NUMERACY & MATHEMATICS

Progression Pathway

Learning Hub

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NUMERACY & MATHEMATICS - Progression Pathway

Numeracy & Mathematics

Introduction and Aims

The Progression Pathways for Numeracy and Mathematics set out a clear progression for knowledge and understanding and related skills from Curriculum for Excellence (CfE) and associated benchmarks through Early Level to the end of Third Level. This progression pathway is intended to assist teachers in their learning and teaching approaches as they plan and assess evidence of learning.

The aims of the pathways are to:

- support and enhance planning and assessment, based on skills, knowledge and understanding;
- provide staff with a structured progression for learning and teaching;
- enable the sharing of standards within schools and clusters;
- enable the development of skills for learning, life and work;
- facilitate the process of monitoring learners' progress and achievement.

Effective Learning & Teaching

The Experiences and Outcomes and the progression detailed in this framework promote and support effective learning and teaching methodologies which will stimulate the interest of children and young people and promote creativity. A rich and supportive learning environment will support a skillful mix of a variety of approaches, including:

- Sharing the purpose of the lesson with effective Learning Intentions based on Experiences and Outcomes;
- Planned active, engaging learning which provides opportunities to observe, explore, investigate, experiment, play, discuss and reflect;
- Learning collaboratively and independently;
- Modelling and scaffolding the development of mathematical thinking skills;
- Opportunities for discussion, communication and explanation of thinking;
- Building on the principles of Assessment is for Learning, ensuring that young people understand the purpose and relevance of what they are learning;
- Use of relevant contexts and experiences, familiar to children and young people;
- Developing mental agility;
- Using concrete materials and pictorial representations at every stage with every child;
- Developing problem-solving capabilities and critical thinking skills;
- Plenary linked to the Learning Intention and outcome of the lesson;
- Using technology in appropriate and effective ways;
- Making frequent links across the curriculum, so that concepts and skills are developed further by being applied in different, relevant contexts;
- Building resilience and developing a growth mindset;
- Repeated practice and consolidation that allows learners to apply skills in familiar and unfamiliar contexts;
- Promoting an interest and enthusiasm for numeracy and maths.

NUMERACY & MATHEMATICS - Progression Pathway

Numeracy & Mathematics

Concrete, Pictorial, Abstract

The Concrete Pictorial Abstract (CPA) approach is a system of learning that uses physical materials and visual representations to help build a child's understanding of abstract topics.

Children are introduced to new mathematical concepts through the use of concrete resources and, when they are comfortable solving problems with physical aids, they are given problems with pictures – usually pictorial representations of the concrete objects they were using.

Children are then asked to solve problems where they only have the abstract i.e. numbers or other symbols. Building these steps across a lesson can help pupils better understand the relationship between numbers and the real world, and therefore helps secure their understanding of the mathematical concept they are learning.

There has been the misconception that concrete resources are only for learners who find maths difficult. Concrete resources should be used in a variety of ways for every child at every stage and level. All children, regardless of ability, benefit from the use of practical resources in ensuring understanding goes beyond the learning of a procedure.

Numeracy and Maths Skills

Numeracy and mathematical skills are embedded in the Experiences and Outcomes and cannot be taught in isolation. These skills can be developed through careful planning of learning activities, questions and a range of assessments. These should encourage learners to think about the concepts, going beyond the recall of knowledge and encouraging them to explain their thinking. As learners progress through CfE levels, they should demonstrate increasing sophistication and independence in their ability to demonstrate, link, transfer and apply the following skills in a range of increasingly challenging contexts:

- interpret questions;
- select and communicate processes and solutions;
- justify choice of strategy used;
- link mathematical concepts;
- use mathematical vocabulary and notation;
- use mental agility;
- reason algebraically; and
- determine the reasonableness of a solution.

The table on the next 2 pages provides a brief outline of the key features of each skill.

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Numeracy and mathematical skill	Key features of the skill	Additional guidance
Interpret questions	• selects the relevant information • interprets data • highlights key words or phrases • makes notes • draws diagrams • chooses appropriate operations.	*Learners need to:* • interpret questions successfully in order to work out solutions; • select relevant information and be able to identify redundant or missing information in a question; • interpret data and understand information presented to work out the solution; • be supported to develop their skills of interpreting questions by highlighting key words or phrases, making notes or drawing diagrams; and • make important decisions about which operations to choose when solving a word problem.
Select and communicate processes and solutions	• explains choice of process • shares thinking • verbalises or demonstrates thought processes.	*Learners need to:* • be able to explain why they have chosen a particular process as it demonstrates their understanding of the task, question or assessment; • have frequent opportunities to discuss their thinking with their peers and teachers; • select from a range of processes and increasingly choose processes which are most efficient; • discuss their solutions to verbalise their thought process, either through explaining their thinking or demonstrating it pictorially; and • become more confident in their abilities to select from a growing repertoire of strategies, articulate their chosen approaches with increasing clarity and make greater use of specialised vocabulary.
Justify choice of strategy used	• shows and talks though their thinking • explains their strategy • justifies choice of strategy compared to other approaches.	*Learners need to:* • show and talk through their thinking to better understand and explain their own strategies; • regularly work in pairs and groups to learn with and from each other to refine their strategies; and • justify their choice of strategy, identifying the most efficient strategies for different types of task.

NUMERACY & MATHEMATICS - Progression Pathway

Numeracy and mathematical skill	Key features of the skill	Additional guidance
Link mathematical concepts	• understands and applies links between mathematical concepts • transfers learning in one area to another • uses connections to solve problems.	*Learners need to:* • be able to link mathematical concepts through inverse operations and equivalences; and • transfer and apply their knowledge and skills within numeracy and mathematics and across the curriculum to solve a range of problems.
Use mathematical vocabulary and notation	• uses correct mathematical vocabulary	*Learners need to:* • apply the correct mathematical vocabulary, notation and appropriate units in a range of contexts.
Mental agility	• knowledge of number facts • manipulates numbers.	*Learners need to:* • develop fluency in mental processes through a sound knowledge of key number facts; and • use strategies to manipulate an appropriate range of numbers and apply these to solve open-ended problems.
Reason algebraically	• finds the unknown quantity • understands and uses the commutative, associative and distributive laws.	*Learners need to:* • understand that numbers can be replaced by pictures or symbols and use this to solve problems; and • apply commutative, associative and distributive laws to work with expressions and equations.
Determine the reasonableness of a solution	• routinely uses estimation and rounding skills • selects the most appropriate degree of accuracy.	*Learners need to:* • use estimation and rounding to estimate and check the reasonableness of a solution; • consider the context of the question when determining the reasonableness of the solution; and • select the appropriate degree of accuracy for the given task.

NUMERACY & MATHEMATICS - Progression Pathway

Numeracy & Mathematics

Assessment & Moderation & Evidence

Benchmarks support teachers' professional judgement of achievement of a level. Teachers' professional judgements will be collected and published at national, local and school levels. It is important that these judgements are robust and reliable. This can only be achieved through effective moderation of planning learning, teaching and assessment.

Teacher professional judgement should be well informed by a wide range of evidence. Benchmarks should be used to review the range of evidence gathered to determine if the expected standard has been achieved and the learner has:

- achieved a breadth of learning across the knowledge, understanding and skills as set out in the Experiences and Outcomes for the level;
- responded consistently well to the level of challenge set out in the Experiences and Outcomes for the level and has moved forward to learning at the next level in some aspects; and
- demonstrated application of what they have learned in new and unfamiliar situations.

It is not necessary for learners to demonstrate mastery of every individual aspect of learning within Benchmarks at a particular level before moving on to the next level. However, it is important that there are no major gaps in learning when looking across the major organisers.

Guidelines for using the document

The progression pathways set out a clear progression for skills, knowledge and understanding in the following CfE Numeracy and Mathematics Organisers:

- Estimation and Rounding
- Number and Number Processes
- Multiples, Factors and Primes
- Fractions, Decimal Fractions and Percentages
- Money
- Time
- Measurement
- Mathematics- its impact on the world, past, present and future
- Patterns and Relationships
- Expressions and Equations
- Properties of 2D shapes and 3D objects
- Angle, Symmetry and Transformation
- Data and Analysis
- Ideas of Chance and Uncertainty

Note: This is a general guide. Learners will progress at their own pace through the CfE levels - the framework is designed to be flexible to permit careful planning for those with additional support needs, including those who have particular difficulties and those who are particularly able or talented.

NUMERACY & MATHEMATICS - Progression Pathway

Numeracy & Mathematics

Early Level

First Level

Second Level

Third Level

NUMERACY & MATHEMATICS - Progression Pathway

Numeracy & Mathematics

The Numeracy and Mathematics Organisers

Suggested Order for *Early Level*

August to December

- Estimation and Rounding
- Number and Number Processes
- Measurement

January to March

- Money
- Properties of 2D Shapes and 3D Objects
- Patterns and Relationships
- Fractions, Decimal Fractions and Percentages
- Time

April to June

- Data and Analysis
- Angle Symmetry and Transformation

Number and Number Processes should be revisited regularly throughout the year.

Numeracy and Mathematics

Lesson Guidance Notes

Early Level

Organiser	Estimation and Rounding

Experience and Outcome	*I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me.*	MNU 0-01a

Awareness of size and amount → Concept of estimation → Concept of rounding → Accuracy within rounding → Tolerance

At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
I can: • begin to **use** the vocabulary of size and amount that I have been exposed to. (including:- long/short, big/small) • begin to **match** objects in the contexts of number and measure. • begin to **sort** groups of objects in the contexts of number and measure.	I can: • begin to **estimate/ guess** 'how many…'. • **describe**, using relevant vocabulary, groups of objects in the contexts of number and measure. (including:- less than/more than, longer than/shorter than, same) • **sort** groups of objects in the contexts of number and measure.	I can: • **understand** and **use** the language of estimation. (including:- less than/more than, longer than/shorter than, same) • **subitise** within 6 to estimate the number of objects in groups. • **check** estimate by counting.	Recognises the number of objects in a group, without counting (subitising) and uses this information to estimate the number of objects in other groups. Checks estimates by counting. Demonstrates skills of estimation in the contexts of number and measure using relevant vocabulary, including less than, longer than, more than and the same.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

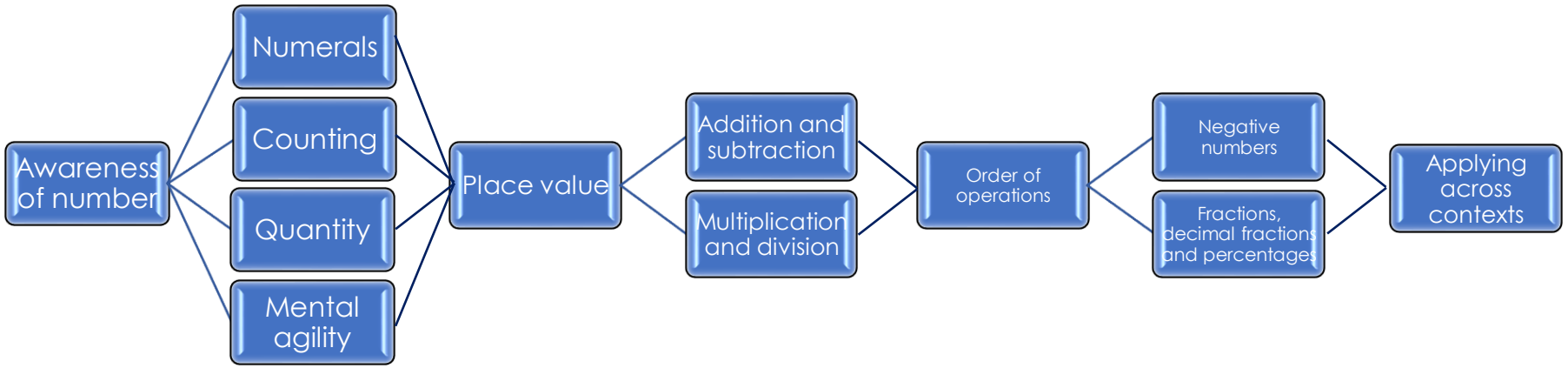
MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

First Level

Numeracy and Mathematics

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.	MNU 0-02a
	I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways.	MNU 0-03a



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
Number Word Sequences			
I can: • **repeat** the number sequence forwards from 0-10. • **repeat** the number sequence backwards from 10-0.	I can: • **recall** the number sequence forwards, starting from any given number (including zero), within 10. • **recall** the number sequence backwards, from any given number (to zero), within 10.	I can: • **recall** the number sequence forwards, starting from any given number, within 30. • **recall** the number sequence backwards, from any given number, within 20.	Explains that zero means there is none of a particular quantity and is represented by the numeral 0. Recalls the number sequence forwards within the range 0-30, from any given number.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

First Level

Numeracy and Mathematics

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.	MNU 0-02a
	I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways.	MNU 0-03a

At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks (cont.)
Number Word Sequences			
I can: • **repeat** the number sequence forwards from 0-10. • **repeat** the number sequence backwards from 10-0.	I can: • **recall** the number word after, within 10. • **recall** the number word before, within 10. • **recall** the number word in between two numbers, within 10. • **begin to respond** to ordinal number prompts, e.g., first in line.	I can: • **recall** the number word after, within 30. • **recall** the number word before, within 20. • **recall** the number word in between two numbers, within 30. • **say** the next 2,3,4 numbers in a number word sequence. • **use** ordinal numbers in real life contexts, for example, I am second in line.	Recalls the number sequence backwards from 20. Uses ordinal numbers in real life contexts, for example, 'I am third in the line'. Identifies and recognises numbers from 0 to 20. Orders all numbers forwards and backwards within the range 0-20. Identifies the number before, the number after and missing numbers in a sequence within 20.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a
MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a
First Level

Numeracy and Mathematics

Early Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.	MNU 0-02a
	I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways.	MNU 0-03a

At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks (cont.)
Numerals			
I can: • **show awareness of** numerals in my environment.	I can: • **recognise** numerals from 0 to 10. • **identify** numerals from 0 to 10.	I can: • **recognise** numerals to 20. • **identify** numerals to 20. • **write** numerals to 10. • **count** numerals forwards and backwards to 20. • **order** numerals forwards & backwards to 20. • **identify** the numeral before, the numeral after, the numeral in between and the missing numeral in a sequence.	Uses the language of before, after and in-between. Uses one-to-one correspondence to count a given number of objects to 20. Identifies 'how many?' in regular dot patterns, for example, arrays, five frames, ten frames, dice and irregular dot patterns, without having to count (subitising). Partitions quantities to 10 into two or more parts and recognises that this does not affect the total.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

First Level

Numeracy and Mathematics

Early Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.	MNU 0-02a
	I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways.	MNU 0-03a

At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks (cont.)
Number Structures			
I can: • with support, **identify** 'how many' in regular & irregular dot patterns, finger patterns, five frames and dice by counting, including zero. • begin to **subitise** familiar patterns, i.e. dice, Numicon and finger patterns. • begin to **copy** patterns to 6.	I can: • **identify** 'how many?' in regular & irregular dot patterns, finger patterns, five frames and dice by counting. • **identify** 'how many?' in regular & irregular dot patterns, five frames and dice without having to count (subitising). • **copy** patterns to 6 in different ways. • **make** patterns to 6 in different ways.	I can: • **identify** 'how many?' in regular & irregular dot patterns, finger patterns and dice, by counting, five frames and ten frames • **identify** 'how many?' in regular & irregular dot patterns, finger patterns, dice, five frames and ten frames without having to count (subitising). • **copy** patterns to 10 in different ways. • **make** patterns to 10 in different ways. • **describe** and draw how I see/ hear the patterns when partitioning. • **describe** and draw how I see/hear the patterns when combining.	Uses the language of before, after and in-between. Uses one-to-one correspondence to count a given number of objects to 20. Identifies 'how many?' in regular dot patterns, for example, arrays, five frames, ten frames, dice and irregular dot patterns, without having to count (subitising). Partitions quantities to 10 into two or more parts and recognises that this does not affect the total.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

First Level

Numeracy and Mathematics

Early Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.	MNU 0-02a
	I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways.	MNU 0-03a

At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
Addition and Subtraction			
I can: • with support, start to **count** groups of objects. • begin to **explore** the language, "more than, less than, altogether". • with support, start to **use** 1-to-1 correspondence to **count** objects in rows and collections, forwards and backwards, to 6. • when counting, begin to **understand** that the last number counted is the total. • **show awareness** that the total number of objects is not affected by the position.	I can: • **understand** cardinal numbers - sorting, classifying • **compare** quantities using appropriate language. • **use** 1-to-1 correspondence to **count** objects in rows and collections, forwards and backwards, to 10. • when counting, **understand** that the last number counted is the total. • **understand** that the total number of objects is not affected by the position.	I can: • **use** 1-to-1 correspondence to **count** objects in rows and collections, forwards and backwards, to 20. • **count** on in ones to add. • **count** back in ones to subtract. • **solve** and **record** addition and subtraction problems within 10 in a variety of ways • **use** + - = symbols. • **solve** simple missing number problems. • **choose** an efficient method for the problem given and **justify** my choice.	Groups items recognising that the appearance of the group has no effect on the overall total (conservation of number). Counts on and back in ones to add and subtract. When counting objects, understands that the number name of the last object counted is the name given to the total number of objects in the group. Adds and subtracts mentally to 10. Uses appropriately the mathematical symbols +, − and =.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

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First Level

Numeracy and Mathematics

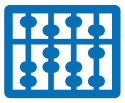
Early Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.	MNU 0-02a
	I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways.	MNU 0-03a

At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks (cont.)
Grouping and Sharing (introducing multiplication and division)			
I can: • begin to **describe, organise** and **make** equal groups. • begin to **understand** sharing and grouping.	I can: • develop the ability to **describe**, **organise** and **make** equal groups. • develop the ability to **understand** sharing and grouping.	I can: • **recall** double numbers within 10. • **describe**, **organise** and **make** equal groups. • **describe**, **organise** and **partition** equal shares.	Solves simple missing number problems. Doubles numbers to a total of 10 mentally.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

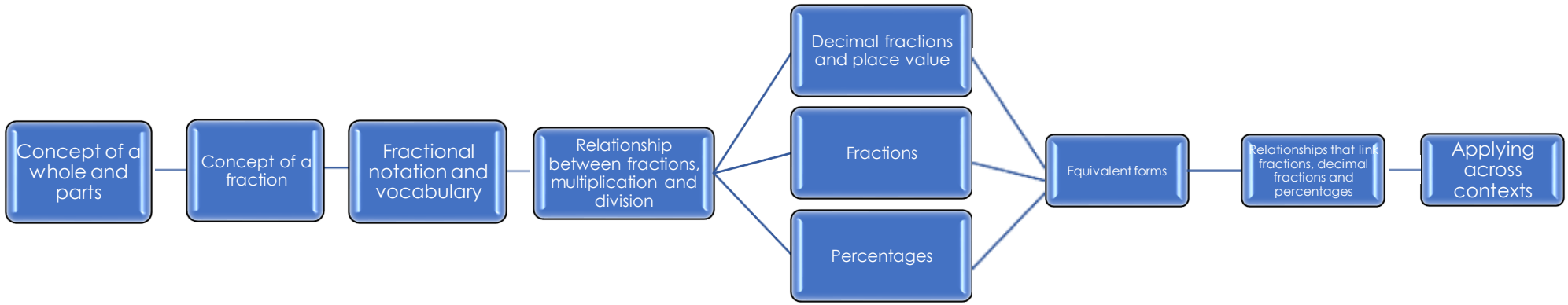
MNU 0-01a | MNU 0-03a | MNU 0-09a | MNU 0-11a | MNU 0-20b | MTH 0-13a | MTH 0-17a

MNU 0-02a | MNU 0-07a | MNU 0-10a | MNU 0-20a | MNU 0-20c | MTH 0-16a | MTH 0-19a

First Level

Numeracy and Mathematics

Organiser	Fractions, Decimal fractions and Percentages
Experience and Outcome	*I can share out a group of items by making smaller groups and can split a whole object into smaller parts.* **MNU 0-07a**



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
I can: • **experience** sharing and grouping within a relevant context, e.g., sharing out items one at a time, splitting a whole object into halves.	I can: • **understand** that making fair shares from a whole object means splitting it into equal sized parts.	I can: • **break** a whole into parts and can **describe** how to make it fair. • **understand** that 'equal parts' are the same size. • **split** a whole object or group of items into two equal parts and **know** that is the same as halving.	Splits a whole into smaller parts and explains that equal parts are the same size.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

First Level

Numeracy and Mathematics

• **use** the language of sharing and fractions in play and everyday situations, e.g., half a cup of milk, half-price sale, equal, the same. • **understand** how to share and what fairness means. • **break** a whole into parts and can **describe** how to make it fair.	• **understand** that making fair shares from a whole collection means splitting it into equal sized groups. • **make** 2 equal groups from objects. • **split** a whole object into 2 equal groups. • **make** a whole object by joining 2 halves.	• **share** objects equally within a relevant context. • **group** items into smaller sets of a given size. • **recognise** half of an object (as 1 of 2 equal parts). • **identify** half of a shape and half of a quantity. • **understand** the term halfway and half of. • **use** the language of sharing and fractions in play and everyday situations.	Uses appropriate vocabulary to describe halves. Shares out a group of items equally into smaller groups.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

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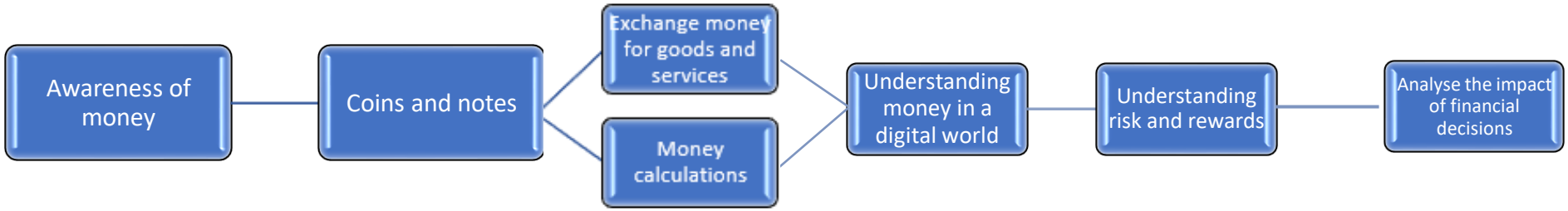
First Level

Numeracy and Mathematics

Lesson Guidance Notes

Early Level

Organiser	Money
Experience and Outcome	*I am developing my awareness of how money is used and can recognise and use a range of coins* — MNU 0-09a



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
I can: • **experience** using money to pay for something in real life situations. • through role play, **experience** the use of money in different contexts.	I can: • **experience** using and handling money and **understand** where it is used in everyday life. • **understand** that coins have different values. • **recognise** the value of some coins.	I can: • **recognise** and name coins to £2. • **use** 1p, 2p, 5p, and 10p coins to pay the exact value for items costing up to 10p. • begin to **calculate** change from 10p. • **develop** an awareness that coins/money can be exchanged for goods and services. • **use** a variety of coins in real life contexts.	Identifies all coins to £2. Applies addition and subtraction skills and uses 1p, 2p, 5p and 10p coins to pay the exact value for items to 10p.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

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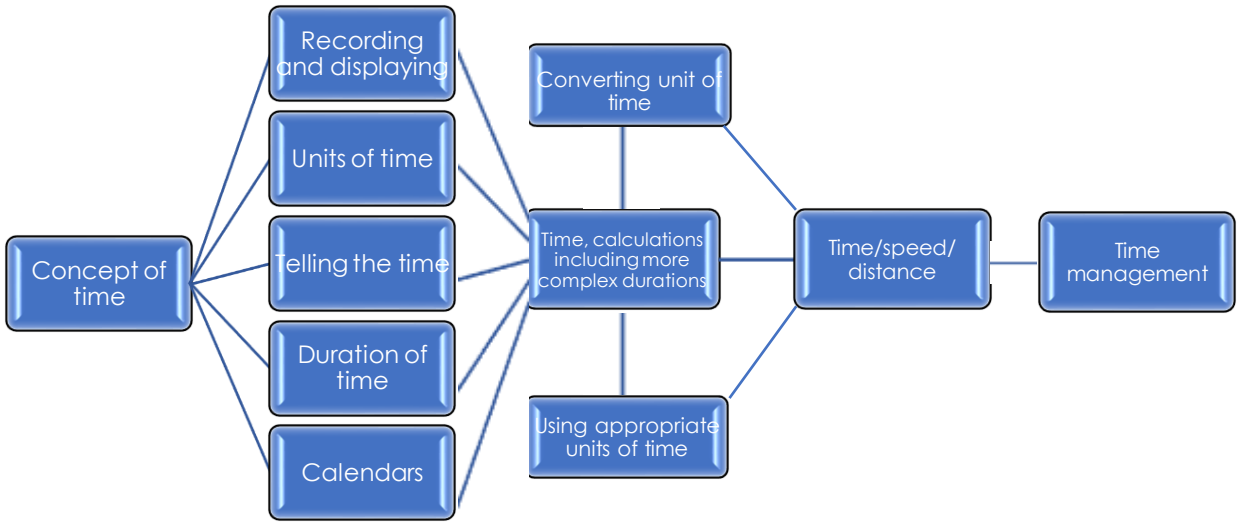
First Level

Numeracy and Mathematics

Organiser	Time

Experience and Outcome	*I am aware of how routines and events in my world link with times and seasons and have explored ways to record and display these using clocks, calendars and other methods.*	MNU 0-10a



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
I can: • **show awareness** of regular routines. • **begin to explore** sequential language such as "first, before, after, next and last".	I can: • **recall/discuss** the order of daily routines and personal events, e.g., what I do in a day, breakfast, dress, go to nursery. • **use** before and after to place events in correct sequence.	I can: • **name** and **sequence** days of the week and **plan** events for future weeks. • **name** the months of the year. • **know** there are four seasons in a year and **talk** about them in context.	Links daily routines and personal events to time sequences. Names the days of the week in sequence, knows the months of the year and talks about features of the four seasons in relevant contexts.

