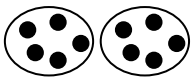
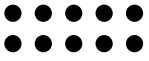
- model multiplication as equal groups or as an array of equal rows, eg two groups of three

 or or 'two rows of three'

[N]

- model the commutative property of multiplication, eg '3 groups of 2 is the same as 2 groups of 3' [N]
- recognise the symbols $\times$, $\div$ and =

Recognise and represent division as grouping into equal sets and solve simple problems using these representations

- model division by sharing a collection of objects into equal groups or as equal rows in an array,
  eg ten objects shared between two  or  [N]
- model division as repeated subtraction [N]
- pose simple multiplication and division questions, including those involving money [N] [CCT]
- solve multiplication and division problems using objects, diagrams, imagery, actions or trial-and-error (Problem Solving) [L] [N]
  - use estimation to check that the answers are reasonable (Fluency, Problem Solving) [CCT] [N]
  - explain strategies using language, actions, materials and drawings (Understanding) [L]
  - support answers by demonstrating how the answer was obtained (Understanding, Fluency) [N]
  - recognise which strategy worked and which did not work (Understanding, Reasoning) [CCT]
- record multiplication and division problems using drawings, numerals, symbols and words [L] [N]

Background Information:

Refer to background information in Multiplication and Division 1

Mathematics • Stage 1

Number and Algebra
Multiplication and Division 2

Language:

Refer to language in Multiplication and Division 1

Mathematics • Stage 1

Number and Algebra

Fractions and Decimals 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

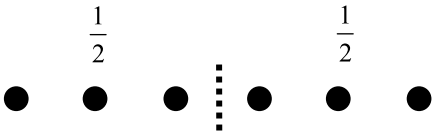
1.5 represents halves, quarters and eighths

Students:

Recognise and describe one-half as one of two equal parts of a whole

- describe equal parts of a whole object or collection of objects,
  eg "I halved my paper and halved again and now I have quarters" [L] [N]

- describe parts of an object or collection of objects as 'about a half', 'more than a half ' or 'less than a half' [L] [N]
- model half of a whole object or a collection of objects [N]



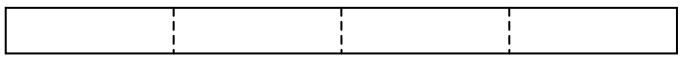
- use fraction notation for half $\left(\frac{1}{2}\right)$ [L]

Background Information:

At this Stage, fractions are used in two different ways: to describe equal parts of a whole, and to describe equal parts of a collection of objects. Fractions refer to the relationship of the equal parts to the whole unit. When using collections to model fractions it is important that students appreciate the collection as being a 'whole' and the resulting groups as 'parts of that whole'. It should be noted that the size of the resulting fraction will depend on the size of the original whole or collection of objects. It is not necessary for students to distinguish between the roles of the numerator and denominator at this Stage. They may use the symbol '$\frac{1}{2}$' as an entity to mean 'one half' or 'a half' and similarly for '$\frac{1}{4}$'.

Three Models of Fractions

Linear Model: uses one directional cuts or folds that compare fractional parts based on length, this model should be introduced first.

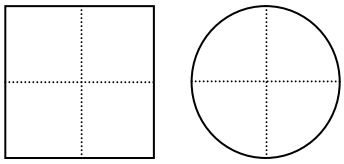


Discrete Model: uses separate items in collections to represent parts of the whole group.

Mathematics • Stage 1

Number and Algebra
Fractions and Decimals 1

Area Model: uses multi-directional cuts or folds that compare fractional parts to the whole. This model should only be introduced once students have an understanding of the concept of area, generally to be introduced in Stage 2.



Language:

Some students may hear ‘whole’ in the phase ‘part of a whole’ and confuse it with the term ‘hole’.

Mathematics • Stage 1

Number and Algebra

Fractions and Decimals 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

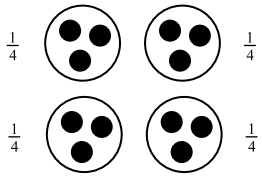
1.5 represents halves, quarters and eighths

Students:

Recognise and interpret common uses of halves, quarters and eighths of shapes and collections

- visualise fractions that are equal parts of a whole, eg imagine where you would cut the rectangle before cutting it [CCT]
- model and describe a quarter or an eighth of a whole object [N]
- model and describe a quarter or an eighth of a collection of objects [N]
- use fraction notation for quarter $\left(\frac{1}{4}\right)$and eighth $\left(\frac{1}{8}\right)$ [L]
- record equal parts of a whole, and the relationship of the groups to the whole using pictures and fraction notation [L] [N]
- identify quarters or eighths of the same unit as being the same [N],

eg



Background Information:

Refer to background information in Fractions and Decimals 1.

