Early Mathematical Ideas - Number

Number Concepts – Pre-Prep

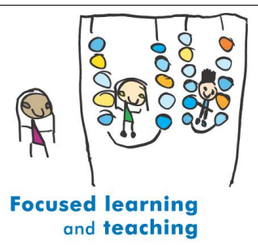
- recognise the purpose of numbers in everyday situations
- when given a number students count backwards by ones
- rational count a collection to 5 to find the quantity of a collection using concrete materials
- recognise quantity from pictorial representations in different arrangements up to 5 materials
- recognise quantity from virtual representations in different arrangements up to 5

- count rhythmically using a drum or clapping to keep the beat when counting
- when given a number students count forwards by ones e.g. count to 5 starting at 2
- locate the numbers 1 to 5 on a number track and via software applications
- match different representations of numbers up to 5 (concrete, pictorial, verbal, symbolic and virtual)

- ask questions involving counting numbers to 5 e.g. *'How many blocks are on the table?'*
- use a number track to identify the number that 'comes before', 'comes between' and 'comes next' with numbers to 5
- use frames to represent the numbers up to 5 in a variety of displays
- use fraction language in everyday situations e.g. a slice of a cake has been five

- recognise different grouping of items up to 5 as representing the same number
- rearrange a collection so that students are able to identify that the number is the collection remains the same with collections up to five
- rational count a collection to 5 to find the quantity of a collection using virtual material materials
- pose and solve problems about numbers up to five using a variety of contexts e.g. using big books
- create and solve problems using virtual materials

- interpret numbers in the environment e.g. numbers displayed on classroom charts or within the classroom shop
- represent numbers to 5 in different ways (concrete, pictorial, verbal, symbolic, virtual)
- exchange money for goods in a role play situation within the classroom shop
- recognise the difference between coins and notes in a role play situation



Addition and Subtraction – Pre-Prep

- describe the action of addition and subtraction using correct language in everyday situations e.g. *addition – joining, subtraction – take away, altogether and makes*
- use visualisation of quantities to assist with addition and subtraction

- use virtual materials to show the action of combining
- use virtual materials to show the action of separating
- use number lines to find and recognise combinations of two or more numbers that add to 5
- use five frames to find the difference between two numbers e.g. *4 takeaway two counters leaves two*

- describe the action of combining e.g. *'I joined three blocks and two blocks together and made five*.'
- describe the action of separating e.g. *'I took two pencils out of my pencil case and now there are three left in my pencil case.'*
- use virtual materials to assist with subtraction concepts *I took two apples out the fridge and now there*

- solve simple everyday problems using problem-solving strategies that include 'acting it out'
- solve simple everyday problems using concrete and virtual materials
- explain and demonstrate how an answer was obtained
- model the inverse relationship between addition and subtraction using concrete materials including number lines to show that subtraction

- use actions, concrete materials objects including fingers, virtual materials and drawings to demonstrate combining
- use actions, concrete materials, objects including fingers, virtual materials and drawings to demonstrate separating
- use virtual materials to assist with addition concepts e.g. *join three dogs and 2 cats together and now I have*

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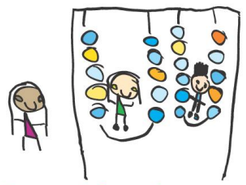
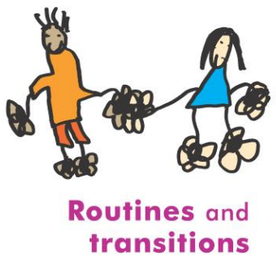
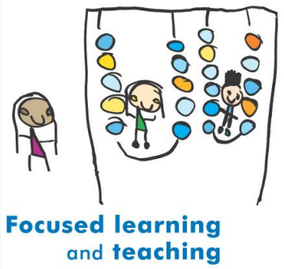
	• use five frames to find and recognise combinations of two or more numbers that add to 5	*are three left in the fridge* • model the inverse relationship between addition and subtraction using concrete materials including five frames to show that subtraction undoes addition and addition undoes subtraction	undoes addition and addition undoes subtraction	*five animals altogether*
 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Multiplication and Division – Pre-Prep				
• ask and respond to grouping questions using drawing, making, describing, acting out, and retelling strategies • ask and respond to sharing questions using drawing, making, describing, acting out, and retelling strategies	• use virtual materials to create and explore stories involving grouping • use virtual materials to create and explore stories involving sharing	• describe and model , grouping using everyday language, actions, materials and drawings • describe and model, sharing using everyday language, actions, materials and drawings	• use virtual materials to create and investigate small equal groups and demonstrate sharing strategies	• use materials to create small equal groups and demonstrate sharing strategies in role play situations