MNU 0-01a | MNU 0-03a | MNU 0-09a | MNU 0-11a | MNU 0-20b | MTH 0-13a | MTH 0-17a

MNU 0-02a | MNU 0-07a | MNU 0-10a | MNU 0-20a | MNU 0-20c | MTH 0-16a | MTH 0-19a

First Level

Numeracy and Mathematics

• **show awareness** that days, months and seasons have names. • **show awareness** of seasons and the special events associated with them. • **show awareness** that there are devices used to measure and display time (e.g., sand timer, clocks, visual timetables, calendars) in my environment.	• **place** events in time sequence. • **use** the names of the days of the week. • begin to **describe** the seasons and the special events associated with them. • **recognise** a range of devices used to measure or display time, e.g., sand timer, clocks, visual timetables, calendars.	• **read** o'clock times on digital and analogue clocks (12 hours only) and **represent** these on a digital display or clock face. • **use** appropriate language when **discussing** time, e.g., before/after, o'clock, hour hand/minute hand. • **discuss**, and where appropriate, **engage** with everyday devices used to measure or display time, e.g., sand timer, clocks, visual timetables, calendar.	Recognises, talks about and where appropriate, engages with everyday devices used to measure or display time, including clocks, calendars, sand timers and visual timetables. Reads analogue and digital o'clock times (12 hour only) and represents this on a digital display or clock face. Uses appropriate language when discussing time, including before, after, o'clock, hour hand and minute hand.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

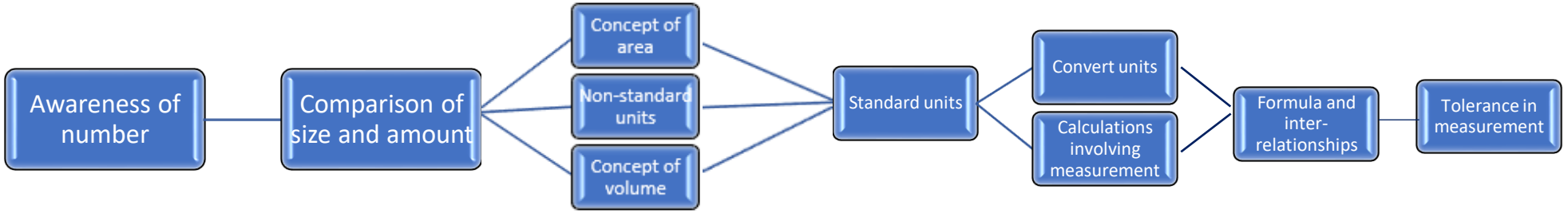
MNU 0-01a | MNU 0-03a | MNU 0-09a | MNU 0-11a | MNU 0-20b | MTH 0-13a | MTH 0-17a

MNU 0-02a | MNU 0-07a | MNU 0-10a | MNU 0-20a | MNU 0-20c | MTH 0-16a | MTH 0-19a

First Level

Numeracy and Mathematics

Organiser	Measurement
Experience and Outcome	*I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others.* **MNU 0-11a**



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
Length and Height			
I can: • with support, **explore** length/ height through play experiences. • begin to **explore** the language of length/height e.g., long, longer, short, shorter, tall, taller, small, smaller etc.	I can: • use non-standard units to **measure** the length of various objects, e.g. hand span, foot span. • **investigate** and **compare** lengths. • begin to **use** the language of length/height e.g., long, longer, short, shorter.	I can: • **share** relevant experiences in which measurements of length and height are used, for example, when making items to fit a space/ a person. • **estimate**, then **measure** the height and length of familiar objects using a range of non-standard units. • **describe** common objects using appropriate measurement language e.g., tall, short. • **compare** and **describe** length using everyday language including longer, shorter, taller.	Shares relevant experiences in which measurements of lengths, heights, mass and capacities are used, for example, in baking.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

First Level

Numeracy and Mathematics

Organiser	Measurement

Experience and Outcome	*I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others.*	MNU 0-11a

At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
Mass			
I can: • with support, **explore** mass through play experiences. • begin to **explore** the language of mass e.g. heavy, heavier, light, lighter etc.	I can: • use non-standard units to **measure** mass, e.g. cubes, sweets. • **compare** two weights by handling or using scales. • begin to **use** the language of mass, e.g. heavy, heavier, light, lighter.	I can: • **share** relevant experiences in which measurements of mass are used, e.g. baking. • **estimate**, then **measure** the mass of familiar objects using a range of non-standard units. • **describe** common objects using appropriate measurement language e.g. heavy, light. • **compare** and **describe** mass using everyday language including heavy, heavier, heaviest, light, lighter, lighter.	Describes common objects using appropriate measurement language, including tall, heavy and empty. Compares and describes lengths, heights, mass and capacities using everyday language, including longer, shorter, taller, heavier, lighter, more and less.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a
MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a
First Level

Numeracy and Mathematics

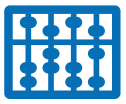
Early Level

Organiser	Measurement

Experience and Outcome	*I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others.*	MNU 0-11a

At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
Volume / Capacity			
I can: • with support, **explore** volume through play experiences. • begin to **explore** the language of volume, e.g. full, empty, half full.	I can: • use non-standard units to **measure** volume, e.g. cups, cubes or sweets. • begin to **use** the language of volume, e.g. full, empty, half full.	I can: • **estimate**, then **measure** the capacity of familiar objects using a range of non-standard units e.g. how many cups will it take to fill the jug? • **describe** common objects using appropriate measurement language e.g. full, half full and/or empty. • **compare** and **describe** capacity using everyday language e.g. comparing containers which would contain more or less, **demonstrating** an **understanding** of the conservation of volume.	Estimates, then measures, the length, height, mass and capacity of familiar objects using a range of appropriate non-standard units.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

MNU 0-01a | MNU 0-03a | MNU 0-09a | MNU 0-11a | MNU 0-20b | MTH 0-13a | MTH 0-17a

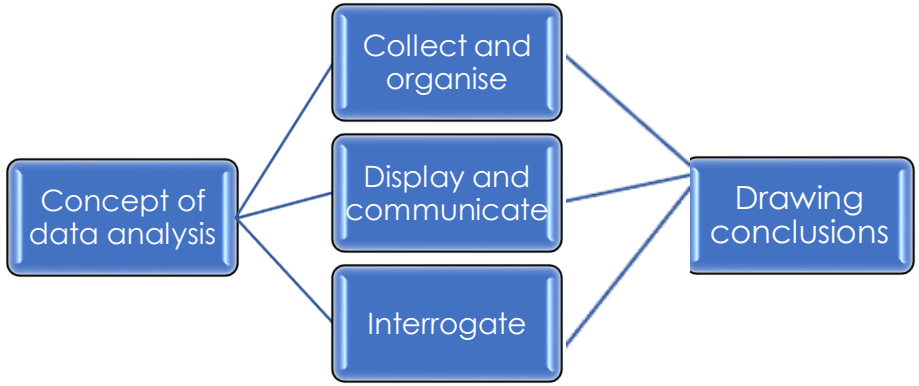
MNU 0-02a | MNU 0-07a | MNU 0-10a | MNU 0-20a | MNU 0-20c | MTH 0-16a | MTH 0-19a

First Level

Numeracy and Mathematics

Organiser	Data Analysis

Experience and Outcome		
	I can collect objects and ask questions to gather information, organising and displaying my findings in different ways.	MNU 0-20a
	I can match objects, and sort using my own and others' criteria, sharing my ideas with others.	MNU 0-20b
	I can use the signs and charts around me for information, helping me plan and make choices and decisions in my daily life.	MNU 0-20c



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
I can: • **show awareness** of signs in my environment.	I can: • **tell** an adult and peers what signs in my immediate environment mean	I can: • **ask** questions about and gain information from simple displays	Asks simple questions to collect data for a specific purpose.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

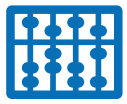
MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

Numeracy and Mathematics

Early Level

• with support, help **collect** a group of objects to **answer** a question posed by me or someone else. • begin to **explore** ways to present my data, e.g, grouping/sorting objects.	• **collect** a group of objects to **ask** and **answer** a question posed by me or someone else. • **sort** my data into groups using simple criteria (colour, size, etc) and **explain** how I did this • **draw** a picture to make a display of my findings. • **talk** about my findings and what the display shows.	• **use** individual tally marks to **collect** information to **answer** a question posed by me or someone else. • **sort** and **group** my objects or data using a range of criteria (colour, shape, size) and **explain** my reasons for choosing this method. • **use** 3D representations (Carroll or Venn diagram) or **draw** a pictograph or block graph to **make** a display of my findings and **summarise** the information in the display by counting.	Collects and organises objects for a specific purpose. Applies counting skills to ask and answer questions and makes relevant choices and decisions based on the data. Contributes to concrete or pictorial displays where one object or drawing represents one data value, using digital technologies as appropriate. Uses knowledge of colour, shape, size and other properties to match and sort items in a variety of different ways. Interprets simple graphs, charts and signs and demonstrates how they support planning, choices and decision making.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

MNU 0-01a | MNU 0-03a | MNU 0-09a | MNU 0-11a | MNU 0-20b | MTH 0-13a | MTH 0-17a

MNU 0-02a | MNU 0-07a | MNU 0-10a | MNU 0-20a | MNU 0-20c | MTH 0-16a | MTH 0-19a

First Level

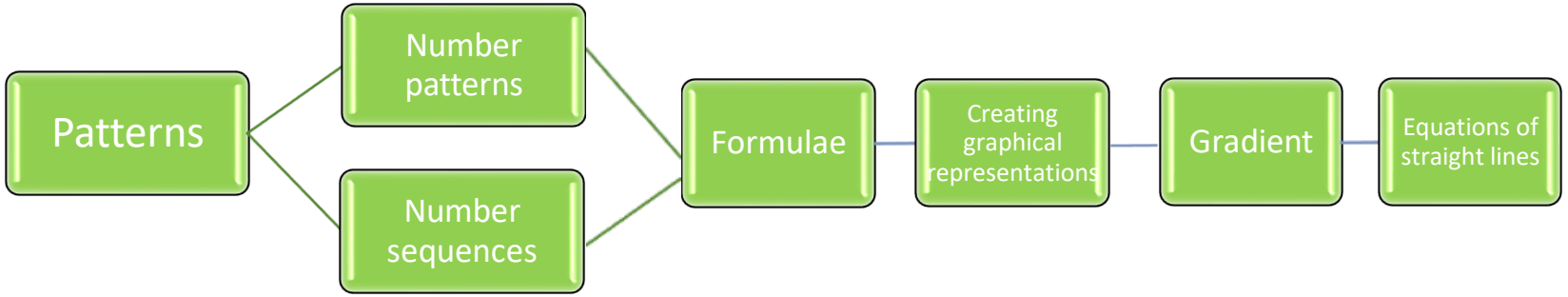
Numeracy and Mathematics

Lesson Guidance Notes

Early Level

Organiser	Patterns and Relationships

Experience and Outcome	*I have spotted and explored patterns in my own and the wider environment and can copy and continue these and create my own patterns.*	MTH 0-13a



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
I can: • **show awareness** of what a pattern is.	I can: • **recognise** simple patterns in the environment. • **copy** and **continue** simple patterns, e.g., sound, movement, colour, shape.	I can: • **copy**, **continue** and **create** simple patterns involving objects, shapes and numbers. • **explore**, **recognise**, and **continue** simple number sequences/patterns and **describe** them appropriately **using** mathematical vocabulary. • **find** missing numbers on a number line within the range 0 to 20.	Copies, continues and creates simple patterns involving objects, shapes and numbers. Explores, recognises and continues simple number patterns. Finds missing numbers on a number line within the range 0 - 20.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

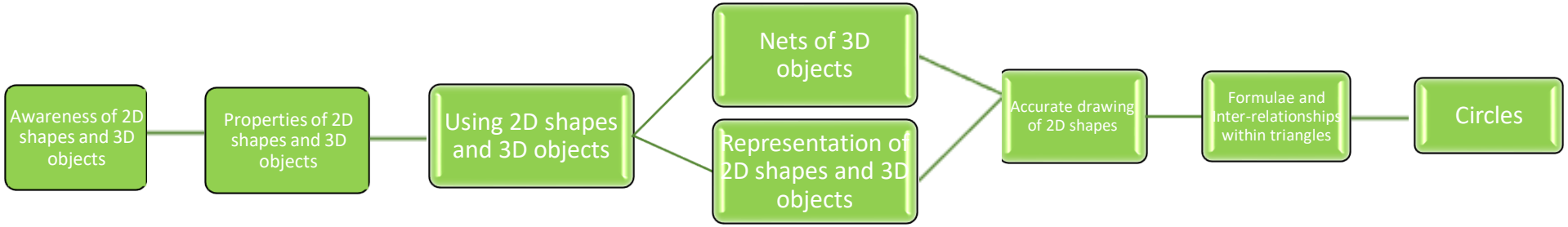
MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

First Level

Numeracy and Mathematics

Organiser	Properties of 2D Shapes and 3D Objects

Experience and Outcome	*I enjoy investigating objects and shapes and can sort, describe and be creative with them.*	MTH 0-16a



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
I can: • **show awareness** of 2D shapes in my environment. • **match** 2D shapes. • **show awareness** of 3D objects in my environment. • **match** 3D objects.	I can: • **sort** 2D shapes. • **recognise** and **describe** common 2D shapes e.g. square, triangle, circle and rectangle. • **create** a picture with 2D shapes. • **build** with 3D objects. • begin to **discuss** how 3D objects look and feel, using the language of straight, round, flat, curved etc.	I can: • **recognise**, **describe** and **sort** common 2D shapes according to various criteria (colour, size, straight, round). • **recognise**, **describe** and **sort** common 3D objects according to various criteria (colour, size, flat, curved, dynamic properties such as stack or roll).	Recognises, describes and sorts common 2D shapes and 3D objects according to various criteria, for example, straight, round, flat and curved.

MNU 0-01a | MNU 0-03a | MNU 0-09a | MNU 0-11a | MNU 0-20b | MTH 0-13a | MTH 0-17a

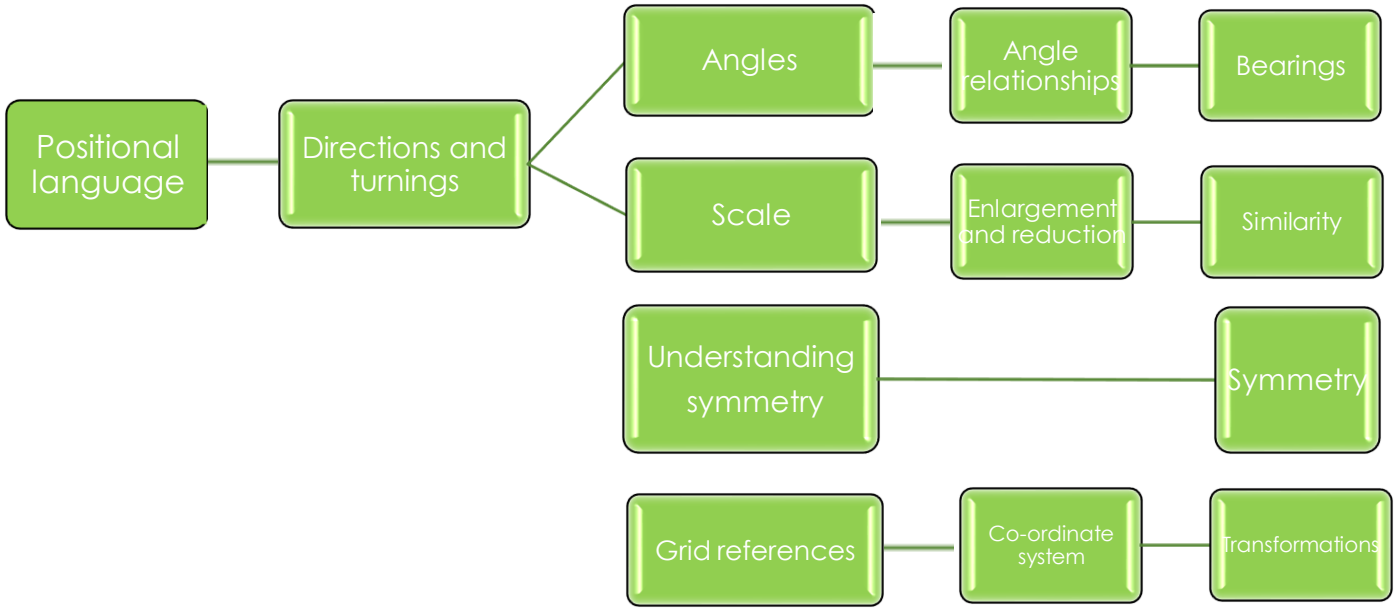
MNU 0-02a | MNU 0-07a | MNU 0-10a | MNU 0-20a | MNU 0-20c | MTH 0-16a | MTH 0-19a

First Level

Numeracy and Mathematics

Organiser	Angle, Symmetry and Transformation

Experience and Outcome		
	In movement, games, and using technology I can use simple directions and describe positions.	MTH 0-17a
	I have had fun creating a range of symmetrical pictures and patterns using a range of media.	MTH 0-19a



At the start of Early Level	Through Early Level	Towards the end of Early Level	Benchmarks
I can: • **show awareness** of positional language, e.g. in front, behind, above, below, over and under.	I can: • **use** simple directions to **describe** positions.	I can: • **understand** and correctly **use** the language of position to **solve** problems in movement and games technology, e.g., in front, behind, above and below.	Understands and correctly uses the language of position and direction, including in front, behind, above, below, left, right, forwards and backwards, to solve simple problems in movement games.

MNU 0-01a MNU 0-03a MNU 0-09a MNU 0-11a MNU 0-20b MTH 0-13a MTH 0-17a

MNU 0-02a MNU 0-07a MNU 0-10a MNU 0-20a MNU 0-20c MTH 0-16a MTH 0-19a

First Level

Numeracy and Mathematics

• **show awareness** that symmetrical pictures are the same on both sides of a given line or fold. • **show awareness** of directional language e.g. left, right, forwards and backwards, up, down, in, out.	• with a partner, **describe** a sequence of directions that involves turning. • begin to **recognise** symmetrical patterns and shapes in the environment. • **create** a symmetrical picture with one line of symmetry using a fold. • **use** language of position to **describe** where objects are. • **use** the language of position to **describe** where I am. • **solve** problems in movement games and technologies.	• **understand** what symmetrical means and **create** a symmetrical picture or pattern using a flip (to turn a figure over a line so that the moved figure is a mirror image of the original), or fold. • **use** the language of direction to **describe** where an object is and to give directions in real life contexts. • **understand** and correctly **use** the language of directions to **solve** simple problems in movement games and technology, e.g., left, right, forwards and backward.	Identifies, describes and creates symmetrical pictures with one line of symmetry.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 0-01a | MNU 0-03a | MNU 0-09a | MNU 0-11a | MNU 0-20b | MTH 0-13a | MTH 0-17a

MNU 0-02a | MNU 0-07a | MNU 0-10a | MNU 0-20a | MNU 0-20c | MTH 0-16a | MTH 0-19a

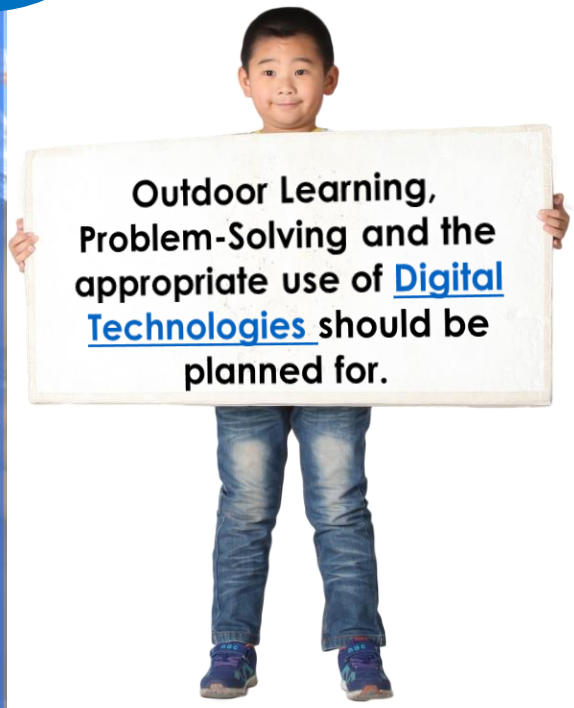
First Level

NUMERACY & MATHEMATICS - Progression Pathway

Numeracy & Mathematics

The Numeracy and Mathematics Organisers

Suggested Order for *First Level*



August to December

- Estimation and Rounding
- Number and Number Processes
- Measurement

January to March

- Money
- Properties of 2D Shapes and 3D Objects
- Patterns and Relationships
- Fractions, Decimal Fractions and Percentages
- Time

April to June

- Data and Analysis
- Ideas of Chance and Uncertainty
- Angle Symmetry and Transformation
- Expressions and Equations
- Mathematics – Its Impact on the World, Past, Present and Future

Number and Number Processes should be revisited regularly throughout the year.

Numeracy and Mathematics

Lesson Guidance Notes

First Level

Organiser	Estimation and Rounding	
Experience and Outcome	*I can share ideas with others to develop ways of estimating the answer to a calculation or problem, work out the actual answer, then check my solution by comparing it with the estimate*	MNU 1-01a

Awareness of size and amount → Concept of estimation → Concept of rounding → Accuracy within rounding → Tolerance

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **explain** why we want to estimate. • **estimate** numbers to 10 using a variety of objects in rows and piles. • **estimate** the total and the difference by counting all and counting on.	I can: • **estimate** numbers using different representations, including the position of a number on a marked and blank number line and hundred square. • **make** reasonable estimates of small quantities to 20. • **round** numbers to the nearest 10 or 100.	I can: • use different strategies to **estimate** an answer to a calculation or a real-life problem, e.g., doubling. • **check** reasonableness of a calculation by **comparing** solution with estimate. • **make** reasonable estimates of quantities to 100. • **round** whole numbers to at least the nearest 10 and 100 and use this skill to routinely **estimate** and **check** reasonableness.	Uses strategies to estimate an answer to a calculation or problem, for example, doubling and rounding. Rounds whole numbers to the nearest 10 and 100 and uses this routinely to estimate and check the reasonableness of a solution.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

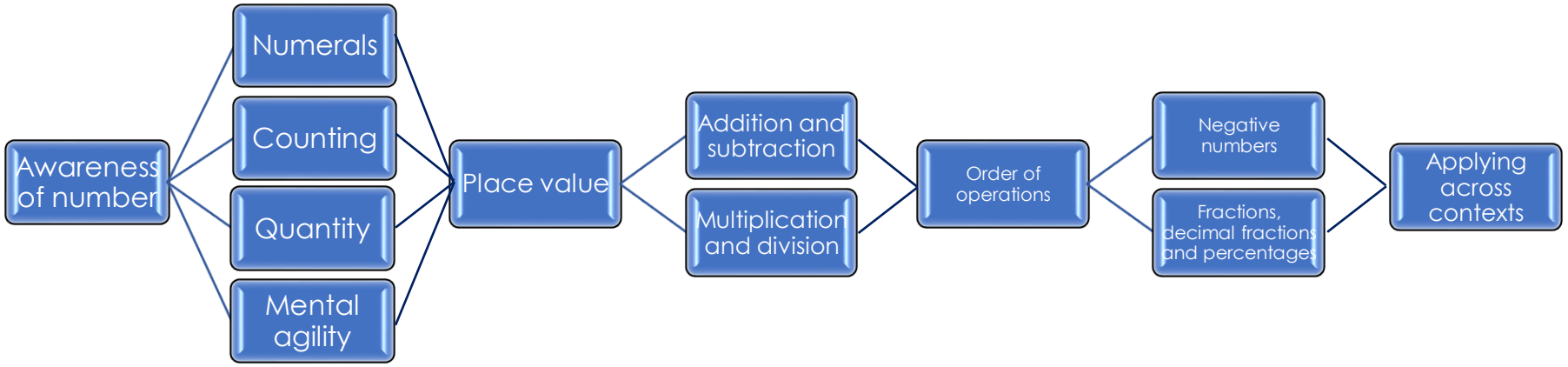
MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level | Second Level

Numeracy and Mathematics

Organiser	Numbers and Number Processes	
Experience and Outcome	*I have investigated how whole numbers are constructed, can understand the importance of zero within the system and can use my knowledge to explain the link between a digit, its place and its value.*	MNU 1-02a
	I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed.	MNU 1-03a



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
Number Word Sequences			
I can: • **recall** the number sequence forwards, starting from any given number, within 100. • **recall** the number sequence backwards, from any given number, within 100.	I can: • **say** forward number word sequences in multiples of 2s within 100, and **keep track** of the counts on my fingers. • **say** backward number word sequences in multiples of 2s within 100, and **keep track** of the counts on my fingers.	I can: • **count** on in 100s, on the hundred, within 1000. • **count** on in 10s, on the hundred and decade, within 1000. • **count** on in 1s, on the hundred and decade, within 1000.	Reads, writes, orders and recites whole numbers to 1000, starting from any number in the sequence.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level

Second Level

Numeracy and Mathematics

• **recall** the number word after, within 100. • **recall** the number word before, within 100. • **recall** the number word in between two numbers, within 100. • **say** the next 2, 3, 4 numbers in a number word sequence. • **count** the number of jumps forwards from one number to another within 100. • **count** the number of jumps backwards from one number to another within 100. • **count** forwards in tens using the sequence of decade numbers. • **count** backwards in tens using the sequence of decade numbers. • **count** forwards and backwards in tens, starting at different decade numbers.	• **say** the next number word before and after in a multiple number sequence in 2s within 100. • **say** forward number word sequences in multiples of 10s within 100, and **keep track** of the counts on my fingers. • **say** backward number word sequences in multiples of 10s within 100, and **keep track** of the counts on my fingers. • **say** the next number word before and after in a multiple number sequence in 10s, within 100. • **say** forward number word sequences in multiples of 5s within 100, and **keep track** of the counts on my fingers. • **say** backward number word sequences in multiples of 5s within 100, and **keep track** of the counts on my fingers.	• **count** on in 10s, off the hundred and decade, within 1000. • **count** on in 1s, off the hundred and decade, within 1000. • **count** back in 100s, on the hundred, within 1000. • **count** back in 10s, on the hundred and decade, within 1000. • **count** back in 1s, on the hundred and decade, within 1000. • **count** back in 100s, off the hundred, within 1000. • **count** back in 10s, off the hundred and decade, within 1000. • **count** back in 1s, off the hundred and decade, within 1000.	Demonstrates understanding of zero as a placeholder in whole numbers to 1000. Uses correct mathematical vocabulary when discussing the four operations including, subtract, add, sum of, total, multiply, product, divide and shared equally. Identifies the value of each digit in a whole number with three digits, for example, 867 = 800 + 60 + 7. Counts forwards and backwards in 2s, 5s, 10s and 100s.

MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

MNU 1-02a | MNU 1-07a | MNU 1-10a | MNU 1-20a | MTH 1-13a | MTH 1-16a | MTH 1-19a

Early Level | Second Level

Numeracy and Mathematics

	• **say** the next number word before and after in a multiple number sequence in 5s, within 100. • **count** on and back in 10s/1s within 100, on the decade. • **count** on and back in 10s/1s within 100, off the decade.		