Language:

At this Stage, the term ‘three-quarters’ may be used to name the remaining parts after one-quarter has been identified.

Mathematics • Stage 1

Number and Algebra

Patterns and Algebra 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.2 investigates and describes methods to solve problems

1.6 creates and completes a variety of patterns and builds number relationships

Students:

Investigate and describe number patterns formed by skip counting and patterns with objects

Number Patterns

- identify and describe patterns when counting forwards or backwards by ones, twos, fives, or tens [N]
  - pose and solve problems based on number patterns (Problem Solving) [CCT] [N]
- continue, create and describe number patterns that increase or decrease [N]
  - ask questions about how number patterns are made and how they can be copied or continued (Reasoning, Understanding) [CCT]
- represent number patterns on a number line or hundreds chart
- model and describe odd and even numbers using counters paired in two rows
  - recognise patterns created by adding combinations of odd and even numbers, eg odd + odd = even, odd + even = odd (Understanding) [CCT]

Background Information:

Number Patterns

At this Stage, students further explore number patterns that increase or decrease. Patterns could now include any patterns observed on a hundreds chart and these might go beyond patterns created by counting in ones, twos, fives or tens.

This links closely with the development of Whole Numbers and Multiplication and Division.

Mathematics • Stage 1

Number and Algebra

Patterns and Algebra 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.3 supports conclusions by explaining or demonstrating how answers were obtained

1.6 creates and completes a variety of patterns and builds number relationships

Students:

Solve problems by using number sentences for addition or subtraction

Number Relationships

- use the equals sign to record equivalent number relationships and to mean 'is the same as' rather than as an indication to perform an operation, eg $5+2=4+3$ [L] [N]
- build addition facts to at least 20 by recognising patterns or applying the commutative property, eg $4+5=5+4$ [N]
- relate addition and subtraction facts for numbers to at least 20, eg $5+3=8$; so $8-3=5$ and $8-5=3$ [N]
  - describe what has been learnt from creating patterns, making connections with addition and related subtraction facts (Understanding) [CCT] [N]
  - check number sentences to determine if they are true or false, and if false, describe why, eg 'Is $7+5=8+5$ true? If not, why not?' (Reasoning) [CCT] [N]
- model and record patterns for individual numbers by making all possible whole number combinations,
  eg $0+4=4$ [N] [CCT]
  $1+3=4$
  $2+2=4$
  $3+1=4$
  $4+0=4$
- find and make generalisations about number relationships, eg adding zero does not change the number, as in $6+0=6$ [N] [CCT]

Describe patterns with numbers and identify missing elements

Number Patterns

- determine a missing element in a number pattern, eg 3, 7, 11, __, 19, 23, 27 [N] [CCT]
  - describe how the missing element in a number pattern was determined (Understanding)
  - check solutions to missing elements in patterns by repeating the process (Fluency, Reasoning)

Mathematics • Stage 1

Number and Algebra
Patterns and Algebra 2

Background Information:

Number Relationships

At this Stage, describing number relationships and making generalisations should be encouraged when appropriate. The concept of equality and the understanding that the equals sign also means 'is the same as' is important.

Mathematics • Stage 1

Measurement and Geometry

Length 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.3 supports conclusions by explaining or demonstrating how answers were obtained

1.7 measures and estimates lengths, areas, volumes, capacities and masses using informal units

Students:

Measure and compare the lengths and capacities of pairs of objects using uniform informal units

- use informal units to measure lengths or distances, placing the units end-to-end without gaps or overlaps
  - select and use appropriate informal units to measure lengths or distances, eg using paper clips instead of pop sticks to measure a pencil (Fluency) [CCT]
- count informal units to measure lengths or distances, and describe the part left over [N]
- estimate and measure linear dimensions and curves using informal units [N]
  - discuss strategies used to estimate length, eg visualising the repeated unit, use the process 'make, mark and move' (Understanding) [N] [CCT]
- record lengths or distances by referring to the number and type of unit used
  - explain the appropriateness of a selected informal unit (Reasoning) [CCT]
  - explain the relationship between the size of a unit and the number of units needed, eg more paper clips than pop sticks will be needed to measure the length of the desk (Understanding) [N] [CCT]
- describe why the length remains constant when units are rearranged [CCT]

Recognise and use formal units to measure lengths of objects

- recognise the need for a formal unit to measure lengths or distances
- use the metre as a unit to measure lengths or distances [N]
- record lengths and distances using the abbreviation for metre (m) [L]
- measure lengths or distances to the nearest metre or half-metre [N]
  - explain that a metre length can be arranged in a variety of ways, eg straight line, curved line (Understanding) [CCT]

Background Information:

At this Stage, measuring the length of objects using informal units enables students to develop some key understandings of measurement. These include: understanding that units are repeatedly placed end-to-end without gaps or overlaps, that units must be equal in size, that identical units should be used to compare lengths, that some units are more appropriate for measuring particular objects, and the relationship between the size of the unit and the number of units needed.