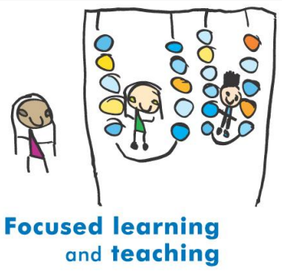
Early Mathematical Ideas – Patterns and Algebra





Patterns and Functions – Pre-Prep

• explore patterns in a variety of context and environments • identify repeating patterns and non-patterns in a variety of context and environments • continue a repeating pattern using materials • translate a repeating patterns into a different representation	• check solutions to extending a repeating pattern by repeating the process • create a repeating pattern using virtual materials • identify and describe the repeating parts • describe self selected rules for sorting using materials	• recognise when an error occurs in a repeating pattern and explain what is wrong • justify what makes a repeating pattern • justify what does not make a repeating pattern • identifying the repeating part in a repeating pattern	• Investigate repeating patterns and ask questions about repeating patterns and non-patterns and what makes them different • ask questions about how repeating patterns are made and how they can be copied • ask questions about how repeating patterns are made and how they can be continued • use appropriate software to investigate the concepts of patterns and functions	• continue a repeating pattern using concrete materials • create a repeating pattern using concrete materials • describe self selected rules for sorting using both hands on materials



Equivalence and Equations – Pre-Prep

• use virtual materials to create same and difference stories using real life contexts suitable to the situation • recognise different visual and virtual arrangements for the same number up to 5 • recognise that 5 can be represented in	• use appropriate software to explore the concepts of equivalence and equations • identity the different between a situation that "*is the same as*" and a situation that "is not the same as" using a range of different contexts and materials	• examine collections of objects to determine if they are same or different, and if different, explain why	• investigate and identify and compare different representations (including virtual) of collections and numbers that have the same or different values up to 5) • describe self selected rules for sorting using both hands on and virtual	• use role play situations to create same and difference stories using real life contexts suitable to the situation • create the "*same as*" stories using drawings, concrete materials or virtual materials • create the "*not the same as*" stories

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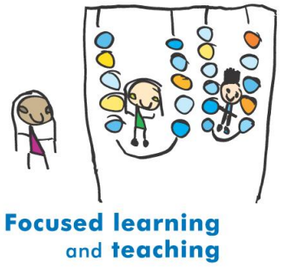
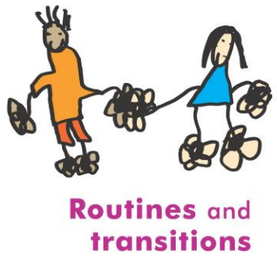
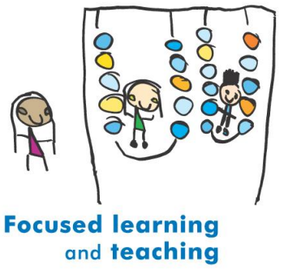
many different ways *e.g. 5 is the same as 3 and 3 or 4 and 1 or 2 and 2 and 1* using a range of contexts			materials	using drawings, concrete materials or virtual materials • use balance scales to demonstrate same as (equals) and not the same as (not equals)

Early Mathematical Ideas – Chance and Data

 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Chance - Pre-Prep				
• list and discuss possible outcomes in everyday and real life situations	• use appropriate language to describe the possibility of an event happening	• describe familiar events as might or might not happen." *It might rain tomorrow because there are lots of clouds in the sky."*	• investigate a range familiar events as might or might not happen in a range of situations	• use a range familiar chance events in role play situations e.g. " *Who might win this game?"*

 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Data - Pre-Prep				
• pose questions about real life situations using everyday language e.g. *'What colour eyes do most people in our class have?'*	• use virtual graphing by clicking and dragging pictures to create a picture graphs	• describe the criteria used for sorting of objects • solve a variety of problems involving data within a range of appropriate contexts for a given situation	• interpret classroom data displays e.g. weather charts, daily charts • organise their own data displays into data that students have generated	• use pictures or people to display collected data

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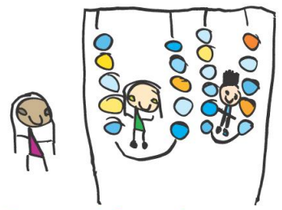
Early Mathematical Ideas – Space

 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Shape and Line - Pre-Prep				
• manipulate and describe real life objects through touch *e.g. hidden in a 'mystery bag'* • identifying and naming circles, squares, triangles and rectangles in concrete and virtual environments	• use everyday language to describe the sorting and classification of 2D shapes and 3D objects • draw two-dimensional shapes and three-dimensional objects using a variety of software • use everyday language to describe 3D objects	• recognise and explain how a group of 2D shapes has been sorted • recognise and explain how a group of 3D objects has been sorted *e.g. 'These objects are all pointy.'*	• investigate and explain why a collection of objects were sorted in a particular way	• draw two-dimensional shapes by tracing around one face of a three-dimensional objects using a range of materials • using a variety of materials, including paints, college materials paper and computer drawing tools to make representations of two-dimensional shapes