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a
MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level Second Level

Numeracy and Mathematics

Organiser	Numbers and Number Processes	
Experience and Outcome	*I have investigated how whole numbers are constructed, can understand the importance of zero within the system and can use my knowledge to explain the link between a digit, its place and its value.*	MNU 1-02a
	I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed.	MNU 1-03a

Numerals

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks (cont.)
I can: • **sequence** consecutive numerals within 100, smallest to largest. • **sequence** consecutive numerals within 100, largest to smallest. • **order** non-consecutive numerals to 100, smallest to largest. • **order** non-consecutive numerals to 100, largest to smallest. • **recognise** numerals to 100. • **identify** numerals to 100. • **write** numerals to 100. • **count** on and back to identify the numeral before, the numeral after, the numeral in between and the missing numeral in a sequence to 100.	I can: • **sequence** consecutive multiples of 100 to 1000. • **order** non-consecutive multiples of 100 to 1000. • **recognise, identify** and **write** numerals 1000. • **recognise** and **identify** multiples of 100 to 1000. • **sequence** decade numerals to 1000. • **sequence** consecutive 3-digit numerals to 1000. • **order** non-consecutive 3-digit numerals to 1000. • **identify** the value of each digit in a numeral, understanding the importance of zero as a placeholder (ones, tens, hundreds). • **count** on and back to identify the numeral before, the numeral after, the numeral in between and the missing numeral in a sequence to 1000.	I can: • **estimate** where to place given numerals given an empty number line marked with 0 and 100, or 0 and 1000. • **describe** the value of each digit in a numeral, understanding the importance of zero as a placeholder (ones, tens, hundreds, thousands).	Reads, writes, orders and recites whole numbers to 1000, starting from any number in the sequence. Demonstrates understanding of zero as a placeholder in whole numbers to 1000. Identifies the value of each digit in a whole number with three digits, for example, 867 = 800 + 60 + 7. Counts forwards and backwards in 2s, 5s, 10s and 100s.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a
MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a
Early Level Second Level

Numeracy and Mathematics

First Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have investigated how whole numbers are constructed, can understand the importance of zero within the system and can use my knowledge to explain the link between a digit, its place and its value.	MNU 1-02a
	I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed.	MNU 1-03a

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks (cont.)
Number Structures			
I can: • **recognise** and **describe** five-wise tens frames. • **recognise** and **describe** pair-wise tens frames. • **partition** flashed tens frames in different ways. • **combine** numbers using flashed tens frames. • **record** partitions using appropriate notation. • use appropriate notation to **calculate** how many altogether (combining). • **describe** numbers in relation to 5 and 10.	I can: • **build** and **describe** numbers to 20: - *using doubles and near doubles* - *using ten as an anchor* - *by partitioning through ten* - *using commutative relationships of number.* • **build** and **describe** numbers to 100 using 10s and 1s in a variety of ways: - *use concrete resources to represent different numbers* - *use pictorial representations to -show different numbers* - *estimate numbers using different representations* - *make 2-digit numbers recording in numbers and words.* • **find** 1 or 10 more and less than a given number (concrete). • **describe** the place value of each digit in a 2-digit number.	I can: • **build** and **describe** numbers to 100 in a variety of ways (canonical- 67 as six tens and seven ones, or non-canonical- 67 as five tens and seventeen ones): - *use concrete resources to represent different numbers* - *use pictorial representations to show different numbers* - *estimate numbers using different representations* - *make 3-digit numbers recording in numbers and words.* • **build** and **describe** numbers beyond 100 using 100s, 10s and 1s. • **show** my understanding of how the number line extends beyond 100. • **find** 1, 10 or 100 more and less than a given number (concrete). • **describe** the place value of each digit in a 3-digit number.	Reads, writes, orders and recites whole numbers to 1000, starting from any number in the sequence. Demonstrates understanding of zero as a placeholder in whole numbers to 1000. Identifies the value of each digit in a whole number with three digits, for example, 867 = 800 + 60 + 7. Counts forwards and backwards in 2s, 5s, 10s and 100s.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level | Second Level

Numeracy and Mathematics

First Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have investigated how whole numbers are constructed, can understand the importance of zero within the system and can use my knowledge to explain the link between a digit, its place and its value.	MNU 1-02a
	I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed.	MNU 1-03a

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
Addition and Subtraction			
Using concrete materials, pictorial representations and abstract thinking, I can: • **recognise** and **describe** part-whole relationships. • **use** number bonds to 20 to **create** problems. • **read** and **arrange** a number sentence using objects and pictures. • **solve** a mathematical number sentence/problem to 20 using symbols. • **add/subtract** (including 0) within 20 by **counting** on/back. • **add/subtract** within 20 (including 0) **using** number bonds.	Using concrete materials, pictorial representations and abstract thinking I can: • **recognise, describe** and **create** part-whole relationships. • **use** number bonds to 20 to derive related facts to 100. • **add** several single digit numbers using number bonds. • **understand** the commutative law and can use it. • **add** and **subtract** with tens and ones. • **add** and **subtract** by bridging 10.	Using concrete materials, pictorial representations and abstract thinking, I can: • **describe** how to **solve** a variety of higher decade addition and subtraction tasks using my knowledge of tens and ones. • **describe**, using appropriate vocabulary, how to **solve** a variety of higher decade addition and subtraction tasks through counting. • begin to **apply** my understanding of number structures to develop and explain a range of *non-count-by-ones strategies to* solve tasks within 1000.	Demonstrates understanding of the commutative law, for example, $6 + 3 = 3 + 6$ or $2 \times 4 = 4 \times 2$. Applies strategies to determine multiplication facts, for example, repeated addition, grouping, arrays and multiplication facts. Solves addition and subtraction problems with three-digit whole numbers. Adds and subtracts multiples of 10 or 100 to or from any whole number to 1000.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

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Early Level Second Level

Numeracy and Mathematics

• **solve** missing number problems within 20. • **use** appropriate vocabulary to **create** addition and subtraction stories within 20. • **describe** how I solve addition and subtraction tasks: - *using counting on* - *using counting back from* - *using doubles* - *using something I already know* - *using concrete/pictorial resources.* When solving problems related to the concepts above, learners should **choose** an efficient method and **justify** choices.	• **describe** how to solve a variety of addition and subtraction, using appropriate vocabulary, tasks to 20: - *using my knowledge of doubles and near doubles* - *by partitioning through ten* - *using compensation strategies* - *using my knowledge of commutative and associative properties* - *using my knowledge of inverse operations.* When solving problems related to the concepts above, learners should **choose** an efficient method and **justify** choices.	• begin to **use** the written algorithm to solve addition and subtraction calculations involving 3-digit numbers or more. • **solve** two step problems. When solving problems related to the concepts above, learners should **choose** an efficient method and **justify** choices.	

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Early Level Second Level

Numeracy and Mathematics

Lesson Guidance Notes

First Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have investigated how whole numbers are constructed, can understand the importance of zero within the system and can use my knowledge to explain the link between a digit, its place and its value.	MNU 1-02a
	I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed.	MNU 1-03a

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
Multiplication and Division			
I can: • **combine** and **count** equal groups. • **partition** a collection into equal shares and establish the number of shares. • **partition** a collection into equal shares and establish the number in each share. • **build, describe** and **count** simple arrays. • **determine** how many altogether on an array using repeated addition. • confidently **sequence** in multiples of 2s.	I can: in at least 2s, 3s, 5s and 10s: • **build**, **describe** and **count** arrays. • **use** multiplicative counting strategies to **calculate** the total of equal groups. • **use** multiplicative counting strategies to **calculate** the number in each share/number of groups when a collection is shared equally. • **use** multiplicative counting strategies (such as repeated addition) to **calculate** how many altogether.	I can: in 2s to 10s: • confidently **build**, **describe** and **count** arrays. • confidently **calculate** the total of equal groups. • confidently **calculate** the number in each share/ number of groups when a collection is shared equally. • **solve** problems involving grouping and sharing: - *using my knowledge of commutative and associative properties* - *using partitioning and combining to simplify problems* - *using repeated addition, repeated subtraction, multiplication and division facts* - *using my knowledge of inverse operations.*	Applies strategies to determine division facts, for example, repeated subtraction, equal groups, sharing equally, arrays and multiplication facts. Uses multiplication and division facts to solve problems within the number range 0 to 1000. Multiplies and divides whole numbers by 10 and 100 (whole number answers only). Applies knowledge of inverse operations (addition and subtraction; multiplication and division). Solves two step problems.

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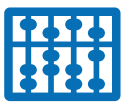
MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level Second Level

Numeracy and Mathematics

	• begin to **recall** multiplication and division facts and can **use** repeated addition and subtraction to **determine** new facts. • confidently **sequence** in multiples of 2s and 3s and use this to **recall** related multiplication and division facts. • begin to **multiply** multiples of ten up to fifty by 2, 3, 4, 5 and 10. • **multiply** a 2-digit number by a single digit (no bridging).	• confidently **sequence** in multiples of 2s, 3s, 5s and 10s and use this to **recall** related multiplication and division facts. • **solve** two step problems involving grouping and sharing. • **choose** the most efficient method for the problem given and **justify** my choice. • **mentally multiply** and **divide** whole numbers by at least 10 and 100. • **multiply** multiples of ten by 2, 3, 4, 5 and 10. • **mentally multiply** a 2-digit number by 2, 3, or 5	

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

MNU 1-02a | MNU 1-07a | MNU 1-10a | MNU 1-20a | MTH 1-13a | MTH 1-16a | MTH 1-19a

Early Level | Second Level

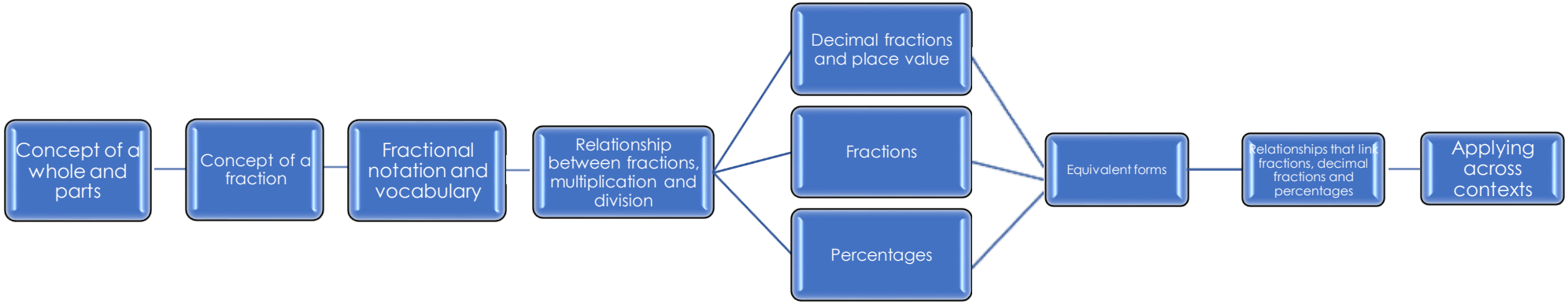
Numeracy and Mathematics

Lesson Guidance Notes

First Level

Organiser	Fractions, Decimal fractions and Percentages

Experience and Outcome		
	Having explored fractions by taking part in practical activities, I can show my understanding of: • *how a single item can be shared equally* • *the notation and vocabulary associated with fractions* • *where simple fractions lie on the number line.*	**MNU 1-07a**
	Through exploring how groups of items can be shared equally, I can find a fraction of an amount by applying my knowledge of division.	**MNU 1-07b**
	Through taking part in practical activities including use of pictorial representations, I can demonstrate my understanding of simple fractions which are equivalent.	**MNU 1-07c**



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **make** halves **using** lengths, objects and shapes. • **identify** halves **using** lengths, objects and shapes.	I can: • **make** equal parts. • **make** thirds and sixths using lengths, objects and shapes.	I can: • **explain** what a fraction is using concrete materials, pictorial representations and mathematical vocabulary (to tenths).	Explains what a fraction is using concrete materials, pictorial representations and appropriate mathematical vocabulary.

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Early Level
Second Level

Numeracy and Mathematics

- **make** halves using quantities.
- **identify** halves using quantities.
- **make** quarters using lengths, objects and shapes.
- **identify** quarters using lengths, objects and shapes.
- **make** quarters using quantities.
- **identify** quarters using quantities.
- **share** and **group** equally.
- **explain** that a fraction is an equal part of a whole.
- **explain** that quarter is half of a half.
- begin to **demonstrate** how to write a fraction.

- **identify** thirds and sixths using lengths, objects and shapes.
- **make** thirds and sixths using quantities.
- **identify** thirds and sixths using quantities.
- **find** part of a set or quantity.
- **recognise** and **use** simple fractional notation, in word and mathematical form.
- **explain** the relationship between the numerator and denominator.
- **explain** that the larger denominator, the smaller the part.
- **demonstrate** how a whole is represented, e.g., 3 thirds = 1 whole, 4 quarters = 1 whole.
- **count** wholes and parts.
- **count** in fraction sequences e.g., $0, \frac{1}{3}, \frac{2}{3}, 1, 1\frac{1}{3}, 1\frac{2}{3}$

- **order** fractions and **identify** where simple fractions lie on an empty number line.
- **estimate** the position of a mixed number on a number line.
- **compare** fractions.
- **find** fractions of whole numbers.
- **identify** the numerator and denominator of fractions and **explain** what each is.
- **explain** how a whole is represented and re-formed, e.g., 10 tenths make a whole.
- **add** equal fractions to make the whole.
- **explain** that fractions are relative to wholes, e.g., explain why $\frac{1}{4}$ of a party sized cake is more than $\frac{1}{2}$ of a smaller one.

Demonstrates understanding that the greater the number of equal parts, the smaller the size of each share.

Uses the correct notation for common fractions to tenths, for example

$\frac{1}{2}, \frac{2}{3}$ and $\frac{4}{8}$

Compares the size of fractions and places simple fractions in order on a number line.

Uses pictorial representations and other models to demonstrate understanding of simple equivalent fractions, for example,

$\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$

Explains the role of the numerator and denominator.

MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

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Early Level | Second Level

Numeracy and Mathematics

First Level

• begin to **demonstrate** what simple notation means, e.g., a half is 1 part out of 2 equal parts and is written as $\frac{1}{2}$. • **estimate** one fair share and show with concrete materials. • **use** simple doubles to find one half. • **demonstrate** where simple fractions lie on a number line	• **use** materials and diagrams to find fractions of quantities by sharing/grouping. • **explain** the relationship between division and simple fractions, e.g. that quartering means dividing into 4 equal parts. • **find** part of a quantity using my knowledge of fractions. • **explore** equivalence through practical enquiry e.g. folding, cutting, sharing, matching etc.	• **locate** and **place** common fractions on a graduated number line 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 and compare e.g. $\frac{1}{4}$ is more than $\frac{1}{2}$ • **use** practical enquiry, find fractions which are equivalent, e.g., folding, cutting, sharing, matching etc. • **use** simple equivalences to compare and order fractions, e.g., $\frac{1}{2} = \frac{2}{4}$ so $\frac{3}{4}$ must be bigger than $\frac{1}{2}$ • **use** the relationship between multiplication, division and simple fractions to **identify** fractions of quantities. • **solve** word problems and **explain** how I solved them, using all of the above.	Uses known multiplication and division facts and other strategies to find unit fractions of whole numbers, for example, $\frac{1}{2}$ or $\frac{1}{4}$

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

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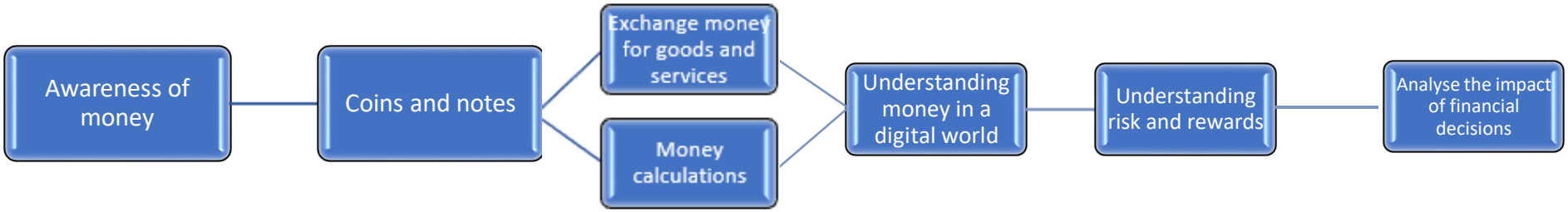
Early Level | Second Level

Numeracy and Mathematics

Organiser	Money	
Experience and Outcome	*I can use money to pay for items and can work out how much change I should receive*	MNU 1-09a
	I have investigated how different combinations of coins and notes can be used to pay for goods or be given in change.	MNU 1-09b



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **order** coins from the least value to the most. • **use** 1p, 2p, 5p, 10p and 20p coins to pay for items. • **calculate** change from at least 20p.	I can: • use mental strategies to **calculate** the total cost of items up to £1. • use mental strategies to **calculate** change up to £1. • **use** different combinations of coins to make the same amounts of money.	I can: • **explain** the role of the £ and p signs and the need for the correct notation e.g., 149p = £1.49 and 7p = £0.07. • **read and write** monetary values using the correct notation. • **calculate**, using mental strategies, the total spend in a shopping situation and can calculate the change involving £s and p up to £10.	Identifies and uses all coins and notes to £20 and explores different ways of making the same total. Records amounts accurately in different ways using the correct notation, for example, 149p = £1·49 and 7p = £0·07. Uses a variety of coin and note combinations, to pay for items and give change within £10.

		• **convert** from pounds and pence to pence and vice versa up to £10. • **identify** all coins and notes up to £20 and can **explore** different ways of making the same total. • **understand** that goods can be paid for using cards and technologies. • **use** a variety of coins in real life contexts.	Applies mental agility number skills to calculate the total spent in a shopping situation and is able to calculate change. Demonstrates awareness of how goods can be paid for using cards and digital technology.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

MNU 1-02a | MNU 1-07a | MNU 1-10a | MNU 1-20a | MTH 1-13a | MTH 1-16a | MTH 1-19a

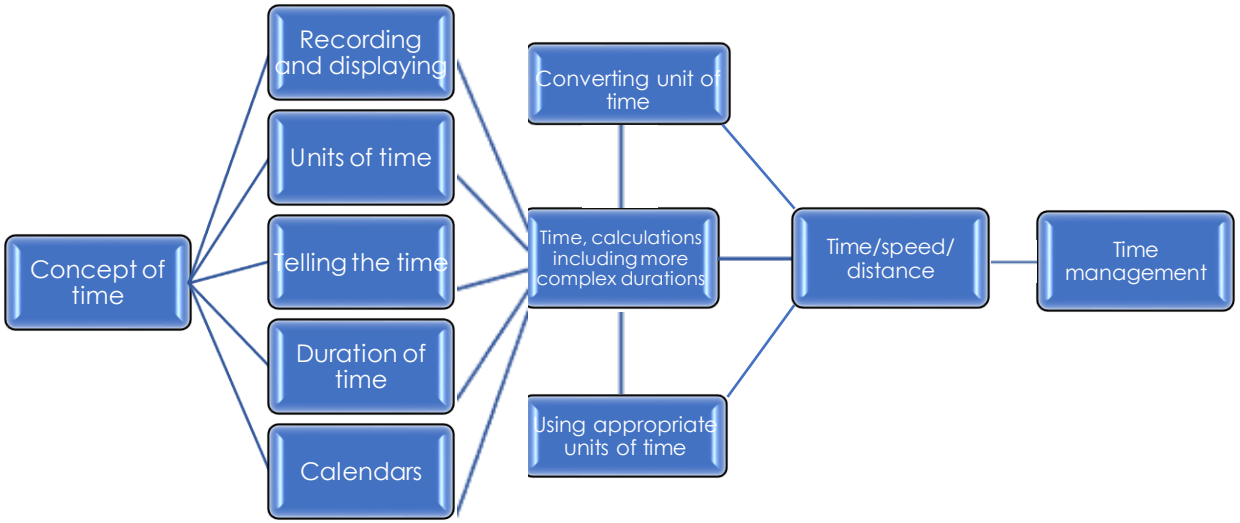
Early Level

Second Level

Numeracy and Mathematics

Organiser	Time

Experience and Outcome		
	I can tell the time using 12 hour clocks, realising there is a link with 24 hour notation, explain how it impacts on my daily routine and ensure that I am organised and ready for events throughout my day.	MNU 1-10a
	I can use a calendar to plan and be organised for key events for myself and my class throughout the year.	MNU 1-10b
	I have begun to develop a sense of how long tasks take by measuring the time taken to complete a range of activities using a variety of timers.	MNU 1-10c



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **identify** and **display** times for on the hour and half past on both digital and analogue clocks.	I can: • **identify** and **display** the time using half past, quarter past and quarter to using digital and analogue12 hour clocks.	I can: • **use** analogue and digital clocks to tell the time using minutes past and minutes to.	Tells the time using half past, quarter past and quarter to using analogue and digital 12 hour clocks.

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Early Level

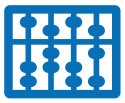
Second Level

Numeracy and Mathematics

First Level

• **calculate** durations in whole hours. • **explain** how many minutes there are in an hour. • **explain** how many seconds there are in a minute. • **use** a variety of timers to measure events using minutes. • **sequence** the seasons in a year. • **sequence,** in order, the months of the year and relate these to the seasons. • **plan** events over the course of a week or month.	• begin to **recall** the number of days in each month. • use a variety of timers to **measure** events using minutes and seconds. • **read** a simple 12hr timetable. • **estimate** time intervals in real life scenarios e.g., how long to run 50m etc. • use a calendar to **plan** events.	• **record** 12-hour times using am and pm. • **identify** the number of: - *seconds in a minute* - *minutes in an hour* - *hours in a day* - *days in each month* - *weeks and days in a year.* • **identify** 24hr notation in a real-life context. • **use** and **apply** my knowledge of calendar and 12-hour timetables to plan key events. • **record** dates in a variety of formats e.g., words and numbers. • **estimate** time durations in appropriate units of seconds, minutes or hours and then **compare** estimates with actual measurements.	Records 12-hour times using am and pm and is able to identify 24-hour notation, for example, on a mobile phone or computer. Records the date in a variety of ways, using words and numbers. Uses and interprets a variety of calendars and 12-hour timetables to plan key events. Knows the number of seconds in a minute, minutes in an hour, hours in a day, days in each month, weeks and days in a year. Orders the months of the year and relates these to the appropriate seasons. Selects and uses appropriate timers for specific purposes.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

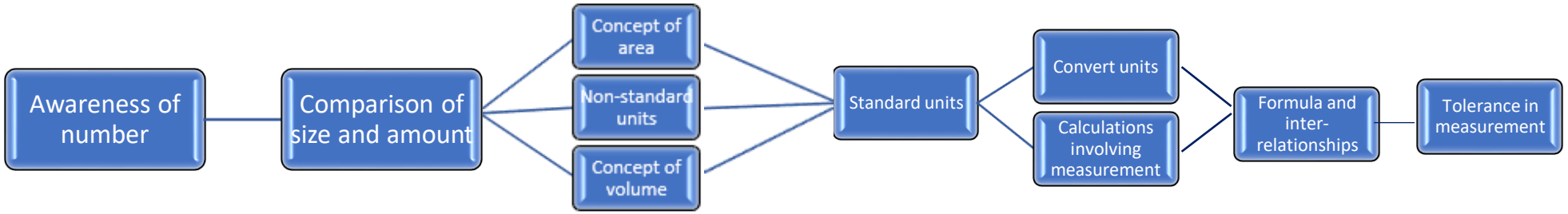
MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

MNU 1-02a | MNU 1-07a | MNU 1-10a | MNU 1-20a | MTH 1-13a | MTH 1-16a | MTH 1-19a

Early Level | Second Level

Numeracy and Mathematics

Organiser	Measurement	
Experience and Outcome	*I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units.*	MNU 1-11a
	I can estimate the area of a shape by counting squares or other methods.	MNU 1-11b



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
Length and Height			
I can: • **estimate** and **measure** in metres. • **estimate** and **measure** in ½ metres.	I can: • **convert** m to cm. • **measure** using m and cm. • **measure** in ½ metres. • use my knowledge of various objects to **estimate** their length.	I can: • **make** accurate use of a range of instruments when measuring length and height, **using** the most appropriate instrument for the task, e.g., ruler, metre stick. • **use** my knowledge of everyday objects to provide reasonable estimates of length and height.	Uses knowledge of everyday objects to provide reasonable estimates of length, height, mass and capacity. Makes accurate use of a range of instruments including rulers, metre sticks, digital scales and measuring jugs when measuring lengths, heights, mass and capacities using the most appropriate instrument for the task.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level

Second Level

Numeracy and Mathematics

• **use** the language of length/ height, e.g. long, longer, short, shorter, tall, taller when discussing length/height, using relevant contexts.	• **estimate** and **compare** my measure. • **compare** and **order** lengths of objects using cm and m. • **read** scales accurately organised in simple graduations.	• **estimate** and **record** measurements of length and height using the appropriate standard units, e.g., millimetres (mm), centimetres (cm) metres (m) • use my knowledge of relationships between units of measure to **make simple conversions**, e.g., 1m 58cm = 158cm. • **apply** my knowledge of fractions to accurately **read** a variety of scales on measuring devices, to the nearest graduation, e.g., $\frac{1}{2}$ or $\frac{1}{4}$	

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MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a
Early Level Second Level

Numeracy and Mathematics

First Level

Organiser	Measurement

Experience and Outcome		
	I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units.	MNU 1-11a
	I can estimate the area of a shape by counting squares or other methods.	MNU 1-11b

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
Area			
I can: • **explain** that the area is the amount of surface covered by a shape. • **investigate** and **compare** areas that are the same shape. • use non-standard units to **measure** the area of a variety of sizes and shapes.	I can: • **find** and **draw** the area of a shape by **counting** squares. • **create** shapes within a given area to at least the nearest half square.	I can: • **use** square grids to **estimate** then **measure** the areas of a variety of simple 2D shapes to at least half square. • **create** shapes with a given area to at least the nearest half square using square tiles or grids. • **recognise** that different shapes can have the same area (conservation of area).	Makes accurate use of a range of instruments including rulers, metre sticks, digital scales and measuring jugs when measuring lengths, heights, mass and capacities using the most appropriate instrument for the task. Uses square grids to estimate then measure the areas of a variety of simple 2D shapes to the nearest half square. Creates shapes with a given area to the nearest half square using square tiles or grids. Recognises that different shapes can have the same area (conservation of area).