It is important that students have had some measurement experiences before being asked to estimate

Mathematics • Stage 1

Measurement and Geometry
Length 1

and that a variety of estimation strategies are taught.

Students should be given opportunities to apply their understandings of measurement, gained through experiences with informal units, to experiences with the centimetre and metre.

Students could make a measuring device using informal units before using a ruler. This will assist students in understanding that the distances between marks on a ruler represent unit lengths and that the marks indicate the end points of each of the units.

Using the terms make, mark and move assists students in understanding the concept of repeated units. By placing the unit down, marking where it ends, moving the item along and continuing the process, students see that the unit of measurement is the space between the marks not the marks themselves.

At this Stage, making a measuring device from ten one-centimetre units and using it to measure allows students to count by tens and may be more manageable than a ruler.

Mathematics • Stage 1

Measurement and Geometry

Length 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.3 supports conclusions by explaining or demonstrating how answers were obtained

1.7 measures and estimates lengths, areas, volumes, capacities and masses using informal units

Students:

Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units

- compare and order two or more lengths or distances using informal units [N] [CCT]
  - use informal units to compare the lengths of two objects that cannot be moved or aligned (Fluency, Reasoning) [CCT]
- make and use a tape measure calibrated in informal units,
  eg calibrating a paper strip using footprints as a repeated unit [CCT]
  - use computer software to draw a line and use a simple graphic as an informal unit to measure its length (Fluency) [ICT]

Recognise and use formal units to measure lengths of objects

- recognise the need for a smaller unit than the metre
- recognise that one hundred centimetres equal one metre [N]
- use a 10 cm length, with 1 cm markings, as a device to measure lengths [N]
- measure lengths or distances to the nearest centimetre [N]
- record lengths and distances using the abbreviation for centimetre (cm) [L]

Background Information:

See Background Information for Length 1

Mathematics • Stage 1

Measurement and Geometry

Area 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.7 measures and estimates lengths, areas, volumes, capacities and masses using informal units

Students:

Estimate and measure shapes and objects based on area using uniform informal units

- estimate and count using informal units to measure area and describe the part left over [N]
- measure area by placing identical informal units in rows or columns without gaps or overlaps
  - select and use appropriate informal units to measure area (Fluency) [CCT]
  - use computer software to create a shape and use a simple graphic as an informal unit to measure its area (Fluency) [ICT]
  - explain why tessellating shapes are best for measuring area (Reasoning) [CCT]

Background Information:

At this Stage, measuring the area of objects using informal units enables students to develop some key understandings of measurement. These include repeatedly placing units so there are no gaps or overlaps and understanding that the units must be equal in size. Covering surfaces with a range of informal units should assist students in understanding that some units tessellate and are therefore more suitable for measuring area.

It is important that students have had some measurement experiences before being asked to estimate, and that a variety of estimation strategies are taught.

When students understand why tessellating units are important, they should be encouraged to make, draw and describe the spatial structure (grid). Students should develop procedures for counting the tile or grid units so that no units are missed or counted twice.

Students should also be encouraged to identify and use efficient strategies for counting, eg using repeated addition or rhythmic counting.

Language:

Area is the measure of the amount of surface. Surface refers to the outer faces or outside of an object. A surface may be flat or curved.

Mathematics • Stage 1

Measurement and Geometry
Area 2

Outcomes
A student:
1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols
1.3 supports conclusions by explaining or demonstrating how answers were obtained
1.7 measures and estimates lengths, areas, volumes, capacities and masses using informal units

Students:

Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units

- compare the areas of two surfaces that cannot be moved or superimposed, eg by cutting paper to cover one surface and superimposing the paper over the second surface
- compare the areas of two similar shapes by cutting and covering
- compare and order two or more areas using informal units [N]
  - discuss strategies used to estimate area, eg visualising the repeated unit (Fluency, Understanding) [CCT]
- draw the spatial structure (grid) of the repeated units
- describe why the area remains constant when units are rearranged [N] [CCT]
- record area by referring to the number and type of units used, eg the area of this surface is 20 tiles
  - explain the relationship between the size of a unit and the number of units needed to measure area, eg more tiles than workbooks will be needed to measure the area of the desktop (Understanding, Reasoning) [N] [CCT]