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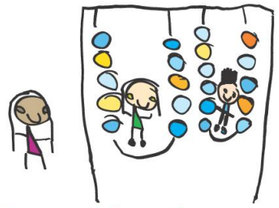
 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Location, Direction and Movement - Pre-Prep				
• use positional language to describe theirs and others placement in their familiar environment	• follow directions to a point or place using everyday language • direct simple computer-controlled toys and equipment	• use positional language to describe theirs placement of materials to describe their familiar place	• investigate and create and follow paths using computer software programs	• participate in movement games involving turning and direction during play situations • use a variety of materials, including boxes, paper and computer drawing tools to make representations of familiar places

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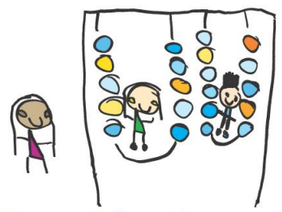
Early Mathematical Ideas – Measurement

 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Length - Pre-Prep				
• use everyday and comparative language to describe and compare length in the environment	• order three objects according to their length using virtual materials i.e. the shortest, the longest and the one between • compare and order the length of objects using virtual materials	• explain why an object is longer or shorter than another • choose an aspect of length and sort objects according to their chosen aspect e.g. width, height, depth	• solve simple everyday problems involving length • order three objects according to their length i.e. the shortest, the longest and the one between	• construct objects to match given attributes of length - tall, short, long, etc e.g. *in sandpit with play dough or collage* • compare and order the length of objects using hands on materials

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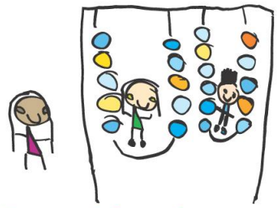
 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Mass - Pre-Prep				
• using drawings and words to record mass comparisons informally using real life situations	• use virtual materials to mimic the action of balance scales and compare significantly different masses	• give reasons why they think one object will be heavier than another and check their predictions using a range of materials • check a prediction about the mass of two objects by using an equal-arm balance	• predict and discuss the action of hefting when a heavy object is placed in one arm and a lighter object in the other arm • predict and 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 • predict which object would be heavier than, lighter than or have about the same mass as another object	• compare the mass of objects by hefting and describe the objects as being heavier or lighter

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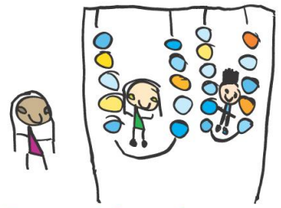
 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Area – Pre-Prep				
• use drawings, words, and virtual materials to compare and record area comparisons informally using real life situations	• use everyday language, actions and materials to describe area e.g. *surface, inside, outside* • use virtual materials to show the action of overlaying	• ask questions about area in everyday situations e.g. '*Which book has the biggest area?*	• explain why they think one area is bigger or smaller than another	• comparing the area of two similar shapes by cutting and covering to stay within the boundary of the shape or object

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	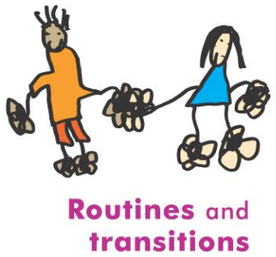			
Volume - Pre-Prep				
• order identical clear containers by comparing the volume of the containers	• recognise when a container is nearly full or empty	• recognise and explain which three-dimensional objects pack and stack easily and those that do not stack easily • question whether an object or collection of objects will fit inside a defined space such as a box or cupboard	• predict whether an object or collection of objects will fit inside a defined space such as a box or cupboard	• compare the volume of objects by pouring liquids

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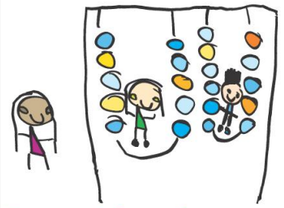
 Real-life situations	 Routines and transitions	 Focused learning and teaching	 Investigations	 Play
Time - Pre-Prep				
• discuss how long it takes to complete everyday events *e.g. a long time, a short time, not long* • order pictures of familiar events to identify which comes before the other • use everyday language to describe how long different events	• discuss events that occur each day e.g. '*We have play time every day.* • recognise when an event takes place e.g. '*We have music on Monday afternoon*.' • order the sequence of happenings over a period of time e.g. *series of pictures of growing beans* • use virtual materials to represent the sequence of events indicating passage of time • use everyday language to describe days, periods of time e.g. 'Monday at prep has a long playtime	• recognise various ways of record time e.g. clocks and calendars	• ask questions related to time e.g. '*How long is it until big lunch?'*	• experiment with time during role play situations e.g. *it takes a long time to pack up block corner*