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level Second Level

Numeracy and Mathematics

First Level

Organiser	Measurement

Experience and Outcome		
	I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units.	MNU 1-11a
	I can estimate the area of a shape by counting squares or other methods.	MNU 1-11b

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
Volume/capacity			
I can: • **estimate** and **measure** the capacity of familiar objects using litres. • **estimate** amounts in relation to litres, **discussing** whether it will fill a litre, be less or be more.	I can: • **convert** 1000ml to 1litre and can **explain** why. • **measure** and **estimate** using ml. • **convert** 500ml to $\frac{1}{2}$ litre and can **explain** why. • **measure** and **estimate** using $\frac{1}{2}$ litre. • **ead** scales accurately organised in simple graduations.	I can: • **accurately use** of a range of instruments when **measuring** volume / capacity using the most appropriate instrument for the task, e.g. measuring jugs. • **estimate** and **record** measurements of capacity using the appropriate standard units, e.g., millilitres (ml), litres (l). • apply my knowledge of relationships between units of measure to **make simple conversions**, e.g., 1l 58ml = 1058ml. • apply my knowledge of fractions to **accurately read** a variety of scales on measuring devices, to the nearest graduation, e.g., $\frac{1}{2}$ or $\frac{1}{4}$	Makes accurate use of a range of instruments including rulers, metre sticks, digital scales and measuring jugs when measuring lengths, heights, mass and capacities using the most appropriate instrument for the task. Records measurements of length, height, mass and capacity to the nearest standard unit, for example, millimetres (mm), centimetres (cm), grams (g), kilograms (kg), millilitres (ml), litres (l). Reads a variety of scales on measuring devices including those with simple fractions, for example, litre. Compares measures with estimates. Uses knowledge of relationships between units of measure to make simple conversions, for example, 1 m 58 cm = 158 cm.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level Second Level

Numeracy and Mathematics

First Level

Organiser	Measurement	
Experience and Outcome	*I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units.*	MNU 1-11a
	I can estimate the area of a shape by counting squares or other methods.	MNU 1-11b

Mass

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **estimate** and **measure** using kilograms. • **estimate** and **measure** using grams.	I can: • **estimate** and **measure** in kg and $\frac{1}{2}$ kilograms. • **demonstrate** that 1000g = 1kg and **explain** why. • **demonstrate** that 500g = $\frac{1}{2}$ kg and **explain** why. • **compare** and **order** the mass of objects using g and kg • **read** scales accurately, organised in simple graduations.	I can: • **make** accurate use of a range of instruments when measuring mass, using the most appropriate instrument for the task, e.g., digital scales. • **estimate** and **record** measurements of mass using the appropriate standard units, e.g., grams (g) and kilograms (kg). • **use** my knowledge of relationships between units of measure to make simple conversions, e.g., 5kg = 5000g. • **apply** my knowledge of fractions to **read** accurately a variety of scales on measuring devices, to the nearest graduation,	Compares measures with estimates. Uses knowledge of relationships between units of measure to make simple conversions, for example, 1 m 58 cm = 158 cm. Reads a variety of scales on measuring devices including those with simple fractions, for example, litre.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

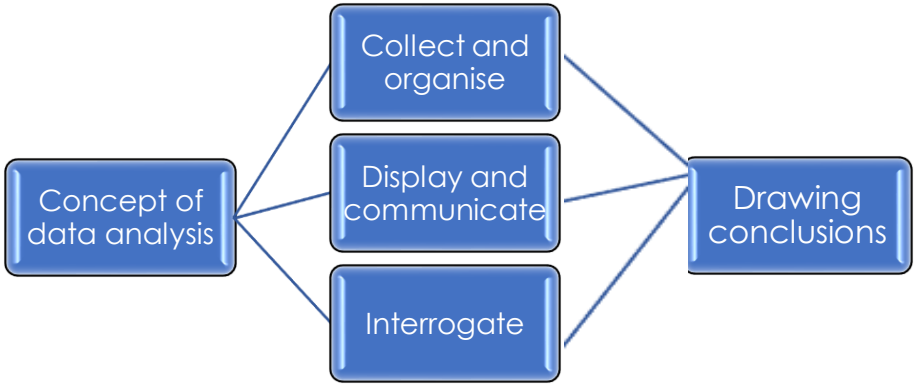
Early Level

Second Level

Numeracy and Mathematics

Organiser	Data Analysis

Experience and Outcome		
	I have explored a variety of ways in which data is presented and can ask and answer questions about the information it contains.	MNU 1-20a
	I have used a range of ways to collect information and can sort it in a logical, organised and imaginative way using my own and others' criteria.	MNU 1-20b
	Using technology and other methods, I can display data simply, clearly and accurately by creating tables, charts and diagrams, using simple labelling and scale.	MNU 1-21a



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **use** a range of data collection methods designed by others. • **draw** simple diagrams, tables and charts to **display** data I have collected e.g. Venn or Carroll diagram, pictograph or block graph.	I can: • begin to **design** own data collection methods. • **draw** simple diagrams, tables and charts to **display** data I have collected e.g., a bar chart with labels, frequency and a title.	I can: • **design** and **use** my own data collection methods. • **create** simple diagrams, tables and charts to **display** data I have collected using a graphing software package or simple spread sheet.	Asks and answers questions to extract key information from a variety of data sets including charts, diagrams, bar graphs and tables.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

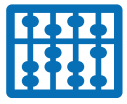
Early Level

Second Level

Numeracy and Mathematics

• **label** the displayed data and include a simple title. • **interpret** information from diagrams and tables (1-1 correspondence only).	• **describe** the results of my data collection. • **read** information from diagrams and tables and **describe** the important features of the data represented	• **describe** the results of my data collection. • **read** information from diagrams and tables (where one unit represents more than one data value) and **describe** the important features of the data represented. • **assess** the accuracy and appropriateness of diagrams.	Selects and uses the most appropriate way to gather and sort data for a given purpose, for example, a survey, questionnaire or group tallies. Uses a variety of different methods, including the use of digital technologies, to display data, for example, as block graphs, bar graphs, tables, Carroll diagrams and Venn diagrams. Includes a suitable title, simple labelling on both axes and an appropriate scale where one unit represents more than one data value in graphs.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

MNU 1-02a | MNU 1-07a | MNU 1-10a | MNU 1-20a | MTH 1-13a | MTH 1-16a | MTH 1-19a

Early Level | Second Level

Numeracy and Mathematics

Organiser	Ideas of chance and uncertainty	
Experience and Outcome	*I can use appropriate vocabulary to describe the likelihood of events occurring, using the knowledge and experiences of myself and others to guide me.*	**MNU 1-22a**

Simple choice and decision making → Predicting and describing likelihood → Choice and decision making based on likelihood → Probability → Applying knowledge of probability

At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • begin to **use** words such as likely, probable, unlikely, and certain to describe outcomes. • begin to **make simple predictions** and **collect** information to test them.	I can: • **use** words such as likely, probable, unlikely, and certain to **describe** possible outcomes. • **make predictions** and **collect** information to test them.	I can: • **use** vocabulary such as likely, probable, unlikely, certain, uncertain, never, possible, impossible to **describe** and **discuss** outcomes, and I can **justify** my choice. • **make predictions** and **collect** information to test them using my own criteria.	Uses mathematical vocabulary appropriately to describe the likelihood of events occurring in everyday situations including, probable, likely/unlikely, certain/uncertain, possible/impossible, and fair/unfair. Interprets data gathered through everyday experiences to make reasonable predictions of the likelihood of an event occurring.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

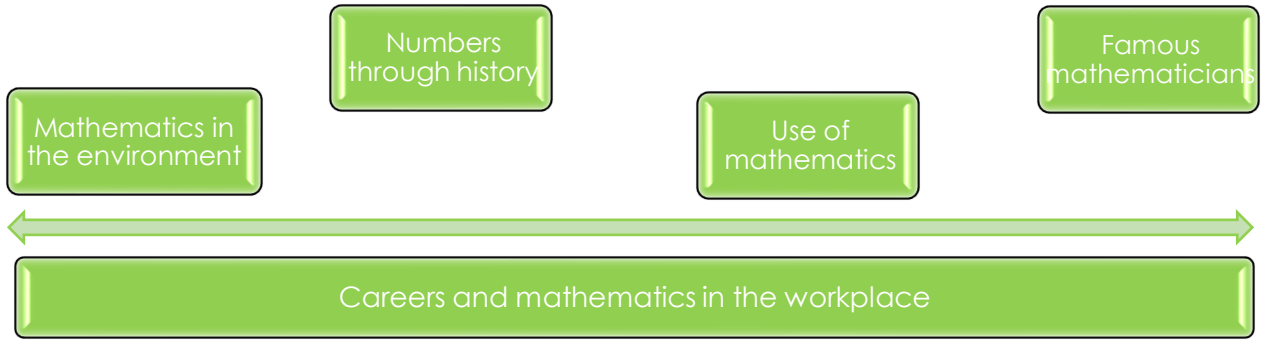
MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Second Level

Numeracy and Mathematics

Organiser	Mathematics – its impact on the world, past, present and future	
Experience and Outcome	*I have discussed the important part that numbers play in the world and explored a variety of systems that have been used by civilisations throughout history to record numbers.*	**MTH 1-12a**



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **investigate** and then **discuss** why numbers are important, e.g., house numbers for addresses, postman etc.	I can: • **investigate** a variety of number systems and the relationships between them, e.g. Roman number systems, Babylonian number system and/or Mayans number system. • **identify** patterns and structures within these number systems.	I can: • **investigate** and **discuss** a variety of number systems, e.g. the binary number system and understand its importance in modern technology.	Investigates and shares understanding of the importance of numbers in learning, life and work. Investigates and shares understanding of a variety of number systems used throughout history.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

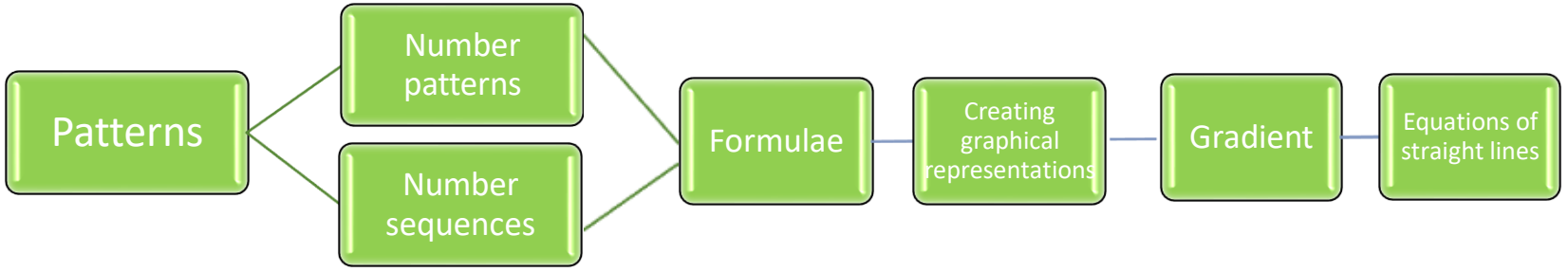
MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Second Level

Numeracy and Mathematics

Organiser	Patterns and Relationships

Experience and Outcome		
	I can continue and devise more involved repeating patterns or designs, using a variety of media.	MTH 1-13a
	Through exploring number patterns, I can recognise and continue simple number sequences and can explain the rule I have applied.	MTH 1-13b



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **apply** my knowledge of number to **identify** more complex patterns and sequences, looking at repeated addition, arrays etc. • **create** my own patterns, **discussing** how I have created them (what the pattern is).	I can: • **explain** rules and **justify** decisions. • **continue** and **create** repeating patterns involving shapes, pictures, symbols and movements. • **recognise** and **make** patterns in number in the multiplication tables and hundred squares.	I can: • **count** forward and backwards in 2s, 5s, and 10s from any whole number, to at least 1000. • **describe** patterns in number, for example, in the multiplication tables and hundred squares. • **describe**, **continue** and **create** number patterns using addition, subtraction, doubling, halving, counting in jumps (skip counting) and known multiples and I can **explain** the rule applied.	Counts forwards and backwards in 2s, 5s and 10s from any whole number up to 1000. Describes patterns in number, for example, in the multiplication tables and hundred square. Continues and creates repeating patterns involving shapes, pictures and symbols. Describes, continues and creates number patterns using addition, subtraction, doubling, halving, counting in jumps (skip counting) and known multiples.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

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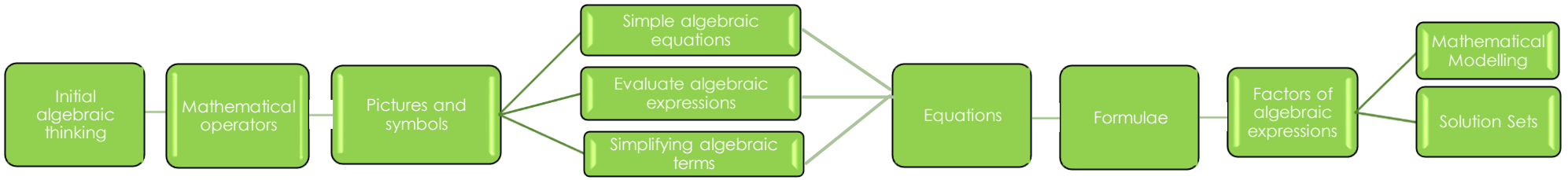
Early Level

Second Level

Numeracy and Mathematics

Organiser	Expressions and Equations

Experience and Outcome		
	I can compare, describe and show number relationships, using appropriate vocabulary and the symbols for equals, not equal to, less than and greater than.	MTH 1-15a
	When a picture or symbol is used to replace a number in a number statement, I can find its value using my knowledge of number facts and explain my thinking to	MTH 1-15b



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **translate** a word problem into a number sentence. • **begin** to **interpret** and solve written calculations where symbols are used for unknown numbers or operators e.g. 7 + ? = 12, 12 ? 6 = 6 or 10 = ? + 4	I can: • **use** numbers and symbols to record the counting tasks I have solved. • **interpret** a written calculation, e.g., 42 + 8 = and **mentally calculate** the answer. • **use** commutative and associative properties to **simplify** calculations, e.g. 3+15=15+3 or 5+3+7=(7+3)+5. • **interpret** and **solve** written calculations where symbols are used for unknown numbers or operators. • **Apply** knowledge of inverse processes (+/-) to **solve** problems. • **use** the ≠ sign in a number sentence or to compare quantities.	I can: • **understand** and **accurately use** the terms 'equal to', 'not equal to', 'less than', ' greater than', and the related symbols (=. ≠, <, >) when comparing sets of quantities. • **apply** knowledge of inverse processes (+/-) and (x/÷) to **solve** problems. • begin to **solve** problems with function machines.	Understands and accurately uses the terms 'equal to', 'not equal to', 'less than', 'greater than', and the related symbols (=, ≠ , <, >) when comparing quantities. Applies understanding of the equals sign as a balance, and knowledge of number facts, to solve simple algebraic problems where a picture or symbol is used to represent a number, for example, u + 17 = 30 and u × 6 = 30.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

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Second Level

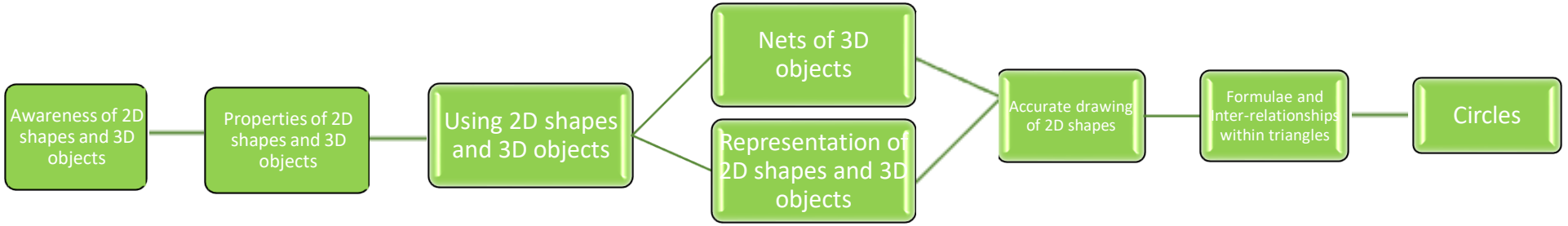
Numeracy and Mathematics

Lesson Guidance Notes

First Level

Organiser	Properties of 2D Shapes and 3D Objects

Experience and Outcome		
	I have explored simple 3D objects and 2D shapes and can identify, name and describe their features using appropriate vocabulary.	MTH 1-16a
	I can explore and discuss how and why different shapes fit together and create a tiling pattern with them	MTH 1-16b



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **name** 2D shapes e.g. rectangle, square, triangle, circle, triangle. • **describe** the properties of common 2D shapes (sides, angles and corners). • **extend** my understanding of 2D shapes to be able to **name** pentagons, hexagons and octagons.	I can: • **sketch/draw** 2D shapes. • **name** and **describe** the properties of pentagons, hexagons and octagons (sides, angles and corners). • **recognise** the properties of simple 3D objects and **use** the correct mathematical language (corner, face, edge, base, angle). • **recognise** that the faces of 3D objects are composed of shapes. • **identify** examples of tiling in the environment.	I can: • **identify** and **classify** a range of simple 2D shapes and **recognise** these shapes in different orientations and sizes. • **use** mathematical language to **describe** the properties of a range of common 2D shapes (sides, corners, angles and area). • **identify** 2D shapes within 3D objects and **recognise** 3D objects from 2D drawing.	Names, identifies and classifies a range of simple 2D shapes and 3D objects and recognises these shapes in different orientations and sizes. Uses mathematical language to describe the properties of a range of common 2D shapes and 3D objects including side, face, edge, vertex, base and angle.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

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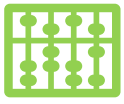
Early Level | Second Level

Numeracy and Mathematics

• **name** 3D objects, e.g. cube, cuboid, cone, sphere, cylinder, triangular prism, square-based pyramid.	• **identify** and **classify** a range of 3D objects and recognise these shapes in different orientations and sizes. • **use** mathematical language to **describe** the properties of a range of common 3D objects (area of faces, edges, corner, base and angles). • **apply** my knowledge of the features of 2D shapes to **create** tiling patterns incorporating at least two different shapes.	• **describe** the results of my data collection. • **read** information from diagrams and tables (where one unit represents more than one data value) and **describe** the important features of the data represented. • **assess** the accuracy and appropriateness of diagrams.	Identifies 2D shapes within 3D objects and recognises 3D objects from 2D drawings. Identifies examples of tiling in the environment and applies knowledge of the features of 2D shapes to create tiling patterns incorporating two different shapes.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

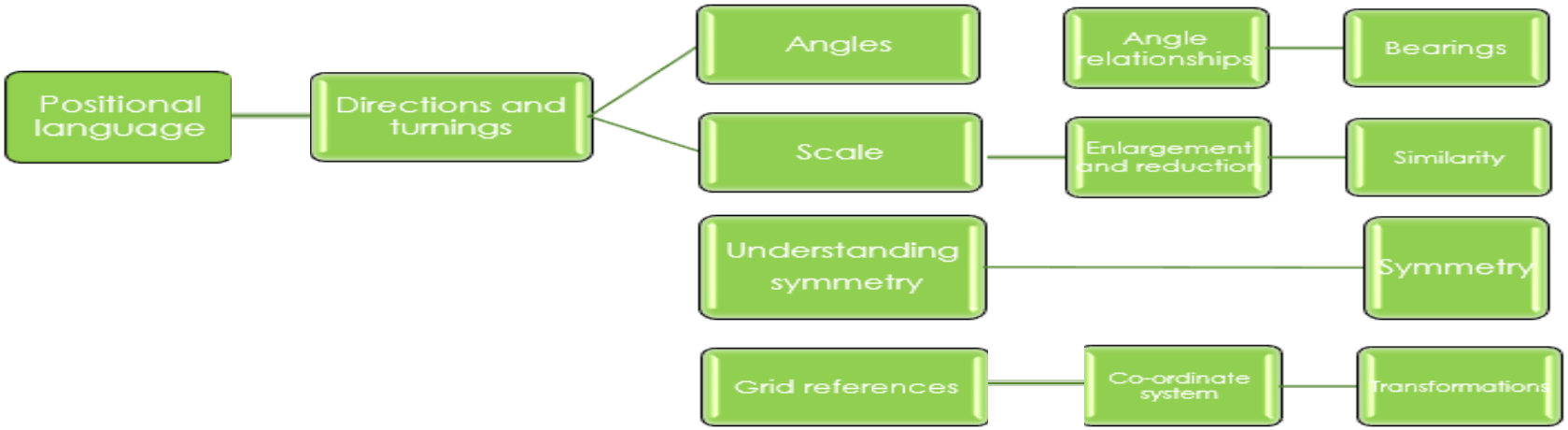
MNU 1-02a | MNU 1-07a | MNU 1-10a | MNU 1-20a | MTH 1-13a | MTH 1-16a | MTH 1-19a

Early Level | Second Level

Numeracy and Mathematics

Organiser	Angle, Symmetry and Transformation

Experience and Outcome		
	I can describe, follow and record routes and journeys using signs, words and angles associated with direction and turning.	MTH 1-17a
	I have developed an awareness of where grid reference systems are used in everyday contexts and can use them to locate and describe position.	MTH 1-18a
	I have explored symmetry in my own and the wider environment and can create and recognise symmetrical pictures, patterns and shapes.	MTH 1-19a



At the start of First Level	Through First Level	Towards the end of First Level	Benchmarks
I can: • **explain** of the purpose of a compass and can **discuss** where and when they can be used.	I can: • **identify** the compass points. • **describe** simple journeys using directional language.	I can: • **identify** and **use** compass points, e.g., North, South, East and West.	Uses technology and other methods to describe, follow and record directions using words associated with angles, directions and turns including, full turn, half turn, quarter turn, clockwise, anticlockwise, right turn, left turn, right angle.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

MNU 1-02a MNU 1-07a MNU 1-10a MNU 1-20a MTH 1-13a MTH 1-16a MTH 1-19a

Early Level

Second Level

Numeracy and Mathematics

• **give** and **follow** verbal directions for a route or journey (supported). • use the language of direction to **describe** and **direct**. • **demonstrate** half and quarter turns along with clockwise and anti-clockwise. • **relate** my knowledge of the properties of shape and angle. • **recognise** symmetrical patterns and shapes in the environment. • **complete** a basic 2D shape to make it symmetrical.	• **give** and **follow** verbal directions for a route or journey (independently). • **discuss** and **demonstrate** how to turn a quarter, half and full turn clockwise and anti-clockwise. • **find** at least 1 line of symmetry within a shape or pattern. • **complete** a shape to make it symmetrical. • **find** shapes or patterns with more than one line of symmetry. • **complete** a more complex shape to make it symmetrical, with at least one line of symmetry. • **describe** why shapes, pictures and patterns are symmetrical. • **understand** the purpose of a grid and can use references to describe positions on the grid.	• **describe** more complex journeys using directional language, for example, words associated with angles, directions and turning including full turn, half turn, quarter turn, clockwise, anticlockwise, right turn, left turn, and right angle. • **use** technologies and other methods to **describe, follow** and **record** directions. • **investigate** and **create** instructions for a journey that I am unfamiliar with. • **produce** signs or a simple plan to help others navigate. • **explain** that a 90-degree turn is equivalent to a quarter turn. • **explain** that a right angle is 90 degrees. • **identify** right angles in the environment and in well-known 2D shapes. • use informal methods to **estimate**, **compare** and **describe** the size of angles in relation to a right angle.	Knows that a right angle is 90°. Knows and uses the compass points, North, South, East and West. Uses informal methods to estimate, compare and describe the size of angles in relation to a right angle. Finds right angles in the environment and in well-known 2D shapes. Identifies where and why grid references are used. Describes, plots and uses accurate two figure grid references, demonstrating knowledge of the horizontal and vertical location. Identifies symmetry in patterns, pictures, nature and 2D shapes. Creates symmetrical pictures and designs with more than one line of symmetry.

MNU 1-01a MNU 1-03a MNU 1-09a MNU 1-11a MNU 1-22a MTH 1-12a MTH 1-15a MTH 1-18a

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Early Level Second Level

		• **compare** different angles using an angle estimator and **relate** my estimates to right angles. • **complete** more complex shapes and patterns to make them symmetrical. • **create** a grid and **give instruction** of how to describe or find a position on the grid. • **use** the language of horizontal and vertical to **describe**, **plot** and **use** accurate grid references. • **create** symmetrical shapes, pictures and designs with more than one line of symmetry. • **describe** why more complex shapes, pictures and patterns are symmetrical	Knows that a right angle is 90°. Knows and uses the compass points, North, South, East and West. Uses informal methods to estimate, compare and describe the size of angles in relation to a right angle. Finds right angles in the environment and in well-known 2D shapes. Identifies where and why grid references are used. Describes, plots and uses accurate two figure grid references, demonstrating knowledge of the horizontal and vertical location. Identifies symmetry in patterns, pictures, nature and 2D shapes . Creates symmetrical pictures and designs with more than one line of symmetry.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 1-01a | MNU 1-03a | MNU 1-09a | MNU 1-11a | MNU 1-22a | MTH 1-12a | MTH 1-15a | MTH 1-18a

MNU 1-02a | MNU 1-07a | MNU 1-10a | MNU 1-20a | MTH 1-13a | MTH 1-16a | MTH 1-19a

Early Level

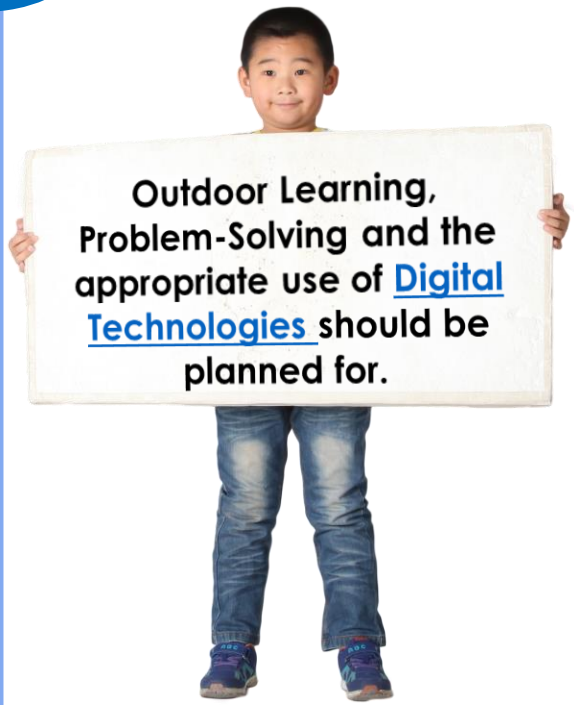
Second Level

NUMERACY & MATHEMATICS - Progression Pathway

Numeracy & Mathematics

The Numeracy and Mathematics Organisers

Suggested Order for *Second Level*



August to December

- Estimation and Rounding
- Number and Number Processes
- Multiples, Factors and Primes
- Measurement

January to March

- Money
- Properties of 2D Shapes and 3D Objects
- Patterns and Relationships
- Fractions, Decimal Fractions and Percentages
- Time

April to June

- Data and Analysis
- Ideas of Chance and Uncertainty
- Angle Symmetry and Transformation
- Expressions and Equations
- Mathematics – Its Impact on the World, Past, Present and Future

Number and Number Processes should be revisited regularly throughout the year.