Background Information:

Refer to background information in Area 1

Mathematics • Stage 1

Measurement and Geometry

Volume and Capacity 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.7 measures and estimates lengths, areas, volumes, capacities and masses using informal units

Students:

Measure and compare the lengths and capacities of pairs of objects using uniform informal units

- estimate volume or capacity using appropriate informal units [N] [CCT], eg blocks for volume, cups for capacity
  - explain a strategy used for estimating volume or capacity (Fluency, Understanding) [CCT]
  - explain that if a smaller unit is used then more units are needed to measure, eg more cups than ice cream containers are needed to fill a bucket (Understanding, Reasoning) [N][CCT]
- measure the capacity of a container by counting the number of times a smaller container can be filled and emptied into the container [N]
  - select an appropriate informal unit to measure and compare the capacities of two containers, eg using cups rather than teaspoons to fill a bucket (Fluency) [N] [CCT]
- recognise that containers of different shapes may have the same capacity, eg a tall narrow container may hold the same as a short, wide container
- measure the volume of a container by filling the container with informal units (eg cubes) and counting the number of units used [N]

Background Information:

Students need experience in filling containers with both continuous material (eg water) and with discrete objects (eg marbles). The use of continuous material leads to measurement using the litre and millilitre in later Stages.

The use of blocks leads to measurement using the units of cubic metre and cubic centimetre.

Calibrating a container using informal units is a precursor to students using measuring cylinders calibrated in formal units (litres and millilitres) at a later Stage.

An object displaces its own volume when totally submerged. Links with fractions using $\frac{1}{2}$ and $\frac{1}{4}$ cups to fill containers.

Language:

The word ‘volume’ has different meanings in everyday contexts, eg volume in relation to sound levels, a volume of a book.

Students need meaningful practice in using the general word ‘container’ to include bottles, jars, tubs, etc.

Mathematics • Stage 1

Measurement and Geometry

Volume and Capacity 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.2 investigates and describes methods to solve problems

1.3 supports conclusions by explaining or demonstrating how answers were obtained

1.7 measures and estimates lengths, areas, volumes, capacities and masses using informal units

Students:

Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units

- compare and order the capacities of two or more containers by filling one container and pouring the contents into another, and pouring the contents of two containers into a third and marking each level [N]
- calibrate a large container using informal units [N],
  eg filling a bottle by adding cups of water and marking the new level as each cup is added
- pack cubic units (eg blocks) into rectangular containers so there are no gaps [N]
  - recognise that cubes pack and stack better in rectangular containers than other shapes (Understanding, Reasoning)
- compare and order the volume of two or more containers by measuring each container with informal units and comparing the number of units needed to fill each container [N]
  - devise and explain strategies for packing and counting units to fill a box, eg packing in layers and ensuring there are no gaps between units (Problem Solving, Understanding) [N] [CCT]
- estimate the volume of a pile of material and check by measuring [N] [CCT]
- compare and order the volumes of two or more models by counting the number of blocks used in each model [N] [CCT]
  - recognise that models with different shapes may have the same volume, eg a model 4 blocks wide and 2 blocks high has the same volume as a model 2 blocks wide and 4 blocks high (Understanding) [N] [CCT]
- compare and order the volumes of two or more objects by marking the change in water level when each is submerged [N]
- recognise that changing the shape of an object does not change the amount of water it displaces
- record volume or capacity by referring to the number and type of informal units used

---

Background Information:

Refer to background information in Volume and Capacity 1

Mathematics • Stage 1

Measurement and Geometry
Volume and Capacity 2

Language:

Refer to language in Volume and Capacity 1

Mathematics • Stage 1

Measurement and Geometry

Mass 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.7 measures and estimates lengths, areas, volumes, capacities and masses using informal units

Students:

Investigate mass using an equal arm balance

- sort objects on the basis of their mass [N]
- use an equal arm balance to compare the masses of two objects
  - discuss the action of an equal arm balance when a heavy object is placed in one pan and a lighter object in the other pan (Understanding) [CCT]
- identify materials that are light or heavy
- place two objects on either side of an equal arm balance to obtain a level balance [CCT]
- record findings from using an equal arm balance through drawings

Background Information:

Mass is an intrinsic property of an object, but its most common measure is in terms of weight. Weight is a force that changes with gravity, while mass remains constant.

At this Stage, measuring mass using informal units enables students to develop some key understandings of measurement. These include: repeatedly using a unit as a measuring device, selecting an appropriate unit for a specific task, appreciating that a common informal unit is necessary for comparing the mass of objects, and understanding that some units are unsatisfactory because they are not uniform, eg pebbles.

Students should appreciate that the equal arm balance has two functions comparing the mass of two objects measuring the mass of an object by repeatedly using a unit as a measuring device.

Language:

As the terms ‘weigh’ and ‘weight’ are common in everyday usage, they can be accepted in student language should they arise.

Mathematics • Stage 1

Measurement and Geometry

Mass 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols
1.2 investigates and describes methods to solve problems
1.3 supports conclusions by explaining or demonstrating how answers were obtained
1.7 measures and estimates lengths, areas, volumes, capacities and masses using informal units

Students:

Compare masses of objects using balance scales

- compare and order the masses of two or more objects by hefting and then checking using an equal arm balance [N]
- measure the mass of an object by counting the number of informal units needed to balance the object [N]
  - select an appropriate informal unit to measure the mass of an object and justify the choice (Fluency) [N] [CCT]
  - explain why some informal units are more appropriate in a given situation (Fluency, Reasoning) [CCT]
- estimate and record mass by referring to the number and type of informal units used
- compare and order the masses of two or more objects using informal units [N]
- use an equal arm balance to find two collections of objects that have the same mass, eg a collection of blocks and a collection of counters [N] [CCT]
- calculate differences in mass by measuring and comparing [N] [CCT], eg 'The pencil has a mass equal to three blocks and a pair of plastic scissors has a mass of six blocks, so the scissors are three blocks heavier than the pencil.'
  - predict whether the amount of units will be greater or smaller when a different unit is used, eg 'I will need more pop sticks than blocks as the pop sticks are lighter than the blocks' (Reasoning) [N] [CCT]
- recognise that mass is conserved [N] [CCT], eg the mass of a lump of plasticine remains constant regardless of shape

---

Background Information:

Refer to background information in Mass 1

Language:

Refer to language in Mass 1

Mathematics • Stage 1

Measurement and Geometry

Time 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.2 investigates and describes methods to solve problems

1.8 describes, compares and orders duration of events and reads clocks on the half- and quarter-hour

Students:

Describe duration using months, weeks, days and hours

- estimate and measure the duration of an event using a repeated informal unit [N], eg the number of times you can clap your hands while the teacher writes your name
  - indicate when it is thought that an activity has gone on for one hour, one minute or one second (Fluency, Understanding) [N]
  - solve simple everyday problems about time and duration (Problem Solving) [N] [CCT]
- use a calendar to calculate the number of months, weeks or days until an upcoming event [N]
- compare and order the duration of events measured using a repeated informal unit [N]

Tell time to the half-hour

- use the terms ‘hour’, ‘minute’ and ‘second’ [L]
  - discuss activities that take one hour, less than an hour, more than an hour (Understanding) [N] [CCT]
- use the terms ‘o’clock’ and ‘half-past’ [L]
- describe the position of the hands on a clock for the half-hour [L]
  - associate everyday events with particular hour and half-hour times, eg ‘We start school at 9 o’clock.’ (Understanding) [N] [CCT]
- read and record hour and half-hour time on digital and analog clock [N]

Mathematics • Stage 1

Measurement and Geometry

Time 1

Background Information:

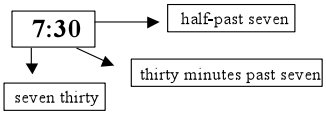
'Timing' and 'telling time' are two different notions. The first relates to the duration of time and the second is 'dial reading'. Both, however, assist students in understanding the passage of time and its measurement.

Duration

At this Stage, the focus is on the passage of time measured using informal units and in hours, minutes and seconds. Using informal units allows students to focus on the process of repeatedly using a unit as a measuring device. It is important at this Stage to have students develop a sense of one hour, one minute and one second through practical experiences rather than know that there are 60 minutes in an hour.

Telling time

At this Stage, 'telling time' focuses on reading the half-hour on both analog and digital clocks. An important understanding is that when the minute hand shows the half-hour, the hour hand is always half-way between two hour markers. Students need to be aware that there are three ways of expressing the time.



Note: When writing digital time, two dots should separate hours and minutes, eg 9:30.

Language:

The terms 'hour hand' and 'minute hand' should be used rather than 'big hand' and 'little hand' to promote understanding of their respective functions.