Numeracy and Mathematics

Lesson Guidance Notes

Second Level

Organiser	Estimation and Rounding	
Experience and Outcome	*I can use my knowledge of rounding to routinely estimate the answer to a problem then, after calculating, decide if my answer is reasonable, sharing my solution with others.*	MNU 2-01a

Awareness of size and amount → Concept of estimation → Concept of rounding → Accuracy within rounding → Tolerance

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **round** any number to nearest 10, 100, and 1000. • **round** decimals with one decimal place to nearest whole. • **estimate** to check answers to a calculation and share with others.	I can: • **round** any number to nearest 10, 100, 1000, 10 000, 100 000. • **estimate** the answer to a problem and use inverse operations to check the answer and share with others.	I can: • **round** whole numbers and decimal fractions to 2 decimal places. • **solve** multi-step problems which involve rounding, estimating and justifying answers.	Rounds whole numbers to the nearest 1000, 10 000 and 100 000. Rounds decimal fractions to the nearest whole number, to one decimal place and two decimal places. Applies knowledge of rounding to give an estimate to a calculation appropriate to the context.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a

MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

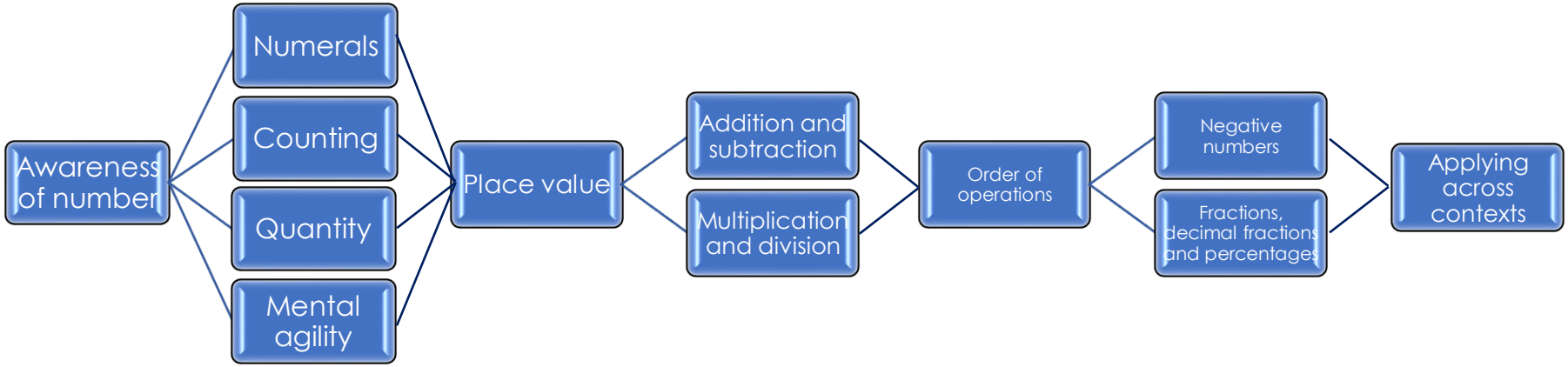
MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level

Third Level

Numeracy and Mathematics

Organiser	Numbers and Number Processes	
Experience and Outcome	*I have extended the range of whole numbers I can work with and having explored how decimal fractions are constructed, can explain the link between a digit, its place and its value.* ***(Place Value)***	MNU 2-02a
	Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others ***(Addition & Subtraction, Multiplication & Division)***	MNU 2-03a
	Having explored the need for rules for the order of operations in number calculations, I can apply them correctly when solving simple problems ***(Addition & Subtraction, Multiplication & Division)***	MNU 2-03c
	I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods. ***(Decimal Fractions)***	MNU 2-03b
	I can show my understanding of how the number line extends to include numbers less than zero and have investigated how these numbers occur and are used. ***(Negative Numbers)***	MNU 2-04a



At the start of Second Level ←	Through Second Level	→ Towards the end of Second Level	Benchmarks
Number Word Sequences			
I can: • **count** numbers forwards and backwards in ones starting from any number 0 - 10 000.	I can: • **count** numbers forwards and backwards in ones starting from any number 0 - 100 000.	I can: • **count** numbers forwards and backwards in 1s, 10 000s, 100 000s, starting from any number 0 - 1 000 000.	Reads, writes and orders whole numbers to 1 000 000, starting from any number in the sequence.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a
MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a
First Level
Third Level

Numeracy and Mathematics

- **identify** the number word just before, number word just after and the missing number in a 2, 3 and 4-digit number, in the range of 0 - 10 000, and be confident when crossing into the next century/thousand.
- **count** forwards and backwards in multiples and steps of 10, 20, 50, 100, 500 and 1000, starting at different points within 10 000.
- **count** forwards and backwards in steps of 6, 7, 8 and 9, within 100.
- **count** objects by grouping in different multiples.
- **count** backwards through zero to include negative numbers.
- **count** in decimal amounts to one decimal place, forwards and backwards from any given number, understanding the value of each digit.

- **identify** the number word just before, number word just after and the missing number in a 2, 3, 4 and 5-digit number, in the range of 0 - 100 000, and be confident when crossing into the next century/thousand/ten thousand.
- **count** forwards and backwards in multiples and steps of 10, 20, 50, 100, 500, 1000, 5000, 10 000, starting at different points within 100 000.
- **count** forwards and backwards in steps of 6, 7, 8 and 9, starting at different points within 100.
- **count** backwards beyond 0.
- **count** forwards and backwards in tenths and hundredths, starting at different points.
- **explain** and **identify** the pattern in a number sequence from 0 - 100 000.
- **extend** and **create** number sequences from 0 - 100 000.

- **count** forwards and backwards across zero and can **identify** the number word just before, number word just after and the missing number.
- **count** forwards and backwards using a wide range of numbers and using a variety of multiples/ steps.
- **count** forwards and backwards in tenths, hundredths and thousandths, starting at different points.
- **explain** and **identify** the pattern in a number sequence from 0 - 1 000 000.
- **extend** and **create** number sequences from 0 - 1 000 000.
- **count** using negative numbers in context to **solve** problems and **calculate** intervals across zero.

Explains the link between a digit, its place and its value for whole numbers to 1 000 000.

Reads, writes and orders sets of decimal fractions to three decimal places.

Explains the link between a digit, its place and its value for numbers to three decimal places.

Partitions a wide range of whole numbers and decimal fractions to three decimal places, for example, 3·6 = 3 ones and 6 tenths = 36 tenths.

Identifies familiar contexts in which negative numbers are used.

Orders numbers less than zero and locates them on a number line.

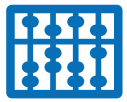
MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level Third Level

Numeracy and Mathematics

• **explain** how a number sequence is growing from 0 – 10 000. • **extend** and **create** number sequences from 0 – 10 000.	• **solve** number word problems involving negative numbers and **explain** how I solved it.		

Concrete, Pictorial, Abstract (CPA) 

SEAL/DNK 

Number Talks 

CLPL 

MNU 2-01a | MNU 2-03a | MNU 2-07a | MNU 2-10a | MNU 2-20a | MNU 2-22a

MNU 2-02a | MNU 2-04a | MNU 2-09a | MNU 2-11a | MNU 2-21a

MTH 2-05a | MNU 2-13a | MTH 2-16a | MTH 2-18a

MTH 2-12a | MNU 2-15a | MTH 2-17a | MTH 2-19a

First Level | Third Level

Numeracy and Mathematics

Lesson Guidance Notes

Second Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have extended the range of whole numbers I can work with and having explored how decimal fractions are constructed, can explain the link between a digit, its place and its value. ***(Place Value)***	MNU 2-02a
	Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others ***(Addition & Subtraction, Multiplication & Division)***	MNU 2-03a
	Having explored the need for rules for the order of operations in number calculations, I can apply them correctly when solving simple problems ***(Addition & Subtraction, Multiplication & Division)***	MNU 2-03c
	I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods. ***(Decimal Fractions)***	MNU 2-03b
	I can show my understanding of how the number line extends to include numbers less than zero and have investigated how these numbers occur and are used. ***(Negative Numbers)***	MNU 2-04a

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks (cont.)
Numerals			
I can: • **sequence** consecutive numerals and **order** non-consecutive numerals from smallest to largest and largest to smallest, within 10 000. • **recognise, identify** and **write** numerals to 10 000. • **position** numbers to 10 000 on the number line. • **identify** the numeral before, the numeral after, the numeral in between and the missing numeral in a sequence to 10 000. • **create, describe** and **extend** numeral sequences.	I can: • **sequence** consecutive numerals and **order** non-consecutive numerals smallest to largest and largest to smallest, within 100 000. • **compare** numerals to 100 000. • **recognise**, **identify** and **write** numerals to 100 000. • **position** numerals to 100 000 on the number line. • **create**, **describe** and **extend** numeral sequences. • **recognise**, **identify** and **write** decimal fractions with up to two decimal places.	I can: • **sequence** consecutive numerals and **order** non-consecutive numerals from smallest to largest and largest to smallest, within 1 000 000. • **compare** numerals to 1 000 000. • **recognise, identify** and **write** numerals to 1 000 000. • **position** numerals to 1 000 000 on the number line. • **create, describe** and **extend** numeral sequences. • **recognise, identify** and **write** decimal fractions with up to three decimal places.	Reads, writes and orders whole numbers to 1 000 000, starting from any number in the sequence. Explains the link between a digit, its place and its value for whole numbers to 1 000 000. Reads, writes and orders sets of decimal fractions to three decimal places. Explains the link between a digit, its place and its value for numbers to three decimal places.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level

Third Level

Numeracy and Mathematics

Second Level

- **recognise, identify** and **write** decimal fractions with up to one decimal place.
- **sequence** and **order** decimal fractions with up to one decimal place.
- **position** decimal fractions on a number line.
- **describe** and **extend** numeral sequences involving decimal fractions with one decimal place.
- **describe** the value of each digit in a decimal fraction up to tenths, **understanding** the importance of zero as a placeholder.
- **identify** the numeral before, the numeral after, the numeral in between and the missing numeral in a sequence to 10 000.
- **match** numerals to pictorial representations or concrete materials.

- **sequence** and **order** decimal fractions with up to two decimal places.
- **position** decimal fractions on a number line.
- **describe** and **extend** numeral sequences involving decimal fractions with two decimal places.
- **describe** the value of each digit in a decimal fraction up to hundredths, **understanding** the importance of zero as a placeholder.
- **identify** the numeral before, the numeral after, the numeral in between and the missing numeral in a sequence to 100 000.
- **match** numerals to pictorial representations or concrete materials.

- **sequence** and **order** decimal fractions with up to three decimal places.
- **position** decimal fractions on a number line.
- **describe** and **extend** numeral sequences involving decimal fractions with three decimal places.
- **identify** the value of each digit in a decimal fraction up to thousandths, **understanding** the importance of zero as a placeholder.
- **identify** the numeral before, the numeral after, the numeral in between and the missing numeral in a sequence to 1 000 000.
- **match** numerals to pictorial representations or concrete materials.

Explains the link between a digit, its place and its value for numbers to three decimal places.

Partitions a wide range of whole numbers and decimal fractions to three decimal places, for example, 3·6 = 3 ones and 6 tenths = 36 tenths.

Identifies familiar contexts in which negative numbers are used.

Orders numbers less than zero and locates them on a number line.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level Third Level

Numeracy and Mathematics

Lesson Guidance Notes

Second Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have extended the range of whole numbers I can work with and having explored how decimal fractions are constructed, can explain the link between a digit, its place and its value. ***(Place Value)***	**MNU 2-02a**
	Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others ***(Addition & Subtraction, Multiplication & Division)***	**MNU 2-03a**
	Having explored the need for rules for the order of operations in number calculations, I can apply them correctly when solving simple problems ***(Addition & Subtraction, Multiplication & Division)***	**MNU 2-03c**
	I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods. ***(Decimal Fractions)***	**MNU 2-03b**
	I can show my understanding of how the number line extends to include numbers less than zero and have investigated how these numbers occur and are used. ***(Negative Numbers)***	**MNU 2-04a**

At the start of Second Level	Through Second Level	Towards the end of Level	Benchmarks (cont.)
Number Structures			
I can: • **build** and **describe** numbers to 10 000 in a variety of ways: *- use concrete resources to represent different numbers* *- use pictorial representations to show different numbers* *- estimate numbers using different representations* *- make 5-digit numbers recording in numbers and words.* • **show** my understanding of how the number line extends to include numbers less than zero.	I can: • **build** and **describe** numbers to 10 000 then 100 000 in a variety of ways: *- use concrete resources to represent different numbers* *- use pictorial representations to show different numbers* *- estimate numbers using different representations* *- make 6-digit numbers recording in numbers and words*	I can: • **build** and **describe** numbers to 1 000 000 in a variety of ways: *- use concrete resources to represent different numbers* *- use pictorial representations to show different numbers* *- estimate numbers using different representations* *- make 7-digit numbers recording in numbers and words.* • **describe** the place value of each digit in a number.	Reads, writes and orders whole numbers to 1 000 000, starting from any number in the sequence. Explains the link between a digit, its place and its value for whole numbers to 1 000 000. Reads, writes and orders sets of decimal fractions to three decimal places. Explains the link between a digit, its place and its value for numbers to three decimal places.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level

Third Level

Numeracy and Mathematics

• **find** 1, 10 or 100 more and less than a given number (concrete). • **describe** the place value of each digit in a four digit number. • **describe** the place value of numbers with 1 decimal place. • **multiply** and **divide** a number by 10 and 100 and identify the value of the digits in the answer.	• **describe** the place value of each digit in a six-digit number. • **describe** the place value of numbers with 2 decimal places • **describe** and **represent** (concrete, pictorial, written) tenths and hundredths. • **multiply** and **divide** a number by 100 and 1000 and identify the value of the digits in the answer.	• **describe** the place value of numbers with 3 decimal places. • **describe** and **represent** (concrete, pictorial, written) tenths, hundredths and thousandths	*Explains the link between a digit, its place and its value for numbers to three decimal places.* *Partitions a wide range of whole numbers and decimal fractions to three decimal places, for example, 3·6 = 3 ones and 6 tenths = 36 tenths.* *Identifies familiar contexts in which negative numbers are used.*

Numeracy and Mathematics

Lesson Guidance Notes

Second Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have extended the range of whole numbers I can work with and having explored how decimal fractions are constructed, can explain the link between a digit, its place and its value. ***(Place Value)***	MNU 2-02a
	Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others ***(Addition & Subtraction, Multiplication & Division)***	MNU 2-03a
	Having explored the need for rules for the order of operations in number calculations, I can apply them correctly when solving simple problems ***(Addition & Subtraction, Multiplication & Division)***	MNU 2-03c
	I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods. ***(Decimal Fractions)***	MNU 2-03b
	I can show my understanding of how the number line extends to include numbers less than zero and have investigated how these numbers occur and are used. ***(Negative Numbers)***	MNU 2-04a

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
Addition and Subtraction			
I can: • **use my understanding** of number structures to **add** and **subtract** numbers up to 4 digits, using materials, algorithms and mental methods as appropriate: *- partition numbers in different ways* *- recognise and describe part whole relationships* *- add and subtract up to four-digit numbers with no regrouping* *- add and subtract with regrouping in the 100s* *- add and subtract with regrouping in the 100s, 10s and 1s.*	I can: • **use my understanding** of number structures to **add** and **subtract** increasingly large numbers with more than 4 digits, using written and mental methods as appropriate. • **add** and **subtract** four digit numbers and beyond with regrouping in the 1000s, 100s, 10s and 1s. • **find** the missing value in addition and subtraction calculations.	I can: • **add** and **subtract** 10, 100, 1000 mentally to and from whole numbers. • **add** and **subtract** 10, 100 and 1000 mentally to and from decimal fractions with at least 2 decimal places. • **add** and **subtract** multiples of 10, 100 and 1000 to and from whole numbers and decimal fractions with at least 2 decimal places.	Adds and subtracts multiples of 10, 100 and 1000 to and from whole numbers and decimal fractions to two decimal places. Adds and subtracts whole numbers and decimal fractions to two decimal places, within the number range 0 to 1 000 000.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level

Third Level

Numeracy and Mathematics

• **estimate, round** and **use** inverse operations to check solutions. • **solve** addition and subtraction problems in contexts, with one and more than one step. • **choose** the most efficient method for the problem given and **justify** my choice. • **use** a range of strategies to **add** and **subtract** decimals to 1 decimal place.	• **solve** addition and subtraction multi-step problems in contexts. • **choose** the most efficient method for the problem given and **justify** my choice. • **use** rounding to **check** answers to calculations. • **estimate, round** and **use** inverse operations to check solutions. • **use** a range of strategies to **add** and **subtract** whole numbers and decimals to 2 decimal places.	• **carry out calculations** involving addition and subtraction. • **carry out,** in the correct order, calculations and operations. • **solve** addition and subtraction multi-step problems in contexts. • **choose** the most efficient method for the problem given and **justify** my choice. • **estimate, round** and **use** inverse operations to check solutions. • **evaluate** a task, **select** the most effective strategy and **solve** a wide range of addition and subtraction tasks. • **explore** adding and subtracting integers within context, e.g., thermometers.	

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First Level Third Level

Numeracy and Mathematics

Lesson Guidance Notes

Second Level

Organiser	Numbers and Number Processes

Experience and Outcome		
	I have extended the range of whole numbers I can work with and having explored how decimal fractions are constructed, can explain the link between a digit, its place and its value. ***(Place Value)***	MNU 2-02a
	Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others ***(Addition & Subtraction, Multiplication & Division)***	MNU 2-03a
	Having explored the need for rules for the order of operations in number calculations, I can apply them correctly when solving simple problems ***(Addition & Subtraction, Multiplication & Division)***	MNU 2-03c
	I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods. ***(Decimal Fractions)***	MNU 2-03b
	I can show my understanding of how the number line extends to include numbers less than zero and have investigated how these numbers occur and are used. ***(Negative Numbers)***	MNU 2-04a

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
Multiplication and Division			
I can: • **develop** mental and semi-formal written strategies for multiplication and division. • **make** the link between sharing, arrays and division. • confidently **sequence** in multiples of 2s, 4s, 8s, 3s, 5s, 6s, 9s and 10s then 7s and use this to recall related multiplication and division facts.	I can: • **use** both mental strategies and algorithms. • **multiply** and **divide** numbers mentally drawing on known facts. • **multiply** 3 and 4 digit numbers by a 1 or 2 digit number. • **divide** 3 and 4 digit numbers by a 1 digit number. • **interpret** remainders appropriately.	I can: • **multiply** and **divide** whole numbers and decimal fractions to 2 decimal places by a single digit, expressing answers as decimal fractions if required. • **multiply** multi digit numbers up to 4 digits by a two digit whole number. • **divide** numbers up to 4 digits by 1 digit.	Uses multiplication and division facts to the 10th multiplication table. Multiplies and divides whole numbers by multiples of 10, 100 and 1000. Multiplies and divides decimal fractions to two decimal places by 10, 100 and 1000.

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First Level
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- use place value, known and derived facts to **multiply** and **divide** mentally (If I know 2 x 3 = 6 I can work out that 600 ÷ 3 = 200).
- **multiply** and **divide** by 10 and 100.
- **multiply** and **divide** 2-digit numbers by a 1-digit number.
- **multiply** and **divide** 3-digit numbers by 1-digit number.
- **multiply** 2-digit numbers by a 2-digit number.
- **use** the commutative law for multiplication and division (3 x 5 = 5 x 3).
- **use** the distributive law: 32 x 3 = (30 x 3) + (2 x 3) = 90 + 6 = 96 and use this to find 'friendly' numbers.
- **use** associative law to multiply three numbers 5 x (2 x 3) = (5 x 2) x 3.

- **use** knowledge of inverse operations.
- **use** the distributive property strategy to **divide** 'friendly' numbers.
- **multiply** and **divide** whole numbers by 10, 100 and 1000.
- **multiply** and **divide** decimal fractions by 10, 100 and 1000.
- **solve** problems involving multiplying and adding using the distributive law.
- **choose** the most efficient method for the problem given and **justify** my choice.
- begin to **apply** the correct order of operations in number calculations when solving multi-step problems.

- **multiply** and **divide** whole numbers and decimal fractions to 2 decimal places by multiples of 10.
- **provide** the answer as a decimal fraction when dividing a whole number by a single digit.
- **apply** knowledge of inverse operations.
- **carry out** calculations involving the four operations.
- **choose** the most efficient method for the problem given and **justify** my choice.
- **apply** the correct order of operations in number calculations when solving multi-step problems.

Uses multiplication and division facts to the 10th multiplication table.

Multiplies and divides whole numbers by multiples of 10, 100 and 1000.

Multiplies and divides decimal fractions to two decimal places by 10, 100 and 1000.

Multiplies whole numbers by two digit numbers.

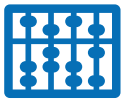
Multiplies decimal fractions to two decimal places by a single digit.

Divides whole numbers and decimal fractions to two decimal places, by a single digit, including answers expressed as decimal fractions, for example, 43 ÷ 5 = 8·6.

Applies the correct order of operations in number calculations when solving multi-step problems.

Numeracy and Mathematics

• **divide** a 3-digit number using short division by regrouping in tens and ones. • **divide** a 3-digit number using short division with regrouping in tens, ones and hundreds. • **solve** two-step multiplication or division word problems in context. • **choose** the most efficient method for the problem given and **justify** my choice. • **multiply** and **divide** decimal fractions by 10. • **multiply** decimal fractions (tenths) by a single digit.			

Concrete, Pictorial, Abstract (CPA) 

SEAL/DNK 

Number Talks 

CLPL 

MNU 2-01a | MNU 2-03a | MNU 2-07a | MNU 2-10a | MNU 2-20a | MNU 2-22a

MNU 2-02a | MNU 2-04a | MNU 2-09a | MNU 2-11a | MNU 2-21a

MTH 2-05a | MNU 2-13a | MTH 2-16a | MTH 2-18a

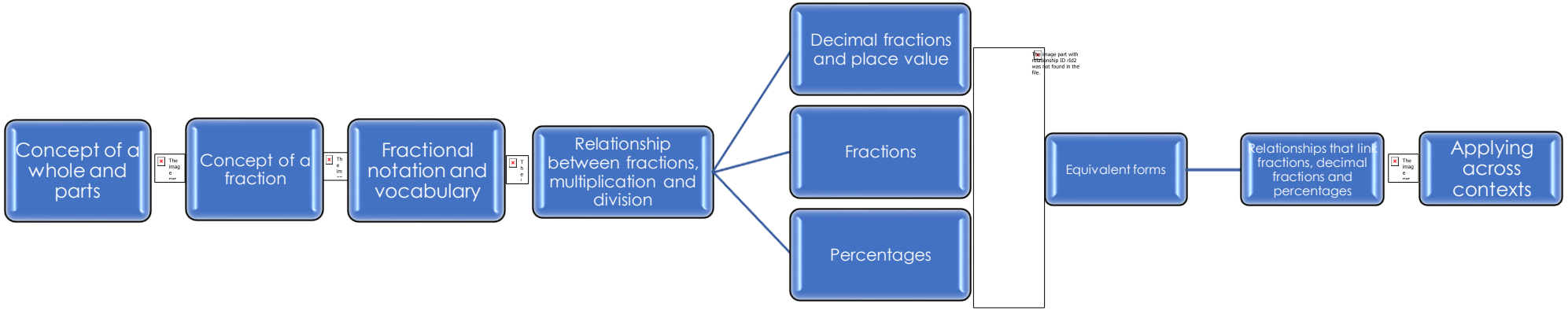
MTH 2-12a | MNU 2-15a | MTH 2-17a | MTH 2-19a

First Level | Third Level

Numeracy and Mathematics

Organiser	Fractions, Decimal Fractions and Percentages

Experience and Outcome		
	I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems.	**MNU 2-07a**
	I can show the equivalent forms of simple fractions, decimal fractions and percentages and can choose my preferred form when solving a problem, explaining my choice of method.	**MNU 2-07b**
	I have investigated how a set of equivalent fractions can be created, understanding the meaning of simplest form, and can apply my knowledge to compare and order the most commonly used fractions.	**MNU 2-07c**



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **show** equivalent fractions pictorially, through practical enquiry and can **describe** orally. • **identify** equivalent fractions.	I can: • **compare** and **order** fractions, whose denominators are multiples of the same number.	I can: • **compare** and **order** fractions, including mixed numbers and improper fractions. • **calculate** equivalence to simplify fractions.	Uses knowledge of equivalent forms of common fractions, decimal fractions and percentages, for example, $\frac{3}{4}$ = 0.75 = 75%, to solve problems.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a
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Numeracy and Mathematics

- **calculate** equivalent fractions.
- **compare** and **order** simple fractions.
- **calculate** simple fractions of numbers and quantities. e.g., $\frac{1}{8}$ of 64.
- **show awareness** that a number can be made from whole numbers and fraction parts and this is known as a mixed number e.g. I have 4 $\frac{1}{2}$ bars of chocolate.
- **show awareness** that a fraction can have a numerator larger than the denominator and this is known as an improper fraction. e.g. $\frac{8}{4}$ (eight quarters)
- **solve** equal sharing problems with answers that are mixed numbers and fractions less than 1.
- **identify** where simple decimal fractions lie on a number line.

- **simplify** fractions.
- **calculate** fractions of numbers and quantities e.g. $\frac{2}{3}$ of 12, $\frac{7}{9}$ of 72.
- **explain** that a mixed number is one with a whole number and a fraction part e.g. 4 $\frac{3}{4}$.
- **explain** that an improper fraction is a fraction greater than one where the numerator is greater than the denominator. e.g., $\frac{8}{3}$.
- **compare** and **order** numbers with the same number of decimal places (up to 2 decimal places).
- **add** and **subtract** decimal fractions with 2 decimal places.
- **multiply** and **divide** decimal fractions with 2 decimal places.
- **understand** and use the term percentage and use mental and written methods to **find** simple percentages of quantities e.g., 1%, 10%, 20%, 50%, and 100%.
- **link** fractions, decimal fractions and percentages using a number line.

- **multiply** a whole number by a fraction.
- **multiply** fractions and mixed numbers by a whole number.
- **compare** and **order** numbers (up to 3 decimal places).
- **add** and **subtract** decimal fractions with 3 decimal places.
- **multiply** and **divide** decimal fractions with 3 decimal places.
- **use** mental and written methods to **find** percentages of quantities e.g., 57% = 50% + 5% + 1% + 1%.
- **solve** real life and relevant problems using simple fractions, decimal fractions and percentages.

Calculates simple percentages of a quantity, and uses this knowledge to solve problems in everyday contexts, for example, calculates the sale price of an item with a discount of 15%.

Calculates simple fractions of a quantity and uses this knowledge to solve problems, for example, find $\frac{3}{5}$ of 60.

Creates equivalent fractions and uses this knowledge to put a set of most commonly used fractions in order.

Expresses fractions in their simplest form.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

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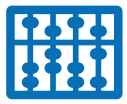
First Level Third Level

Numeracy and Mathematics

• **compare** numbers with the same number of decimal places (up to 1 decimal places). • **add** and **subtract** decimal fractions with 1 decimal place. • **multiply** and **divide** decimal fractions with 1 decimal place • **link** fractions and decimal fractions using a number line. • **convert** simple fractions into decimal fractions.	• **convert** common fractions to decimal fractions and to percentages.		