Mathematics • Stage 1

Measurement and Geometry

Time 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.2 investigates and describes methods to solve problems

1.3 supports conclusions by explaining or demonstrating how answers were obtained

1.8 describes, compares and orders duration of events and reads clocks on the half- and quarter-hour

Students:

Name and order months and seasons

- name and order the months of the year
- recall the number of days that there are in each month
- order the seasons and name the months for each season

Use a calendar to identify the date and determine the number of days in each month

- identify a day and date using a conventional calendar [N]
  - identify personally- or culturally-specific days (Understanding) [IU]

Tell time to the quarter-hour, using the language of 'past' and 'to'

- use the terms 'past' and 'to', eg 'It is a quarter-past three', 'It is a quarter to four.' [L] [N]
- describe the position of the hands on a clock for quarter-past and quarter-to [L]
- associate the numerals 3, 6 and 9 with 15, 30 and 45 minutes and using the terms 'quarter-past' and 'quarter-to' [N]
- identify which hour has just passed when the hour hand is not pointing to a numeral [N]
- read and record quarter-past and quarter-to time on digital and analog clocks [N]

Background Information:

See background information in Time 1

Language:

See language in Time 1

Mathematics • Stage 1

Measurement and Geometry

Three-Dimensional Space 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.9 investigates three- and two-dimensional figures, describes position and comprehends directions

Students:

Recognise and classify familiar two-dimensional shapes and three-dimensional objects using obvious features

- identify and name three-dimensional objects including cones, cubes, cylinders, spheres, prisms and pyramids from a collection of everyday objects [L]
  - select an object from a description of its features, eg find an object with six square faces (Understanding) [CCT]
- identify cones, cubes, cylinders, spheres, prisms and pyramids presented in different orientations [CCT],
  eg 
- recognise three-dimensional objects from pictures, photographs and in the environment
- recognise that three-dimensional objects look different from different views, eg a cup, a cone [CCT]

Background Information:

At this Stage, students begin to explore objects in greater detail. They continue to describe the objects using their own language and are introduced to some formal language. Developing and retaining mental images of objects is an important skill for these students. Manipulation of a variety of real objects and shapes in the classroom, the playground and outside the school is crucial to the development of appropriate levels of language and representation.

Language:

The mathematical term for a corner of a three-dimensional object is ‘vertex’. The plural is ‘vertices’. At this Stage, students may use the everyday term ‘corner’.

The word ‘face’ has different meanings in different contexts. In mathematics the term ‘face’ refers to a flat surface, eg a cube has six faces.

Mathematics • Stage 1

Measurement and Geometry

Three-Dimensional Space 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.9 investigates three- and two-dimensional figures, describes position and comprehends directions

Students:

Describe the features of three-dimensional objects

- manipulate and describe common three-dimensional objects, including cones, cubes, cylinders, spheres and prisms [L]
- use the terms ‘faces’, ‘edges’ and ‘corners’ to describe three-dimensional objects [L]
- identify two-dimensional shapes as faces of three-dimensional objects [CCT]
- sort three-dimensional objects according to particular attributes, [N]
  eg shape of faces
  - explain the attribute or multiple attributes used when sorting three-dimensional objects (Understanding, Fluency)
- represent three-dimensional objects by making simple models, drawing or painting
  - choose a variety of materials to represent three-dimensional objects, including computer drawing tools (Fluency) [CCT] [ICT]
  - explain or demonstrate how a simple model was made (Understanding, Fluency)
- describe the features of three-dimensional objects using materials, pictures, imagery and actions [L]

Background Information:

Refer to background information in Three-Dimensional Space 1

Language:

Refer to language in Three-Dimensional Space 1

Mathematics • Stage 1

Measurement and Geometry

Two-Dimensional Space 1

Outcomes

A student:

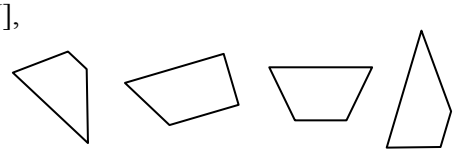
1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.9 investigates three- and two-dimensional figures, describes position and comprehends directions

Students:

Recognise and classify familiar two-dimensional shapes and three-dimensional objects using obvious features

- manipulate, compare and describe features of two-dimensional shapes, including hexagons, rhombuses and trapeziums [N]
- sort two-dimensional shapes by a given attribute [N], eg number of sides or corners
  - select a shape from a description of its features (Understanding) [L]
  - explain the attribute used when sorting two-dimensional shapes (Understanding)
- identify and name hexagons, rhombuses and trapeziums presented in different orientations [N],



eg
  - recognise that the name of a shape does not change by changing its orientation in space (Understanding)
- recognise and describe two-dimensional shapes as either regular or irregular [L]
- identify regular hexagons from a group of hexagons (Understanding)
- make representations of two-dimensional shapes in different orientations, using drawings and a variety of materials including ICT [CCT] [ICT]
- identify shapes found in pictures and the environment

Mathematics • Stage 1

Measurement and Geometry
Two-Dimensional Space 1

Background Information:

Manipulation of a variety of real objects and shapes is crucial to the development of appropriate levels of imagery, language and representation.