Concrete, Pictorial, Abstract (CPA) 

SEAL/DNK 

Number Talks 

CLPL 

MNU 2-01a | MNU 2-03a | MNU 2-07a | MNU 2-10a | MNU 2-20a | MNU 2-22a

MNU 2-02a | MNU 2-04a | MNU 2-09a | MNU 2-11a | MNU 2-21a

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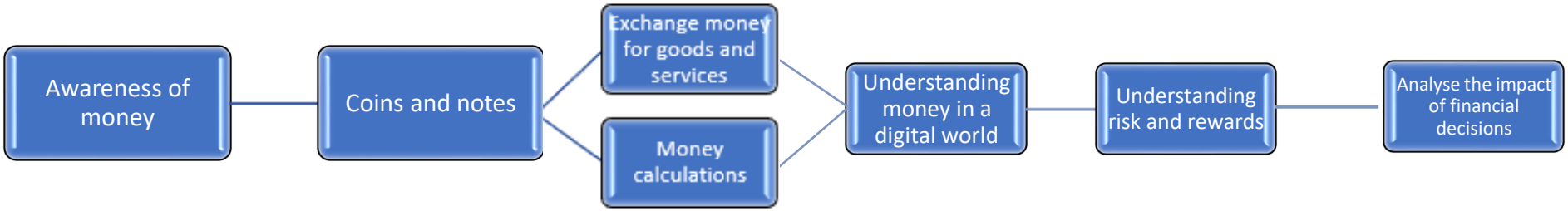
MTH 2-12a | MNU 2-15a | MTH 2-17a | MTH 2-19a

First Level | Third Level

Numeracy and Mathematics

Organiser	Money

Experience and Outcome		
	I can manage money, compare costs from different retailers, and determine what I can afford to buy.	MNU 2-09a
	I understand the costs, benefits and risks of using bank cards to purchase goods or obtain cash and realise that budgeting is important.	MNU 2-09b
	I can use the terms profit and loss in buying and selling activities and can make simple calculations for this.	MNU 2-09c



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **select** appropriate strategies to **solve** simple money problems. • **investigate**, **explore** and **begin** to use effective mental strategies to carry out straightforward calculations involving money and money problems.	I can: • **select** efficient mental strategies to **solve** money problems. • **compare** the cost from different retailers for products and services. • **interpret** sales information from different retailers.	I can: • **understand** and can **use** appropriate calculations to work out profit and loss in buying and selling within real life contexts e.g. when working with a budget for an enterprise activity/school outing.	Carries out money calculations involving the four operations. Compares costs and determines affordability within a given budget. Demonstrates understanding of the benefits and risks of using bank cards and digital technologies.

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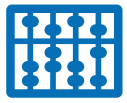
MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a
First Level
Third Level

Numeracy and Mathematics

Second Level

• **calculate**, using mental strategies, the total spend in a shopping situation involving £s and p, up to at least £100. • **calculate** the change involving £s and p up to at least £100.	• **compare** cost to **determine** what is affordable within a given budget. • **discuss** the costs, benefits and risks of bank cards.	• **compare** the price of goods against my given budget and **determine** if I can afford to buy them. • **choose** the best method of written and mental calculation strategies to **add**, **subtract**, **multiply** and **divide** with money and use technology when appropriate. • **understand** the benefits and risks of using bank cards and digital technologies.	**Calculates profit and loss accurately, for example, when working with a budget for an enterprise activity.**

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

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MNU 2-02a | MNU 2-04a | MNU 2-09a | MNU 2-11a | MNU 2-21a

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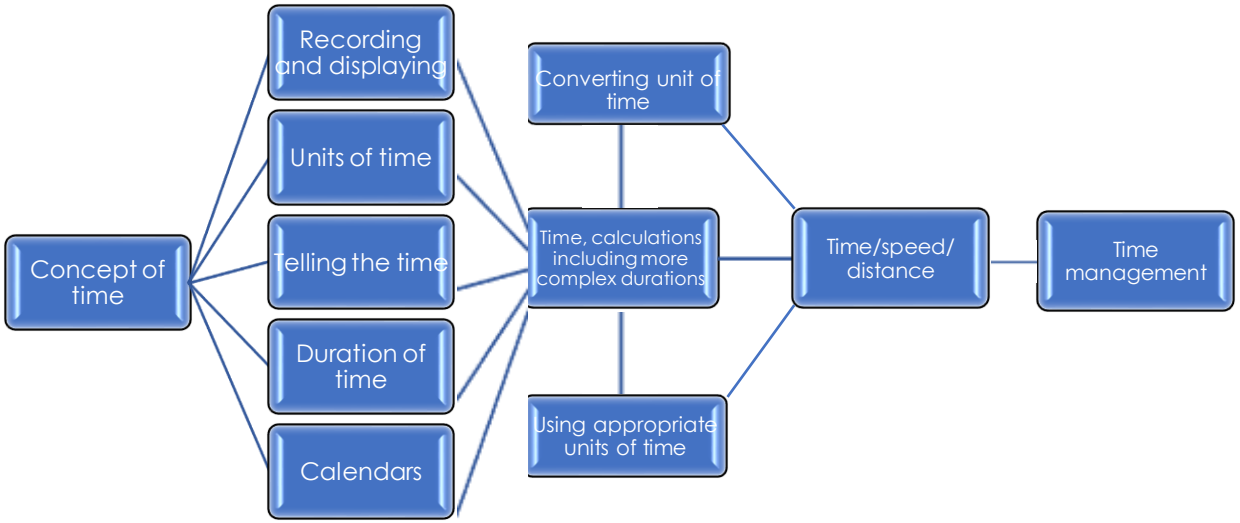
First Level

Third Level

Numeracy and Mathematics

Organiser	Time

Experience and Outcome		
	I can use and interpret electronic and paper-based timetables and schedules to plan events and activities, and make time calculations as part of my planning.	MNU 2-10a
	I can carry out practical tasks and investigations involving timed events and can explain which unit of time would be most appropriate to use.	MNU 2-10b
	Using simple time periods, I can give a good estimate of how long a journey should take, based on my knowledge of the link between time, speed and distance.	MNU 2-10c



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **convert** a number of seconds into minutes and seconds.	I can: • **investigate** a range of timetables set out in both 12 and 24-hour clock times.	I can: • **read** and **convert** between 12-hour and 24-hour notation.	Reads and records time in both 12 hour and 24 hour notation and converts between the two.

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First Level Third Level

Numeracy and Mathematics

Second Level

- **calculate** the duration of an event if I know the start time and when it ends (within the hour).
- **use** a calendar to **calculate** the number of days between events within the month.
- **calculate** time intervals from timetables in 12-hour notation, both mentally and using a written format.
- **use** timing devices to **time** practical activities. e.g., sand timers
- **use** 24-hour clock to show and read times.
- **convert** between 12-hour and 24-hour time.
- **solve** real-life time problems by using and applying skills previously learned.

- **recall** the number of days in each month.
- **convert** a number of minutes into hours and minutes.
- **calculate** the duration of an event if I know the start time and when it ends (bridging across the hour).
- **use** a calendar to **calculate** the number of days between events over a few weeks bridging over the months.
- **select** and **utilise** the most appropriate unit of time for a given task and **justify** my choice.
- **choose** the most appropriate device to record time in a practical situation using relevant units e.g. 100ths of a second.
- **time** practical activities.
- **solve** real-life time problems by **using** and **applying** skills previously learned.

- **record** 12-hour times using am and pm.
- **apply** my knowledge of 12 and 24-hour notation to plan a journey using timetables.
- **convert** between minutes, seconds, hours and days.
- **use** and **interpret** a range of electronic and paper calendars to plan activities/events in a real-life context.
- **estimate** the duration of a journey based on knowledge of the link between speed/distance/time e.g. a woman runs at 5 metres per second, how far would she run in 10 seconds?
- **calculate** duration of activities/events including bridging several hours and parts of hours, using both 12-hour and 24-hour notation.
- **solve** real-life time problems by using and applying skills previously learned.

Knows the relationships between commonly used units of time and carries out simple conversion calculations, for example, changes 1 hours into minutes.

Uses and interprets a range of electronic and paper-based timetables and calendars to plan events or activities and solve real life problems.

Calculates durations of activities and events including situations bridging across several hours and parts of hours using both 12 hour clock and 24 hour notation.

Estimates the duration of a journey based on knowledge of the link between speed, distance and time.

Chooses the most appropriate timing device in practical situations and records using relevant units, including hundredths of a second.

Selects the most appropriate unit of time for a given task and justifies choice.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

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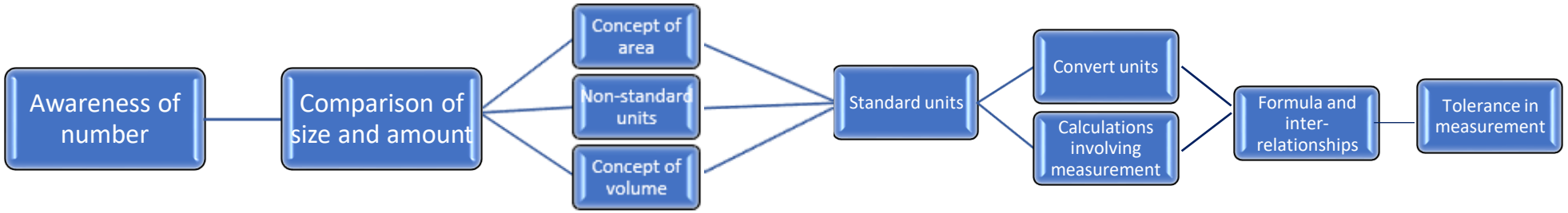
MNU 2-02a | MNU 2-04a | MNU 2-09a | MNU 2-11a | MNU 2-21a | MTH 2-12a | MNU 2-15a | MTH 2-17a | MTH 2-19a

First Level | Third Level

Numeracy and Mathematics

Organiser	Measurement	
Experience and Outcome	*I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure.*	MNU 2 -11a
	I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.	MNU 2 -11b
	I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object.	MNU 2 -11c



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
Length and Height			
I can: • **estimate** and **measure**, using an appropriate device, the length, width and height of an object using m, cm and mm. • **read** scales accurately using m, cm and mm.	I can: • **use** the comparative size of objects to make reasonable estimations of length and height. • **convert** m to cm and cm to m.	I can: • **show awareness** of imperial units of length. • **convert** between common units of measure using decimal notation e.g. 550cm = 5.5m and **apply** this knowledge when solving problems	Uses the comparative size of familiar objects to make reasonable estimations of length, mass, area and capacity.

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First Level

Third Level

	• **convert** cm to mm and mm to cm. • **convert** m to km and km to m.	• **estimate** and **measure** accurately distances in kilometres. • **estimate** to the nearest appropriate unit, then measure using an appropriate device, **accurately using** mm, cm and m. • **demonstrate** an understanding of the conservation of measurement	Estimates to the nearest appropriate unit, then measures accurately: length, height and distance in millimetres (mm), centimetres (cm), metres (m) and kilometres (km); mass in grams (g) and kilograms (kg); and capacity in millilitres (ml) and litres (l). Calculates the area of squares, rectangles and right-angled triangles in square millimetres (mm^2), square centimetres (cm^2) and square metres (m^2). Calculates the volume of cubes and cuboids in cubic centimetres (cm^3) and cubic metres (m^3). Converts between common units of measurement using decimal notation, for example, 550 cm = 5·5 m; 3·009 kg = 3009 g. Chooses the most appropriate measuring device for a given task and carries out the required calculation, recording results in the correct unit.

Numeracy and Mathematics

Second Level

Organiser	Measurement

Experience and Outcome		
	I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure.	MNU 2 -11a
	I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.	MNU 2 -11b
	I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object.	MNU 2 -11c

At the start of Second Level ←	Through Second Level	→ Towards the end of Second Level	Benchmarks
Perimeter			
I can: • **understand** that perimeter is the distance around the outside edge. • **calculate accurately** the perimeter of regular shapes using mm/cm or m.	I can: • **calculate** the perimeter of simple straight sided 2D shapes using mm, cm or m and explain my choice of method.	I can: • **draw** squares and rectangles accurately with a given perimeter.	Calculates the perimeter of simple straight sided 2D shapes in millimetres (mm), centimetres (cm) and metres (m). Draws squares and rectangles accurately with a given perimeter or area. Calculates the volume of cubes and cuboids in cubic centimetres (cm^3) and cubic metres (m^3).

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First Level Third Level

Numeracy and Mathematics

Organiser	Measurement

Experience and Outcome		
	I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure.	MNU 2 -11a
	I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.	MNU 2 -11b
	I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object.	MNU 2 -11c

At the start of Second Level ⟷	Through Second Level	Towards the end of Second Level	Benchmarks
Area			
I can: • **calculate** the area of regular shapes using cm^2. • **calculate** the area of regular shapes using $\frac{1}{2}$ cm^2.	I can: • **use** the comparative size of objects to **make** reasonable estimations of area. • **calculate** the area of squares and rectangles. • **calculate** the area of squares and rectangles using the formula A = l x b in mm^2, cm^2 and m^2.	I can: • **calculate** the area of squares, rectangles and right-angled triangles mm^2, cm^2 and m^2 and **explain** the choice of method used. • **draw** squares and rectangles accurately with a given area. • **demonstrate** an understanding of the conservation of area. • **calculate** the area of right-angled triangles by using the formula A = l x b.	Calculates the area of squares, rectangles and right-angled triangles in square millimetres (mm^2), square centimetres (cm^2) and square metres (m^2). Calculates the volume of cubes and cuboids in cubic centimetres (cm^3) and cubic metres (m^3). Converts between common units of measurement using decimal notation, for example, 550 cm = 5·5 m; 3·009 kg = 3009 g.

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First Level Third Level

Numeracy and Mathematics

Second Level

Organiser	Measurement

Experience and Outcome		
	I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure.	MNU 2 -11a
	I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.	MNU 2 -11b
	I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object.	MNU 2 -11c

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
Mass			
I can: • **explain** that, for example, kg = 250g. • **estimate** and **measure**, using an appropriate device, the mass of objects using a variety of gram and kilograms weights. • **read** scales accurately using kg and g.	I can: • **use** the comparative size of objects to **make** reasonable estimations of mass. • **choose** the appropriate unit of measure when estimating the mass of objects. • **convert** kg to g and g to kg. • **order** weights written in different units. • **read** scales accurately.	I can: • **show awareness** of imperial units of mass. • **estimate** to the nearest appropriate unit, then **measure** using an appropriate device, **accurately using** mass in grams and kilograms. • **convert** between common units of measure using decimal notation e.g. 3.009kg = 3009g and **apply** this knowledge when solving problems. • **demonstrate** an understanding of the conservation of mass.	Estimates to the nearest appropriate unit, then measures accurately: length, height and distance in millimetres (mm), centimetres (cm), metres (m) and kilometres (km); mass in grams (g) and kilograms (kg); and capacity in millilitres (ml) and litres (l). Converts between common units of measurement using decimal notation, for example, 550 cm = 5·5 m; 3·009 kg = 3009 g.

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First Level | Third Level

Numeracy and Mathematics

Second Level

Organiser	Measurement

Experience and Outcome		
	I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure.	MNU 2 -11a
	I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.	MNU 2 -11b
	I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object.	MNU 2 -11c

Volume / Capacity

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **explain** that, for example, 250ml = litre. • **read** scales accurately using l and ml.	I can: • **use** the comparative size of objects to **make** reasonable estimations of volume. • **convert** l to ml and ml to l. • **estimate and measure**, using an appropriate device, using cm cubed (cm^3). • **convert** cm^3 to ml. • **explain** that capacity is the maximum amount of liquid a container can hold (maximum volume).	I can: • **estimate** to the nearest appropriate unit, then **measure** using an appropriate device, **accurately using** millilitres and litres. • **convert** cm^3 to ml to litres. • **calculate** the volume of cubes and cuboids in cm^3 and m^3 and can **explain** the choice of method used e.g. V = lbh. • **show** an awareness of imperial units of volume. • **demonstrate** an understanding of the conservation of volume.	Calculates the area of squares, rectangles and right-angled triangles in square millimetres (mm^2), square centimetres (cm^2) and square metres (m^2). Calculates the volume of cubes and cuboids in cubic centimetres (cm3) and cubic metres (m^3). Estimates to the nearest appropriate unit, then measures accurately: length, height and distance in millimetres (mm), centimetres (cm), metres (m) and kilometres (km); mass in grams (g) and kilograms (kg); and capacity in millilitres (ml) and litres (l).

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

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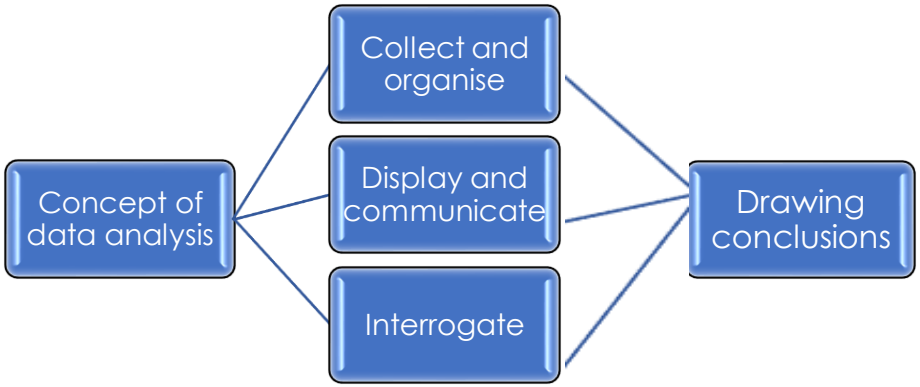
First Level Third Level

Numeracy and Mathematics

Organiser	Data Analysis

Experience and Outcome		
	Having discussed the variety of ways and range of media used to present data, I can interpret and draw conclusions from the information displayed, recognising that the presentation may be misleading.	MNU 2 -20a
	I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the results in an appropriate way.	MNU 2 -20b
	I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology.	MNU 2 -21c



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **suggest** information to collect to answer particular questions. • **suggest** suitable data collection methods.	I can: • **clarify** questions to decide what data to collect. • **design** suitable data collection methods.	I can: • **reflect** on the process of collection and say if any misleading or inaccurate data has been collected.	Devises ways of collecting data in the most suitable way for the given task.

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MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level

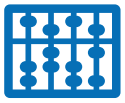
Third Level

Numeracy and Mathematics

Second Level

• **represent** data, using suitable scales, from an extended range of tables, charts, diagrams, plots and graphs. • **check** the data has been recorded accurately. • **read** information from a range of tables, charts, diagrams, plots and graphs (including 1 to many correspondence).	• **represent** data, using suitable scales, from an extended range of tables, charts, diagrams, plots and graphs. • **explain** what the data shows.	• **redesign** my data collection method to avoid these problems next time round. • **compare** different displays of the same data.	Collects, organises and displays data accurately in a variety of ways including through the use of digital technologies, for example, creating surveys, tables, bar graphs, line graphs, frequency tables, simple pie charts and spreadsheets. Analyses, interprets and draws conclusions from a variety of data. Draws conclusions about the reliability of data taking into account, for example, the author, the audience, the scale and sample size used. Displays data appropriately making effective use of technology and chooses a suitable scale when creating graphs.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

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First Level

Third Level

Numeracy and Mathematics

Lesson Guidance Notes

Second Level

Organiser	Ideas of Chance and Uncertainty	
Experience and Outcome	*I can conduct simple experiments involving chance and communicate my predictions and findings using the vocabulary of probability.*	**MNU 2-22a**

Simple choice and decision making → Predicting and describing likelihood → Choice and decision making based on likelihood → Probability → Applying knowledge of probability

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **use** vocabulary such as equal chance, fifty-fifty to **describe** and **discuss** outcomes, and I can **justify** my choice. • **understand** the concept of equally likely events.	I can: • **use** vocabulary such as one in two, two in three to **describe** and **discuss** outcomes, and I can **justify** my choice. • **arrange** events in order to **determine** which is most or least likely to occur. • **estimate** probability by conducting experiments e.g. coin tosses, dice throws.	I can: • **use** vocabulary such as percentage chance and $\frac{1}{6}$ (ratio) to **describe** and **discuss** outcomes and **justify** my choice. • **show** that I am aware of how implications of chance are used in daily routines, decision making and the media. • **understand** that the more you carry out an experiment, the more confident you become in predicting the result.	Uses the language of probability accurately to describe the likelihood of simple events occurring, for example equal chance; fifty-fifty; one in two, two in three; percentage chance; and . Plans and carries out simple experiments involving chance with repeated trials, for example, 'what is the probability of throwing a six if you throw a die fifty times?'. Uses data to predict the outcome of a simple experiment.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

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First Level

Third Level

Lesson Guidance Notes

Second Level

Numeracy and Mathematics

Organiser	Multiples, Primes and Factors
Experience and Outcome	*Having explored the patterns and relationships in multiplication and division, I can investigate and identify the multiples and factors of numbers.* **MTH 2-05a**

Multiples and factors → Common multiples and factors → Prime numbers

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **describe** what multiples are and can **generate** a sequence using skip counting, e.g., counting in 3s from any number. • **find** factors using multiplication tables up to 100 and concrete materials. • **explain** what a factor is and the relationship between factors and multiplication/division.	I can: • **identify** multiples of whole numbers using repeated addition, subtractions, part-whole strategies. • **identify** factors of a number.	I can: • **apply** knowledge of multiples and factors to problems in real life contexts, e.g., number, money and measure.	Identifies multiples and factors of whole numbers and applies knowledge and understanding of these when solving relevant problems in number, money and measurement.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

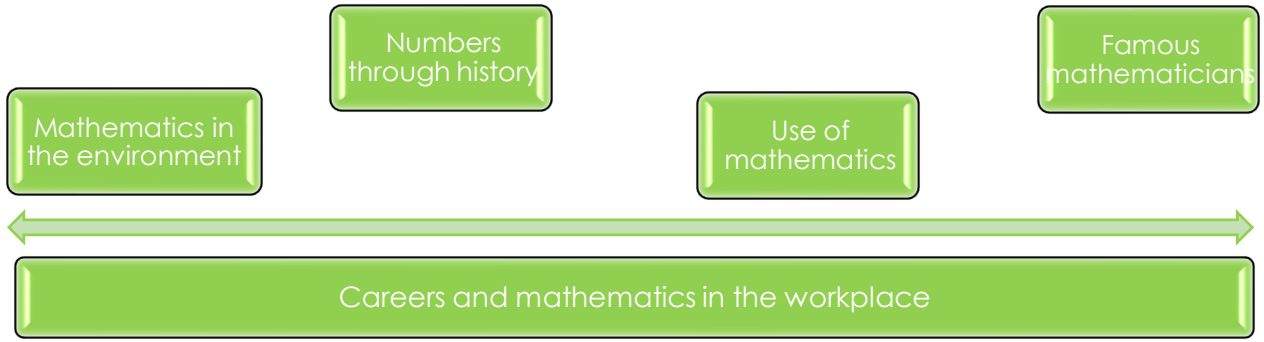
Third Level

Numeracy and Mathematics

Lesson Guidance Notes

Second Level

Organiser	Mathematics – its impact on the world, past, present and future	
Experience and Outcome	*I have worked with others to explore, and present our findings on, how mathematics impacts on the world and the important part it has played in advances and inventions*	**MTH 2-12a**



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • work with others to **research** how mathematics has played a part in inventions, for example the wheel, map of the world.	I can: • work with others to **research** how mathematics has played a part in advances in society, for example measuring time, code breaking.	I can: • **present** my findings on the part mathematics has played in advances and inventions, using appropriate technology.	Researches and presents examples of the impact mathematics has in the world of life and work. Contributes to discussions and activities on the role of mathematics in the creation of important inventions, now and in the past.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

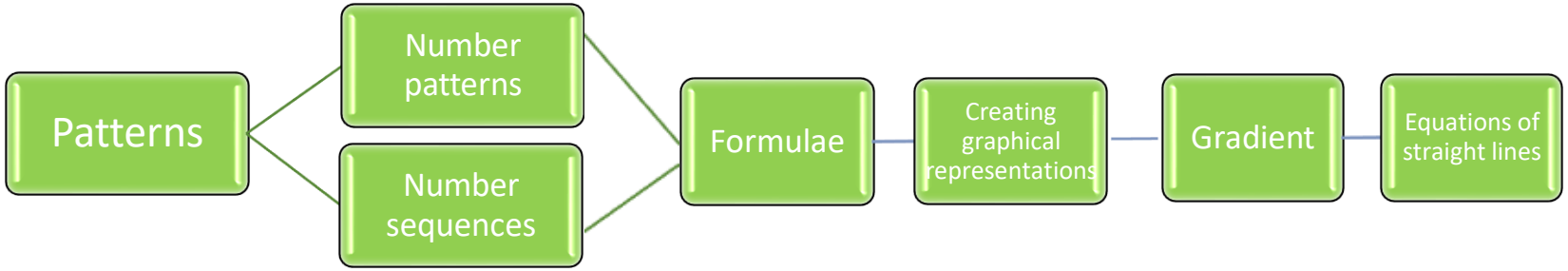
MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level Third Level

Numeracy and Mathematics

Organiser	Patterns and Relationships

Experience and Outcome	*Having explored more complex number sequences, including well-known named number patterns, I can explain the rule used to generate the sequence, and apply it to extend the pattern.*	MTH 2-13a



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **work** with and use well known named number patterns, e.g., Fibonacci. • **extend, create** and **explain** the rules for repeating patterns and simple number sequences.	I can: • **investigate** different ways of seeing a pattern grow pictorially. • **explain** and **use** a rule from a more complex sequence and extend that sequence including square numbers and Fibonacci sequence. • **apply** my knowledge of multiples, factors and square numbers to **generate** number patterns for others to continue.	I can: • **investigate** different ways of seeing more complex patterns grow pictorially. • **explain** and **use** a rule from a more complex sequence and **extend** that sequence including triangular numbers. • **apply** my knowledge of multiples, factors, square numbers and triangular numbers to **generate** number patterns for others to continue.	Explains and uses a rule to extend well known number sequences including square numbers, triangular numbers and Fibonacci sequence. Applies knowledge of multiples, square numbers and triangular numbers to generate number patterns.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a

MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

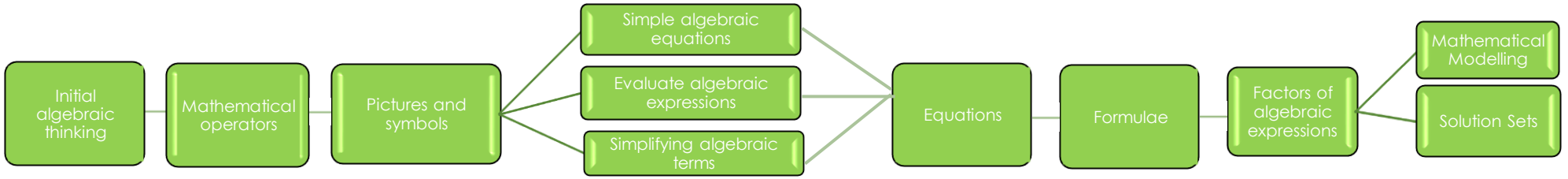
First Level

Third Level

Numeracy and Mathematics

Organiser	Expressions and Equations

Experience and Outcome	*I can apply my knowledge of number facts to solve problems where an unknown value is represented by a symbol or letter.*	MTH 2-15a



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **calculate** the missing numbers in more complex statements where symbols are used for unknown numbers or operators. • **use** my understanding of equality to **check** my solutions to missing number calculations.	I can: • **use** a given formula in words to **calculate** a value using the given information in the problem e.g. Number of people = number of cars x 4 How many people can go on the trip if they take 6 cars? • **create** a formula in words from a problem context: Tom earns £7 an hour e.g. Tom's wages = 7 x number of hours worked. • **describe** what a variable is.	I can: • **add, subtract, multiply** or **divide** by the same amount on both sides of a number sentence or equation. • **solve** simple equations with variables on one side of the equal sign involving very simple single operations, e.g., x - 4 = 7 or 2n = 8.	Solves simple algebraic equations with one variable, for example, a - 30 = 40 and 4b = 20.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a

MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level

Third Level

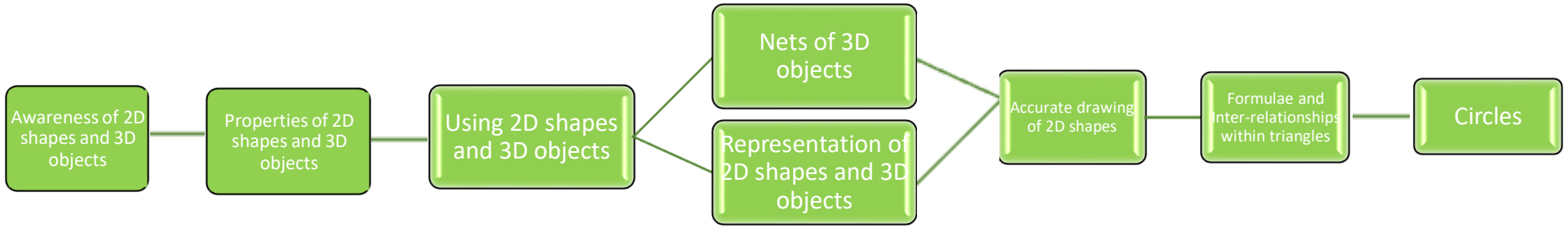
Numeracy and Mathematics

Lesson Guidance Notes

Second Level

Organiser	Properties of 2D Shapes and 3D Objects

Experience and Outcome		
	Having explored a range of 3D objects and 2D shapes, I can use mathematical language to describe their properties, and through investigation can discuss where and why particular shapes are used in the environment.	MTH 2-16a
	Through practical activities, I can show my understanding of the relationship between 3D objects and their nets.	MTH 2-16b
	I can draw 2D shapes and make representations of 3D objects using an appropriate range of methods and efficient use of resources.	MTH 2-16c



At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **identify** a range of regular and irregular 2D shapes that I can work with and name e.g., parallelogram, trapezium, rhombus, isosceles triangles, and equilateral triangles. • **use** nets for common 3D objects e.g., cube, cuboid.	I can: • **show** an understanding of 2D shapes through links to symmetry, angles, and parallel lines. • **investigate** the relationship between 2D shapes and 3D objects by building up 2D shapes into 3D.	I can: • **extend** my knowledge of regular and irregular 2D shapes through links to symmetry, angles, parallel lines etc. • **explain** that the radius is half of the diameter.	Describes 3D objects and 2D shapes using specific vocabulary including regular, irregular, diagonal, radius, diameter and circumference. Applies this knowledge to demonstrate understanding of the relationship between 3D objects and their nets.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a
MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a
MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a
MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

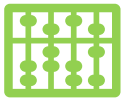
First Level
Third Level

Numeracy and Mathematics

Second Level

• **explore** 3D objects within the environment and their importance in building and construction	• **explore** the relationship between the radius and diameter of a circle and the importance of the centre of the circle in practical terms e.g., marking out a circular flower bed with a stick and string. • **investigate** the relationship between 2D shapes and 3D objects by building up 2D shapes into 3D. • **create** nets for basic 3D objects. • **extend** the range of 3D objects that I can work with and name e.g., hexagonal prism, dodecahedron. • **extend** my knowledge of the properties of 3D objects. • **investigate** 3D structures and their composite shapes and understand why some shapes are more suitable for construction.	• **describe** 2D shapes and 3D objects using specific vocabulary face, edge, vertex, angle, diagonal, radius, diameter and circumference and **apply** this knowledge to demonstrate understanding of the relationship between 3D objects and their nets. • **identify** and **describe** 2D shapes and 3D objects/structures within the environment and **explain** why their properties match their function e.g., the importance of triangles in a bridge structure. • **use** digital technologies and mathematical instruments to **draw** 2D shapes. • further **extend** my knowledge of 3D objects and their relationship to nets. • **describe** 2D shapes and 3D objects using specific vocabulary face, edge, vertex, angle, diagonal, radius, diameter and circumference and **apply** this knowledge to demonstrate	Identifies and describes 3D objects and 2D shapes within the environment and explains why their properties match their function. Knows that the radius is half of the diameter. Uses digital technologies and mathematical instruments to draw 2D shapes and make representations of 3D objects, understanding that not all parts of the 3D object can be seen.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

MNU 2-01a | MNU 2-03a | MNU 2-07a | MNU 2-10a | MNU 2-20a | MNU 2-22a

MNU 2-02a | MNU 2-04a | MNU 2-09a | MNU 2-11a | MNU 2-21a

MTH 2-05a | MNU 2-13a | MTH 2-16a | MTH 2-18a

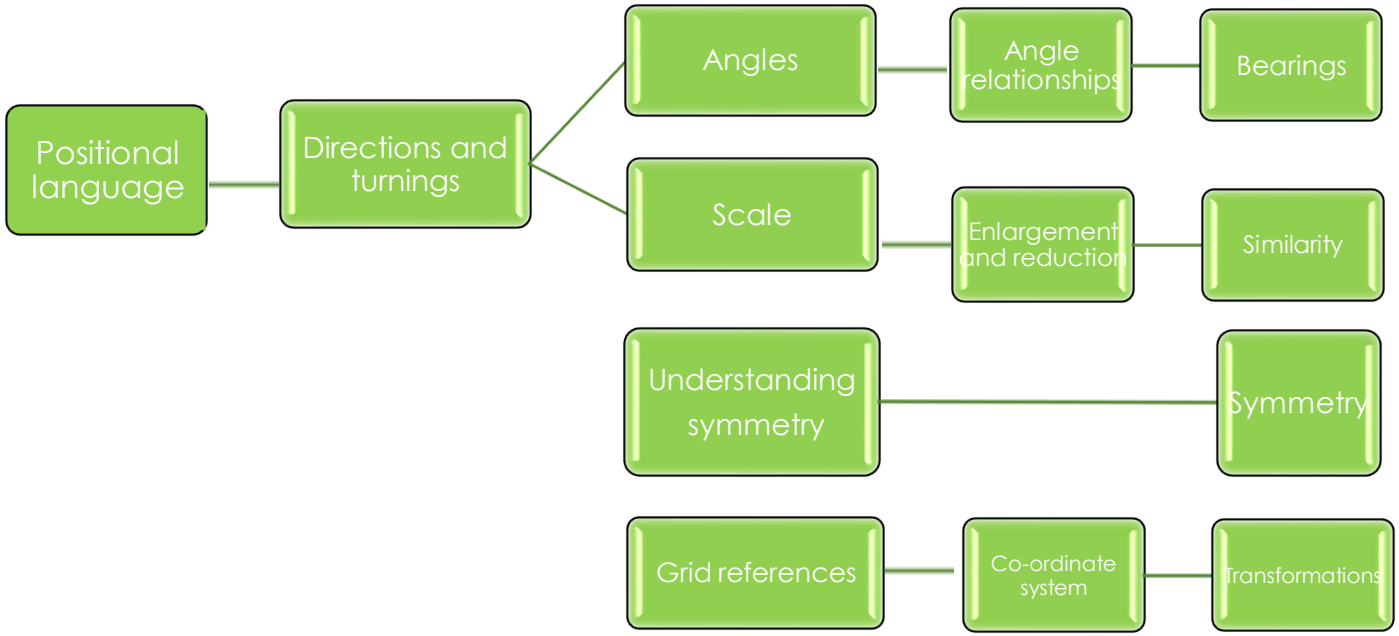
MTH 2-12a | MNU 2-15a | MTH 2-17a | MTH 2-19a

First Level

Third Level

Numeracy and Mathematics

Organiser	Angle, Symmetry and Transformation	
Experience and Outcome	*I can illustrate the lines of symmetry for a range of 2D shapes and apply my understanding to create and complete symmetrical pictures and patterns.*	MTH 2-19a
	I have investigated angles in the environment, and can discuss, describe and classify angles using appropriate mathematical vocabulary.	MTH 2 – 17a
	I can accurately measure and draw angles using appropriate equipment, applying my skills to problems in context.	MTH 2 – 17b
	Through practical activities which include the use of technology, I have developed my understanding of the link between compass points and angles and can describe, follow and record directions, routes and journeys using appropriate vocabulary.	MTH 2 – 17c
	Having investigated where, why and how scale is used and expressed, I can apply my understanding to interpret simple models, maps and plans.	MTH 2- 17d
	I can use my knowledge of the coordinate system to plot and describe the location of a point on a grid.	MTH 2- 18a



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MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

Numeracy and Mathematics

Second Level

At the start of Second Level	Through Second Level	Towards the end of Second Level	Benchmarks
I can: • **explain** the criteria for and can **identify** acute, obtuse, straight and reflex angles. • **explain** the measurements of a few basic angles e.g., right angles, straight lines and full turn. • **draw** right angles. • **explain** the connection between quarter turns, right angles, half turns and full turns. • **name** the 8 compass points and link with angles between them. • **find** and **draw** the lines of symmetry on pictures, patterns or objects. • **identify** an object on a map and **describe** its location in relation to the 8 points of the compass e.g. The shop is in a SW direction from the train station.	I can: • **extend** my knowledge for types of angles and can **identify** straight and reflex angles and a complete turn. • **draw** right, acute, obtuse angles and full turns. • **measure** right, acute and obtuse angles accurately (± 2 degrees). • **use** these measurements to **estimate** the size of an angle. • **use** the eight-point compass rose. • **use** the compass points to **describe**, **follow** and **record** direction routes and journeys. • **identify** and **draw** lines of symmetry; horizontal, vertical and both diagonals. • **use** the notation of coordinate grids.	I can: • **show** that complementary angles add up to 90 degrees. • **show** that supplementary angles add up to 180 degrees. • **use** my knowledge of complementary and supplementary angles to **calculate** missing angles. • **use** mathematical language e.g., acute, obtuse, straight and reflex to describe and classify a range of angles identified within shapes in the environment. • **measure** and draw accurately a range of angles to within accuracy ± 2 degrees, using rulers and protractors. • **apply** knowledge of the relative size of angles to **solve** problems in a range of contexts.	Uses mathematical language including acute, obtuse, straight and reflex to describe and classify a range of angles identified within shapes in the environment. Measures and draws a range of angles to within . Knows that complementary angles add up to 90° and supplementary angles add up to 180° and uses this knowledge to calculate missing angles. Uses knowledge of the link between the eight compass points and angles to describe, follow and record directions. Interprets maps, models or plans with simple scales, for example, 1 cm:2 km.

MNU 2-01a MNU 2-03a MNU 2-07a MNU 2-10a MNU 2-20a MNU 2-22a MTH 2-05a MNU 2-13a MTH 2-16a MTH 2-18a

MNU 2-02a MNU 2-04a MNU 2-09a MNU 2-11a MNU 2-21a MTH 2-12a MNU 2-15a MTH 2-17a MTH 2-19a

First Level Third Level

Numeracy and Mathematics

Second Level

• **complete** symmetrical shapes on a co-ordinate grid. • **create** shapes on a co-ordinate grid. • **create** a grid and **give instructions** of how to describe or find a position on a grid. • **begin** to investigate scale in maps, models and plans.	• **plot** coordinates on a coordinate grid. • **interpret** maps, models or plans using a basic scale. • **show** that that scaled objects, maps and plans keep the same shape and look.	• **discuss** angles I have seen in the environment and can **describe** them using appropriate vocabulary. • **identify, complete** and **create** symmetrical shapes and pictures and patterns with vertical, horizontal and diagonal lines of symmetry with and without digital technology. • **use** my knowledge of the compass points and angles to **describe**, **follow** and **record** directions. • **describe**, **plot** and **record** the location of a point in the first quadrant on Cartesian grid using co-ordinate notation. • **use** and **interpret** maps, models or plans using a scale.	Describes, plots and records the location of a point, in the first quadrant, using coordinate notation. Identifies and illustrates line symmetry on a wide range of 2D shapes and applies this understanding to complete a range of symmetrical patterns, with and without the use of digital technologies.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 2-01a | MNU 2-03a | MNU 2-07a | MNU 2-10a | MNU 2-20a | MNU 2-22a

MNU 2-02a | MNU 2-04a | MNU 2-09a | MNU 2-11a | MNU 2-21a

MTH 2-05a | MNU 2-13a | MTH 2-16a | MTH 2-18a

MTH 2-12a | MNU 2-15a | MTH 2-17a | MTH 2-19a

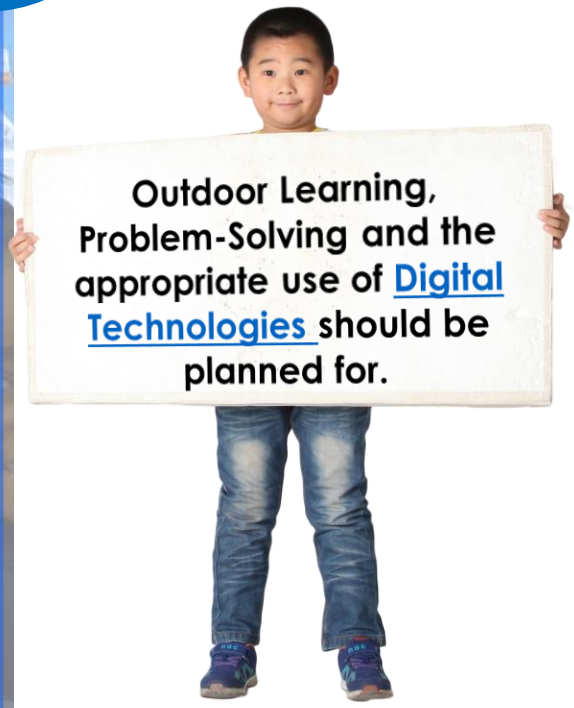
First Level | Third Level

NUMERACY & MATHEMATICS - Progression Pathway

Numeracy & Mathematics

The Numeracy and Mathematics Organisers

Suggested Order for *Third Level*



August to December

- Estimation and Rounding
- Number and Number Processes
- Multiples, Factors and Primes
- Powers and Roots

January to March

- Measurement
- Money
- Properties of 2D Shapes and 3D Objects
- Patterns and Relationships
- Fractions, Decimal Fractions and Percentages
- Time

April to June

- Data and Analysis
- Ideas of Chance and Uncertainty
- Angle Symmetry and Transformation
- Expressions and Equations
- Mathematics – Its Impact on the World, Past, Present and Future

Number and Number Processes should be revisited regularly throughout the year.

Numeracy and Mathematics

Lesson Guidance Notes

Third Level

Organiser	Estimation and Rounding	
Experience and Outcome	*I can round a number using an appropriate degree of accuracy, having taken into account the context of the problem.*	MNU 3-01a

At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **round** decimal fractions to 3 decimal places.	I can: • **use** my knowledge of estimation to **calculate** an approximate solution to a problem. • **use** my knowledge of estimation to **simplify** the calculation and **explain** my choice of strategy.	I can: • **use** my estimated answer to **check** the validity of my final calculation. • **apply** my knowledge of rounding to help **solve** problems.	Rounds decimal fractions to three decimal places. Uses rounding to routinely estimate the answers to calculations.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

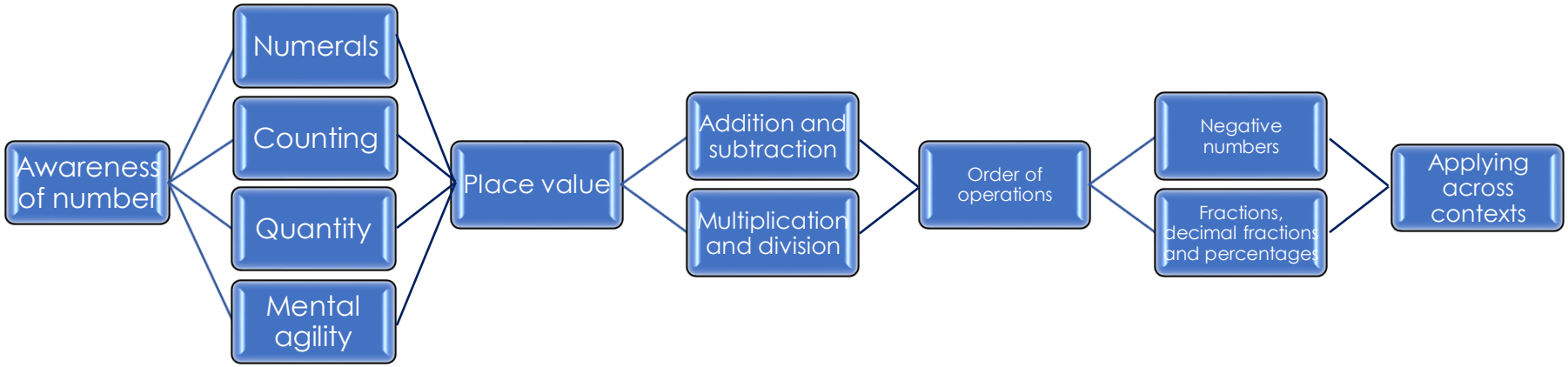
Number Talks

CLPL

MNU 3-01a MNU 3-04a MNU 3-08a MNU 3-10a MNU 3-20a MNU 2-22a
MNU 3-03a MNU 3-07a MNU 3-09a MNU 3-11a MNU 3-21a
MTH 3-05a MNU 3-12a MTH 3-14a MTH 3-16a MTH 3-18a
MTH 3-06a MNU 3-13a MTH 3-15a MTH 3-17a MTH 3-19a
Second Level

Numeracy and Mathematics

Organiser	Numbers and Number Processes	
Experience and Outcome	*I can use a variety of methods to solve number problems in familiar contexts, clearly communicating my processes and solutions*	MNU 3-03a
	I can continue to recall number facts quickly and use them accurately when making calculations.	MNU 3-03b
	I can use my understanding of numbers less than zero to solve simple problems in context.	MNU 3-04a



At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
Addition and Subtraction			
I can: • **solve** addition or subtraction problems correctly **using** a range of strategies for whole numbers and decimals. • **add** and **subtract** positive integers from any given integer.	I can: • **solve** addition or subtraction problems correctly including decimal fractions to 3 decimal places. • **add** and **subtract** negative integers from any given integer.	I can: • **solve** a range of addition and subtraction problems with whole numbers and decimal fractions to 3 decimal places. • **solve** addition and subtraction problems with integers.	Solves addition and subtraction problems working with whole numbers and decimal fractions to three decimal places. Solves addition and subtraction problems working with integers.

MNU 3-01a MNU 3-04a MNU 3-08a MNU 3-10a MNU 3-20a MNU 2-22a MTH 3-05a MNU 3-12a MTH 3-14a MTH 3-16a MTH 3-18a
MNU 3-03a MNU 3-07a MNU 3-09a MNU 3-11a MNU 3-21a MTH 3-06a MNU 3-13a MTH 3-15a MTH 3-17a MTH 3-19a
Second Level

Numeracy and Mathematics

Third Level

Organiser	Numbers and Number Processes	
Experience and Outcome	*I can use a variety of methods to solve number problems in familiar contexts, clearly communicating my processes and solutions*	MNU 3-03a
	I can continue to recall number facts quickly and use them accurately when making calculations.	MNU 3-03b
	I can use my understanding of numbers less than zero to solve simple problems in context.	MNU 3-04a

At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
Multiplication and Division			
I can: • **use** various strategies to **calculate** multiplication and division facts to the 10th multiplication table, e.g. partitioning, bar models and arrays. • **use** various strategies to **solve** problems with **multiplying** by a whole number and **dividing** by a single digit whole number. • **multiply** and **divide** negative integers by any positive integer and vice versa.	I can: • **recall** multiplication and division facts to the 10th multiplication table. • **use** various strategies to **calculate** multiplication and division facts to the 12th multiplication table, e.g. partitioning, bar models and arrays. • **use** various strategies to **solve** problems with decimal fractions **multiplying** and **dividing** by a single digit whole number. • **multiply** and **divide** negative integers by any negative integer.	I can: • **quickly recall** multiplication and division facts to the 10th multiplication table. • **use** multiplication and division facts to the 10th multiplication table to **solve** problems involving whole numbers. • **use** multiplication and division facts to the 12th multiplication table. • **use** various strategies to **solve** multiplication and division problems working with whole numbers and decimal fractions. • **solve** any multiplication and division problem working with integers.	Recalls quickly multiplication and division facts to the 10th multiplication table. Uses multiplication and division facts to the 12th multiplication table. Solves multiplication and division problems working with whole numbers and decimal fractions to three decimal places. Solves multiplication and division problems working with integers.

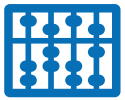
MNU 3-01a MNU 3-04a MNU 3-08a MNU 3-10a MNU 3-20a MNU 2-22a MTH 3-05a MNU 3-12a MTH 3-14a MTH 3-16a MTH 3-18a

MNU 3-03a MNU 3-07a MNU 3-09a MNU 3-11a MNU 3-21a MTH 3-06a MNU 3-13a MTH 3-15a MTH 3-17a MTH 3-19a

Second Level

Numeracy and Mathematics

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

CLPL

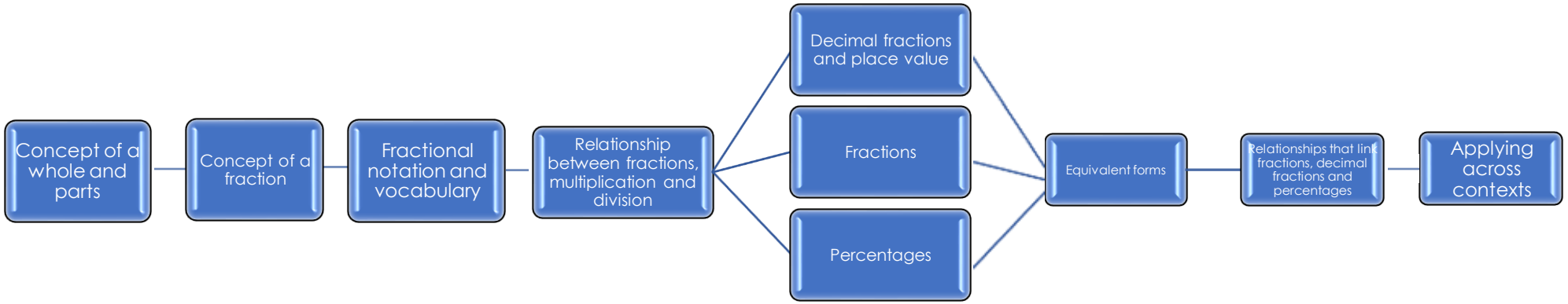
Numeracy and Mathematics

Lesson Guidance Notes

Third Level

Organiser	Fractions, Decimal Fractions and Percentages

Experience and Outcome		
	I can solve problems by carrying out calculations with a wide range of fractions, decimal fractions and percentages, using my answers to make comparisons and informed choices for real life situations.	**MNU 3-07a**
	By applying my knowledge of equivalent fractions and common multiples, I can add and subtract commonly used fractions.	**MNU 3-07b**
	Having used practical, pictorial and written methods to develop my understanding, I can convert between whole or mixed numbers and fractions.	**MNU 3-07c**
	I can show how quantities that are related can be increased or decreased proportionally and apply this to solve problems in everyday contexts.	**MNU 3-08a**



At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **use** strategies, including concrete materials and visual representations, to **add** and **subtract** simple fractions.	I can: • **use** different strategies to **add** and **subtract** fractions including fractions with different denominators.	I can: • **add** and **subtract** mixed numbers including fractions with different denominators.	Converts fractions, decimal fractions or percentages into equivalent fractions, decimal fractions or percentages.

MNU 3-01a MNU 3-04a MNU 3-08a MNU 3-10a MNU 3-20a MNU 2-22a
MNU 3-03a MNU 3-07a MNU 3-09a MNU 3-11a MNU 3-21a
MTH 3-05a MNU 3-12a MTH 3-14a MTH 3-16a MTH 3-18a
MTH 3-06a MNU 3-13a MTH 3-15a MTH 3-17a MTH 3-19a
Second Level

Numeracy and Mathematics

• **use** strategies, including concrete materials and visual representations, to **change** a mixed number into an improper fraction and improper fraction to mixed number. • **convert** any given percentage into an equivalent decimal fraction and vice versa. • **explain** how two or more quantities can be written in a ratio. • **write** two or more quantities as a ratio. • **simplify** a ratio or **find** equivalent ratios. • **use** visual representations to **find out** a missing share of a total when given the ratio.	• **change** mixed numbers to improper fractions and **explain** my strategy. • **change** improper fractions to mixed numbers and **explain** my strategy. • **use** my knowledge of fractions, decimal fractions and percentages to **carry out** calculations without a calculator. • **convert** any given percentage into an equivalent fraction in its simplest form. • **convert** any given fraction into an equivalent fraction over 100 or a multiple of 100 and then **convert** to an equivalent percentage. • **use** a given ratio to **find out** how many shares there are in total. • **find out** the value of one share and **share** the total amount with respect to the given ratio. • **discuss** why as one quantity increases, another quantity may increase/decrease proportionally.	• **solve** problems involving addition and subtraction of mixed numbers in various contexts. • **use** my knowledge of fractions, decimal fractions and percentages to **carry out** calculations with or without a calculator. • **convert** any fraction into an equivalent decimal fraction by first changing the fraction to a percentage. • **convert** any decimal fraction into a percentage and then into a fraction in its simplest form. • **use** direct proportion and visual representations to **solve** problems where related quantities are increased or decreased proportionally.	Adds and subtracts whole numbers and fractions, including when changing a denominator. Converts between whole or mixed numbers, improper fractions and decimal fractions. Uses knowledge of fractions, decimal fractions and percentages to carry out calculations with and without a calculator. Solves problems in which related quantities are increased or decreased proportionally. Expresses quantities as a ratio and where appropriate simplifies, for example, 'if there are 6 teachers and 60 children in a school find the ratio of the number of teachers to the total amount of teachers and children'.

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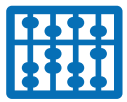
Second Level

Numeracy and Mathematics

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

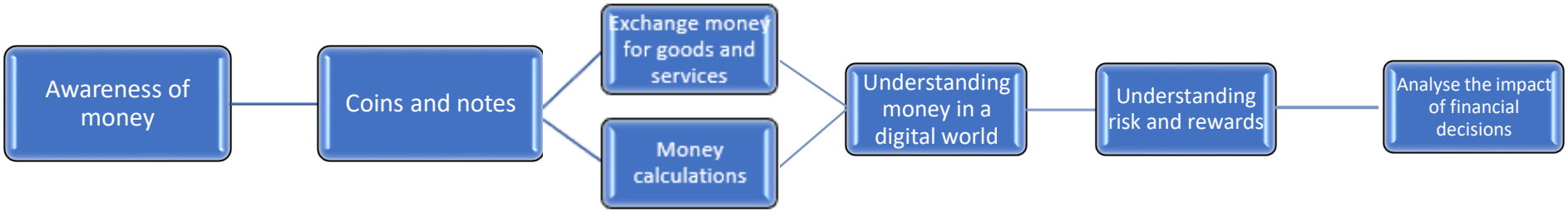
CLPL

Numeracy and Mathematics

Lesson Guidance Notes

Third Level

Organiser	Money	
Experience and Outcome	*When considering how to spend my money, I can source, compare and contrast different contracts and services, discuss their advantages and disadvantages, and explain which offer best value to me.*	MNU 3-09a
	I can budget effectively, making use of technology and other methods, to manage money and plan for future expenses.	MNU 3-09b



At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **use** the internet and other sources to find goods and services, **compare** them and **discuss** their advantages and disadvantages. • **use** budgets effectively to **source** different suppliers for buying the same goods and: - **calculate** costs when buying more than one item - **calculate** the change given from a certain amount - **calculate** any savings made.	I can: • **consider** how to spend my money to get the cheapest price and **calculate** the saving made. • **calculate** the amount of foreign currency I would receive for a given amount of £s.	I can: • **source, compare**, and **contrast** different prices, deals, contracts and services, **discuss** their advantages and disadvantages and **explain** which offer best value to me. • **compare** deals and **calculate** the total cost, e.g. buy-1-get-1-free, 2-for-1, multipack buys, and decide which is the best value.	Demonstrates understanding of best value in relation to contracts and services when comparing products. Chooses the best value for their personal situation and justifies choices. Budgets effectively, using digital technology where appropriate, showing development of financial capability.