Skills of visualising three-dimensional objects and two-dimensional shapes are developing at this Stage and must be fostered through practical activities and communication. It is important for students to experience a broad range and variety of shapes in order to develop flexible mental images.

Students need to be able to recognise shapes presented in different orientations. Students need to develop an understanding that changing the orientation of the shape does not change its features or its name, eg a square on its point is still a square. In addition, they should have experiences identifying both regular and irregular shapes.

Regular shapes have all sides and angles equal.

A shape is said to have symmetry if both parts match when it is folded along a line of symmetry. Each part is the mirror image of the other.

Language:

The term ‘diamond’ is often used in everyday contexts when describing a quadrilateral with four equal sides. However, ‘diamond’ is not mathematically correct; the correct term is ‘rhombus’.

Mathematics • Stage 1

Measurement and Geometry

Two-Dimensional Space 2

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.9 investigates three- and two-dimensional figures, describes position and comprehends directions

Students:

Describe and draw two-dimensional shapes, with and without digital technologies

- use the terms ‘sides’ and ‘corners’ to describe features of two-dimensional shapes [L]
- join and separate an arrangement of shapes to form new shapes
  - identify shapes that are embedded in an arrangement of shapes or in a design (Understanding)
- identify a line of symmetry on appropriate two-dimensional shapes
  - use computer drawing tools to complete a design with one line of symmetry (Fluency) [ICT] [CCT]
- make symmetrical designs using pattern blocks, drawings and paintings [CCT] [N]
  - create a picture or design using computer paint, draw and graphics tools (Fluency) [ICT] [CCT]
- identify and name parallel, vertical and horizontal lines in pictures and the environment [L]
- identify the arms and vertex of an angle [L]
- compare angles by placing one angle on top of another [N]

Investigate the effect of one-step slides and flips with and without digital technologies

- make tessellating designs by flipping, sliding and turning a two-dimensional shape [CCT]
  - manipulate an image using computer functions including ‘flip’, ‘move’, ‘rotate’ and ‘resize’ (Fluency, Understanding) [ICT]
- identify shapes that do, and do not, tessellate [CCT]
- flip, slide or turn a single shape and describe the movement of the shape [CCT], eg ‘When I flip the rectangle it looks like a mirror image.’

Identify and describe half and quarter turns

- recognise whether a shape has been half or quarter turned
- create and continue patterns with two-dimensional shapes using half and quarter turns [CCT], eg ‘If I draw a rectangle and quarter turn it three times the pattern looks like a cross.’

Background Information:

At this Stage students will need to have experiences involving directions and turning. This is a precursor to understanding 360° as a full revolution. Discussions around what a ‘full turn’, ‘half turn’ and ‘quarter turn’ are will be necessary. Relating this information to them physically, playing games like ‘Simon Says’ using turns, may be helpful, as is linking the vocabulary to clocks.

Mathematics • Stage 1

Measurement and Geometry

Position 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.9 investigates three- and two-dimensional figures, describes position and comprehends directions

Students:

Give and follow directions to familiar locations

- use the terms ‘left’ and ‘right’ to describe the position of objects in relation to themselves, eg ‘The tree is on my right.’ [L]
  - give or follow instructions to position objects in models and drawings, eg ‘Draw the bird between the two trees.’ (Understanding, Fluency) [PSC]
  - give or follow simple directions using a diagram or description (Understanding, Fluency) [PSC] [L]
- describe the path from one location to another on a drawing [L]
  - use a diagram to give simple directions (Understanding, Fluency) [PSC]
  - create a path using computer drawing tools (Fluency) [ICT] [PSC]

Background Information:

Being able to describe the relative position of objects in a picture or diagram requires interpretation of a two-dimensional representation.

Mathematics • Stage 1

Measurement and Geometry
Position 2

Outcomes
A student:
1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols
1.9 investigates three- and two-dimensional figures, describes position and comprehends directions

Students:

Interpret simple maps of familiar locations and identify the relative positions of key features

- interprets simple maps by identifying objects in different locations [L],
  eg find our classroom on a school plan map
- draw a sketch of a simple model [CCT]
- describe the position of objects in models, photographs and drawings [L]
  - give reasons when answering questions about the positions of objects (Reasoning) [CCT]
- make simple models from memory, photographs, drawings or descriptions [CCT] [PSC]
  - use knowledge of position in real world contexts to recreate models (Fluency, Understanding) [PSC] [CCT]
- use drawings to represent the position of objects along a path [L]

Background Information:

Making models and drawing simple sketches of their models is the focus at this Stage. Students usually concentrate on the relative position of objects in their sketches. The relationship of size between objects is difficult and will be refined over time, leading to the development of scale drawings in later Stages. Accepting students' models and sketches is important.

Mathematics • Stage 1

Statistics and Probability

Data 1

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.10 gathers and organises data, represents data in column and picture graphs and interprets the results

Students:

Choose simple questions and gather responses

- gather data and keep track of what has been counted by using concrete materials, tally marks, words or symbols [N] [L]

Represent data with objects and drawings where one object or drawing represents one data value. Describe the displays

- display data using concrete materials and pictorial representations [N]
- use objects or pictures as symbols to represent data, using one-to-one correspondence [N], eg using a block to represent each car

---

Background Information:

The notion of representing an object with a different object is abstract and is introduced at this Stage.

It is important that each object in a three-dimensional graph represents one object except in the case where things are used in pairs, eg shoes. One object can also represent an idea such as one person's preference.

By collecting information to investigate a question, students can develop simple ways of recording.

Some methods include placing blocks or counters in a line, colouring squares on grid paper, and using tally marks.

Language:

Column graphs consist of vertical columns or horizontal bars. However, the term 'bar graph' is reserved for divided bar graphs and should not be used for a column graph with horizontal bars.

Mathematics • Stage 1

Statistics and Probability
Data 2

Outcomes
A student:
1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols
1.2 investigates and describes methods to solve problems
1.10 gathers and organises data, represents data in column and picture graphs and interprets the results

Students:

Identify a question of interest based on one categorical variable. Gather data relevant to the question

- pose suitable questions that can be answered by gathering and displaying data,
  eg 'What will be the most popular school sport in our class?', 'How did each student in our class get to school today?' [CCT]
  - determine what data to gather to investigate a question (Problem Solving) [CCT]

Collect, check and classify data

- collect data on familiar topics through questioning [N] [L],
  eg 'How many students are in our class each day this week?'
- identify categories of data and use them to sort data [N] [L] [CCT],
  eg sorting collected data into each day of the week and into boys and girls present

Create displays of data using lists, table and picture graphs and interpret them

- use a baseline, equal spacing and same-sized symbols when representing data in a graph [N]
  - identify misleading representations of data, eg where the symbols used for one-to-one correspondence are not the same size (Understanding, Reasoning) [N] [CCT]
- display data using lists, tables, picture and column graphs [N]
  - use displays to communicate information gathered in other subjects, eg data gathered in a unit on Our Families or Local Places (Understanding, Fluency) [L]
  - use simple graphics software to create picture graphs (Fluency, Understanding) [ICT]
- interpret information presented in picture graphs or column graphs [N] [L]
  - interpret data displayed in simple picture graphs and column graphs found in books and made by other students (Understanding) [L]

Background Information:

Refer to background information in Data 1

Language:

Refer to language in Data 1

Mathematics • Stage 1

Statistics and Probability

Chance

Outcomes

A student:

1.1 describes mathematical situations using everyday and mathematical language, actions, materials, diagrams and symbols

1.11 recognises and describes the elements of chance in everyday events

Students:

Identify practical activities and everyday events that involve chance. Describe outcomes as 'likely' or 'unlikely' and identify some events as 'certain' or 'impossible'

- compare familiar events and describe them as being more or less likely to happen [N]
- describe a variety of possible outcomes in everyday situations [CCT], eg deciding what might occur in a story before the ending of a book
- distinguish between possible and impossible events [N]
  - describe familiar events as being possible or impossible, eg 'It is possible that it will rain today', 'it is impossible to roll one six-sided dice and get a seven.' (Understanding) [N]

Background Information:

Students should be encouraged to recognise that, because of the element of chance, their predictions will not always be proven true.

When discussing certainty, there are two extremes: events that are certain to happen and those that are certain not to happen. Words such as 'might', 'may', 'possible' are between these two extremes.

Language:

The meaning of 'uncertain' is 'not certain' – it does not mean 'impossible'.