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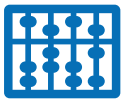
Second Level

Numeracy and Mathematics

• **explain** the meaning of financial terms, including, debit/credit, APR, p.a., direct debit/standing order and interest rate. • **give** examples of currencies that are used in different countries.		• **use** my understanding of financial terms and vocabulary to **choose** the best financial product for me. • **convert** between different currencies having investigated the current exchange rate.	Demonstrates knowledge of financial terms, for example, debit/credit, APR, pa, direct debit/standing order and interest rate. Converts between different currencies

Concrete, Pictorial, Abstract (CPA) 

SEAL/DNK 

Number Talks 

CLPL 

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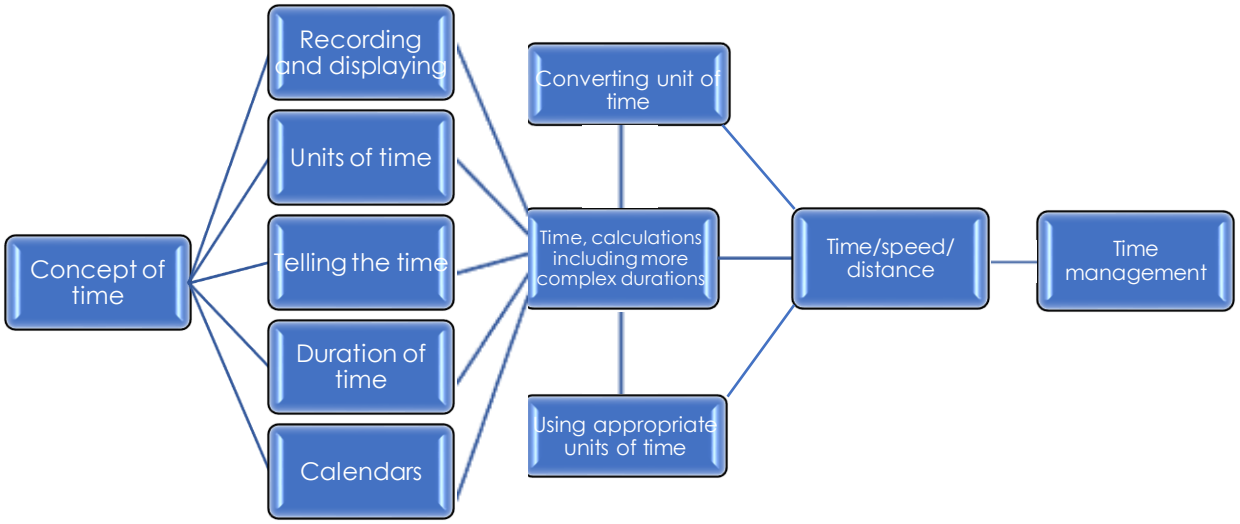
Second Level

Numeracy and Mathematics

Organiser	Time

Experience and Outcome	*Using simple time periods, I can work out how long a journey will take, the speed travelled at or distance covered, using my knowledge of the link between time, speed and distance.*	MNU 3-10a



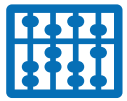
At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **explain** the relationship between speed, distance and time. • **identify** the different units used for speed and **explain** their meaning.	I can: • **calculate** duration of activities/events including bridging across several hours and days. • **use** the relationship connecting speed, distance and time to **derive formulas** to calculate speed, distance or time.	I can: • **calculate** duration of activities/events including bridging across hours, parts of hours and days. • **decide** which formula I need for a given problem, **use** the formula correctly, **calculate** the answer accurately and **record** my answer using the correct units.	Applies knowledge of the relationship between speed, distance and time to find each of the three variables.

Numeracy and Mathematics

Third Level

• **choose** the correct units for distance and time and **identify** the correct corresponding unit for speed.	• **use** the formulas connecting speed, distance and time to calculate the unknown quantity when I have information about the remaining two. • **record** my answers to my calculations using the correct units.	• **use** timetables/journey planners and appropriate technology calculate distances, times of journeys and the speed of travel. • **decide** which mode of transport is appropriate by calculating departure/arrival times and if the journey is safe or possible within safe speed restrictions.	Calculates time durations across hours and days.

Concrete, Pictorial, Abstract (CPA)



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Number Talks

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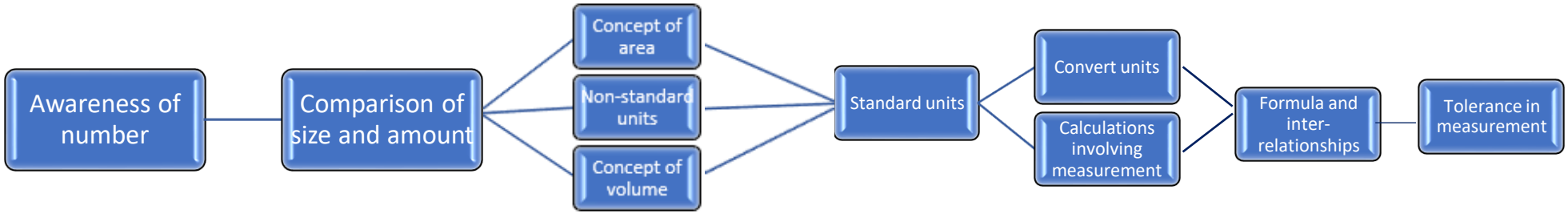
MNU 3-03a | MNU 3-07a | MNU 3-09a | MNU 3-11a | MNU 3-21a | MTH 3-06a | MNU 3-13a | MTH 3-15a | MTH 3-17a | MTH 3-19a

Second Level

Numeracy and Mathematics

Organiser	Measurement	
Experience and Outcome	*I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task, and using a formula to calculate area or volume when required.*	MNU 3 -11a
	Having investigated different routes to a solution, I can find the area of compound 2D shapes and the volume of compound 3D objects, applying my knowledge to solve practical problems	MNU 3 -11b



At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
Length and Height			
I can: • **choose** the most appropriate unit of length to **describe/measure** a length or height of an object.	I can: • **convert** between units of length from km through to mm working to 3 decimal places.	I can: • **convert** units of length to solve problems and give my answer in the most appropriate unit for the context of the problem.	Chooses appropriate units for length, area and volume when solving practical problems. Converts between standard units to three decimal places and applies this when solving calculations of length, capacity, volume and area.

• **estimate** the length or height of an object using the most appropriate unit of measure.	• **convert** between units of length to **calculate** the perimeter of a 2D shape when units are inconsistent.	• **convert** units of length to **solve** problems involving calculating the area of 2D shapes where the units are inconsistent and give my answer in the most appropriate unit of area.	Calculates the area of a 2D shape where the units are inconsistent. Finds the area of compound 2D shapes constructed from squares, rectangles and triangles.

Numeracy and Mathematics

Organiser	Measurement

Experience and Outcome		
	I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task, and using a formula to calculate area or volume when required.	MNU 3 -11a
	Having investigated different routes to a solution, I can find the area of compound 2D shapes and the volume of compound 3D objects, applying my knowledge to solve practical problems	MNU 3 -11b

At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
Perimeter			
I can: • **choose** the most appropriate unit of length to use when calculating the perimeter of a 2D shape or object.	I can: • **convert** between units of length to **calculate** the perimeter of a 2D shape when units are inconsistent.	I can: • **convert** units of length to solve problems and give my answer in the most appropriate unit for the context of the problem.	Chooses appropriate units for length, area and volume when solving practical problems. Converts between standard units to three decimal places and applies this when solving calculations of length, capacity, volume and area. Calculates the area of a 2D shape where the units are inconsistent.

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Second Level

Numeracy and Mathematics

Third Level

Organiser	Measurement

Experience and Outcome		
	I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task, and using a formula to calculate area or volume when required.	MNU 3 -11a
	Having investigated different routes to a solution, I can find the area of compound 2D shapes and the volume of compound 3D objects, applying my knowledge to solve practical problems	MNU 3 -11b

At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
Area			
I can: • **choose** the most appropriate unit of area to describe the area of a 2D surface or 2D surface of an object. • **estimate** the area of a 2D shape and choose the correct unit to describe the area.	I can: • **convert** between units of area, mm^2 to cm^2 and back, cm^2 to m^2 and back and working to 3 decimal places. • **calculate** the area of triangles using $A=\frac{1}{2}$ b x h where the measurement of height is at right angles to the measurement of the base.	I can: • **convert** units of length to solve problems involving calculating the area of 2D shapes where the units are inconsistent and give my answer in the most appropriate unit of area. • **calculate** the area of compound shapes made up from squares, rectangles and triangles.	Chooses appropriate units for length, area and volume when solving practical problems. Converts between standard units to three decimal places and applies this when solving calculations of length, capacity, volume and area. Calculates the area of a 2D shape where the units are inconsistent. Finds the area of compound 2D shapes constructed from squares, rectangles and triangles.

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MNU 3-03a MNU 3-07a MNU 3-09a MNU 3-11a MNU 3-21a MTH 3-06a MNU 3-13a MTH 3-15a MTH 3-17a MTH 3-19a

Second Level

Numeracy and Mathematics

Third Level

Organiser	Measurement

Experience and Outcome		
	I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task, and using a formula to calculate area or volume when required.	MNU 3 -11a
	Having investigated different routes to a solution, I can find the area of compound 2D shapes and the volume of compound 3D objects, applying my knowledge to solve practical problems	MNU 3 -11b

At the start of Third Level ⟷	Through Third Level	Towards the end of Third Level	Benchmarks
Volume / Capacity			
I can: • **choose** the most appropriate unit of volume to measure the volume of chosen containers and 3D objects.	I can: • **convert** between units of volume/capacity, cm^3 to ml and back, ml to l and back working to 3 decimal places and **use** the unit most appropriate for the problem I am working on.	I can: • **convert** between units of volume, cm^3 to m^3 and back, and be able to talk about the size and practicality of mm^3 and km^3, working to 3 decimal places. • **calculate** the volume of compound 3D objects made up from cubes and cuboids.	Chooses appropriate units for length, area and volume when solving practical problems. Converts between standard units to three decimal places and applies this when solving calculations of length, capacity, volume and area. Finds the volume of compound 3D objects constructed from cubes and cuboids.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

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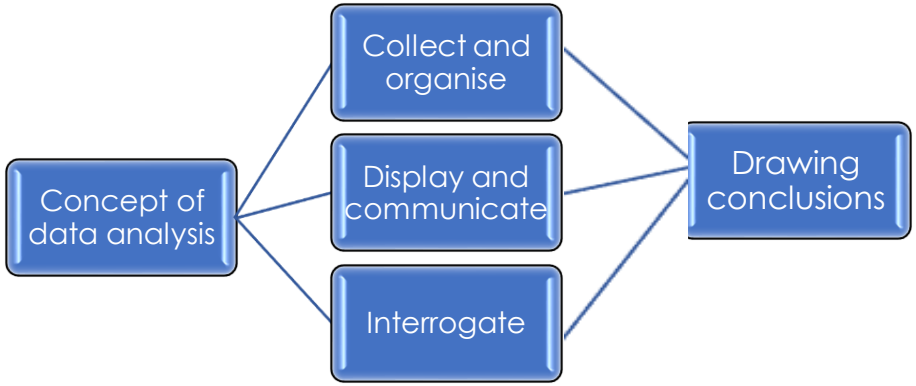
Second Level

Numeracy and Mathematics

Organiser	Data Analysis

Experience and Outcome		
	I can work collaboratively, making appropriate use of technology, to source information presented in a range of ways, interpret what it conveys and discuss whether I believe the information to be robust, vague or misleading.	**MNU 3 -20a**
	When analysing information or collecting data of my own, I can use my understanding of how bias may arise and how sample size can affect precision, to ensure that the data allows for fair conclusions to be drawn.	**MNU 3 -20b**
	I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology.	**MNU 3 -21c**



At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **source** information to collect using digital technology if needed.	I can: • **answer questions** about the data when represented in a suitable form.	I can: • **reflect** on the process of data collection and say if there is any sample bias, e.g. too few people surveyed or sample chosen too varied.	Sources information or collects data making use of digital technology where appropriate.

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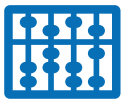
Second Level

Numeracy and Mathematics

• **collect** the data I have sourced accurately and decide the best format to display the data making it easier to interpret. • **display** the data sourced in a variety of forms and **interpret** what the data is telling me.	• **describe** trends in the data over time using appropriate language. • **decide** if the data is misleading or not, **decide** if the conclusions the data is presenting are unrealistic and begin to **explore** why this might be the case.	• **reflect** on the process of data collection and say if there is any sample bias, e.g. too few people surveyed or sample chosen too varied. • **explain** how sample bias can affect the data and choose a representative sample accordingly. • **determine** the reasons for displayed data being misleading.	Interprets data sourced or given. Describes trends in data using appropriate language, for example, increasing trend. Determines if information is robust, vague or misleading by considering, for example, the validity of the source, scale used, sample size, method of presentation and appropriateness of how the sample was selected. Collects data by choosing a representative sample to avoid bias. Organises and displays data appropriately in a variety of forms, for example, compound bar and line graphs and pie charts, making effective use of technology as appropriate.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

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Second Level

Numeracy and Mathematics

Organiser	Ideas of Chance and Uncertainty	
Experience and Outcome	*I can find the probability of a simple event happening and explain why the consequences of the event, as well as its probability, should be considered when making choices.*	MNU 3-22a

Simple choice and decision making → Predicting and describing likelihood → Choice and decision making based on likelihood → Probability → Applying knowledge of probability

At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **use** the vocabulary: impossible, unlikely, evens, likely and certain, and **discuss** how they relate to a probability scale of 0 (impossible) to 1 (certain). • **place** a value written as fraction or decimal fraction on the probability scale of 0 to 1 and **describe** how likely the outcome will be.	I can • **discuss** the frequency of an event or the randomness of an outcome and how this relates to the probability of the event/outcome occurring. *e.g. the probability of rolling a 6 is $\frac{1}{6}$ but I could roll a dice six times and not get a 6 or get a 6 more than once.* • **calculate** the probability of an event happening leaving the answer as a fraction, a simplified fraction or a decimal fraction.	I can: • **understand** that the probability of an event happening and the probability of it not happening must add to 1. • **identify** all the possible outcomes of a mutually exclusive event, events that cannot happen at the same time, and calculate the probability of each, *e.g. cut a deck of cards and get a black king or a diamond or an ace of spades.*	Uses the probability scale of 0 to 1 showing probability as a fraction or decimal fraction. Demonstrates understanding of the relationship between the frequency of an event happening and the probability of it happening. Uses a given probability to calculate an expected outcome, for example, 'the probability of rain in June is 0·25 so how many days do we expect it to rain?'.

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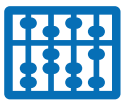
Second Level

Numeracy and Mathematics

• **discuss** an outcome and **assign** it a possible value from 0 to 1, given as a fraction or decimal fraction.	• **use** a given probability to **calculate** a value for a given outcome and **discuss** the appropriateness of the answer, *e.g. the probability of having triplets is 0.03. How many sets of triplets would you expect to be born in a month where 80 woman give birth?*	• **make decisions** on real-life situations based on the probability of the event happening and the possible consequences of my choice, *e.g. deciding to ground airplanes and cancel flights after a forecast of a storm.*	Calculates the probability of a simple event happening, for example, 'what is the probability of throwing a prime number on a 12 sided die?'. Identifies all of the mutually exclusive outcomes of a single event and calculates the probability of each. Investigates real-life situations which involve making decisions on the likelihood of events occurring and the consequences involved.

Concrete, Pictorial, Abstract (CPA)



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Number Talks

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Second Level

Numeracy and Mathematics

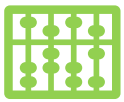
Organiser	Multiples, Primes and Factors	
Experience and Outcome	*I have investigated strategies for identifying common multiples and common factors, explaining my ideas to others, and can apply my understanding to solve related problems.*	MTH 3-05a
	I can apply my understanding of factors to investigate and identify when a number is prime.	MTH 3-05b

At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **find** a common multiple for 2 or 3 numbers using a suitable strategy and **explain** my method used. • **find** common factors for 2 or 3 numbers using a suitable strategy and **explain** my method used.	I can: • **identify** common multiples or common factors of any set of whole numbers and **explain** the strategy used. • **identify** the lowest common multiple of a set of numbers and **explain** the strategy used	I can: • **apply** knowledge of common multiples and lowest common multiples to **solve** problems in different contexts. • **apply** my knowledge of highest common factors to **solve** problems in different contexts.	Identifies common multiples, including the lowest common multiple for whole numbers and can explain method used. Identifies common factors, including the highest common factor for whole numbers and can explain method used. Identifies prime numbers to 100 and can explain method used.

Numeracy and Mathematics

• **use** my knowledge of factors to identify a prime number and explain why it is prime.	• **identify** the highest common factor of a set of numbers and **explain** strategy used. • **identify** prime numbers up to 100 and **explain** strategy used.	• **use** multiplication facts to break a prime number into its prime factors e.g. 30 = 2 x 3 x 5.	Solves problems using multiples and factors. Writes a given number as a product of its prime factors.

Concrete, Pictorial, Abstract (CPA)



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Number Talks

CLPL

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Second Level

Numeracy and Mathematics

Organiser	Powers and Roots

Experience and Outcome	*Having explored the notation and vocabulary associated with whole number powers and the advantages of writing numbers in this form, I can evaluate powers of whole numbers mentally or using technology.*	MTH 3-06a

At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **use** powers notation to **distinguish** between repeated addition and repeated multiplication of the same number and the size of the answer, e.g. 5 + 5 + 5 compared to 5 x 5 x 5. • **explain** why powers of numbers can be used to shorten the written calculation and understand the pattern of powers, e.g. 3 x 3 = 3^2, 3 x 3 x 3 = 3^3 and 3x 3 x 3 x 3 = 3^4. • **use** vocabulary associated with the power and the base number to multiply by.	I can: • **use** the term squared, relate it to a square of those dimensions and **explain** how this extends into square numbers and patterns. • **use** the term cubed and how it related to a 3D cube of those dimensions. • **calculate** powers of the numbers 1 to 10 up to power 3.	I can: • **calculate** powers of whole numbers. • **use** my knowledge of powers to **write** whole numbers as a whole number to a power, e.g. 32 = 2^5, 125 = 5^3.	Explains the notation and uses associated vocabulary appropriately, for example, index, exponent and power. Evaluates whole number powers, for example, 2^4 = 16. Expresses whole numbers as powers, for example, 27 = 3^3.

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MNU 3-03a MNU 3-07a MNU 3-09a MNU 3-11a MNU 3-21a
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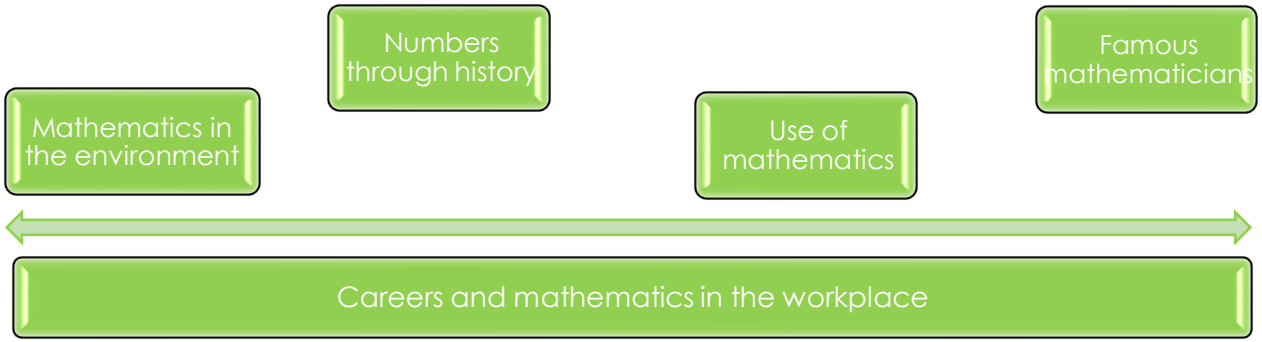
Numeracy and Mathematics

Lesson Guidance Notes

Third Level

Organiser	Mathematics – its impact on the world, past, present and future	
Experience and Outcome	*I have worked with others to research a famous mathematician and the work they are known for, or investigated a mathematical topic, and have prepared and delivered a short presentation.*	MTH 3-12a



At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • work with others to **research** the work of famous mathematicians, what work they are known for and why it is still relevant today.	I can: • work with others to **research** how mathematics has played a part in advances in society, inventions used and the technology maths is involved in.	I can: • **present** my findings on the mathematical topic I have researched, **use** the mathematical notation correctly and **explain** why the maths is relevant in modern society and why it is used.	Researches and communicates using appropriate mathematical vocabulary and notation, the work of a famous mathematician or a mathematical topic and explains the relevance and impact they have on society.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

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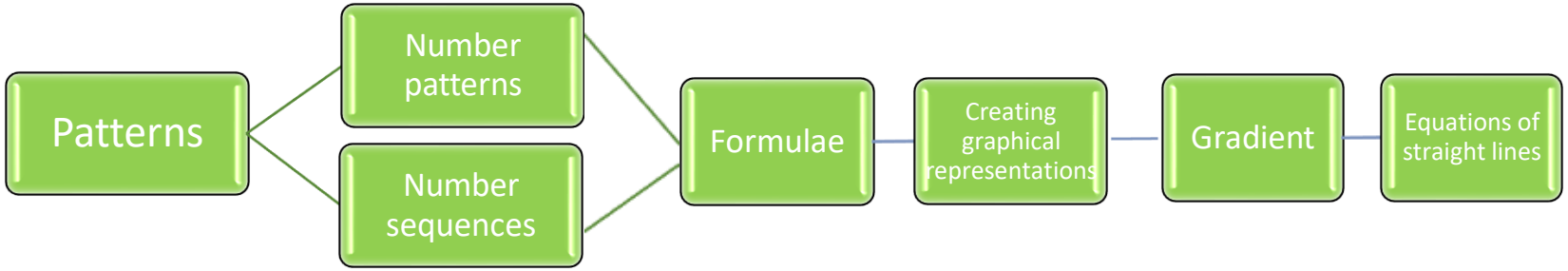
MNU 3-03a MNU 3-07a MNU 3-09a MNU 3-11a MNU 3-21a MTH 3-06a MNU 3-13a MTH 3-15a MTH 3-17a MTH 3-19a

Second Level

Numeracy and Mathematics

Organiser	Patterns and Relationships

Experience and Outcome	*Having explored number sequences, I can establish the set of numbers generated by a given rule and determine a rule for a given sequence, expressing it using appropriate notation*	MTH 3-13a

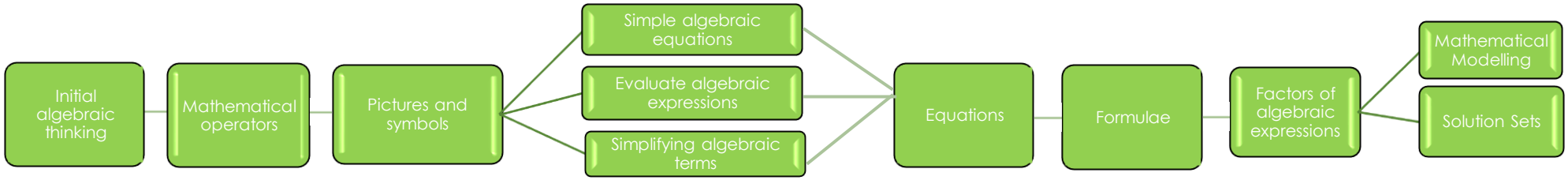


At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **use** a rule and a counting system, e.g. n = 1, 2, 3, … to **generate** a number sequence.	I can: • **extend** a pattern that I am given and **explain** the calculation I am doing to get the next term in the sequence. • **study** the way a number pattern extends and **describe** the common rule that connects the value of the number to its position in the sequence.	I can: • **express** rules in algebraic notation from a problem or a statement.	Generates number sequences from a given rule, for example, T = 4n + 6. Extends a given pattern and describes the rule. Expresses sequence rules in algebraic notation, for example, the cost of hiring a car is £75 plus a charge of £0·05 per mile, 'm' driven, C = 0.05m + 75.

Numeracy and Mathematics

Organiser	Expressions and Equations

Experience and Outcome		
	I can collect like algebraic terms, simplify expressions and evaluate using substitution.	MTH 3-14a
	Having discussed ways to express problems or statements using mathematical language, I can construct, and use appropriate methods to solve, a range of simple equations.	MTH 3-15a
	I can create and evaluate a simple formula representing information contained in a diagram, problem or statement.	MTH 3-15b



At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **use** the language associated with 'like terms' to **describe** when two or more terms are alike and what it means to collect them e.g. 'simplify', 'shorten', 'tidy'.	I can: • **collect** like terms in an expression containing terms in one variable and numeric terms. • **substitute** for two variables with numerical values to **evaluate** an expression, following the order of operations correctly, using positive and negative numbers.	I can: • **collect** like terms in an expression containing more than one variable, including squared terms, and numeric terms. • **evaluate** a simple formula using my knowledge of substitution and the correct order of operations, e.g. Find C when m = 60 using C = 0.05m + 75.	Collects like terms, including squared terms, to simplify an algebraic expression. Evaluates expressions involving two variables using both positive and negative numbers.

Numeracy and Mathematics

• **substitute** a variable with a numerical value to **evaluate** an expression using positive numbers. • **use** concrete materials to **represent** an equation and, by balancing both sides, I can find the value of the unknown.	• **record,** using a balancing method, how to solve a linear equation and **state** the value of the unknown variable. • **use** the facts given in a word problem or statement to **create** a simple linear formula.	• **solve** linear equations displaying all working for my method and **state** the value of the unknown. • **use** the information displayed in a diagram, e.g. a poster or a straight line graph, to **create** a simple linear formula.	Solves linear equations, for example, ax ± b = c where a, b and c are integers. Creates a simple linear formula representing information contained in a diagram, problem or statement. Evaluates a simple formula, for example, C = 0.05m + 75.

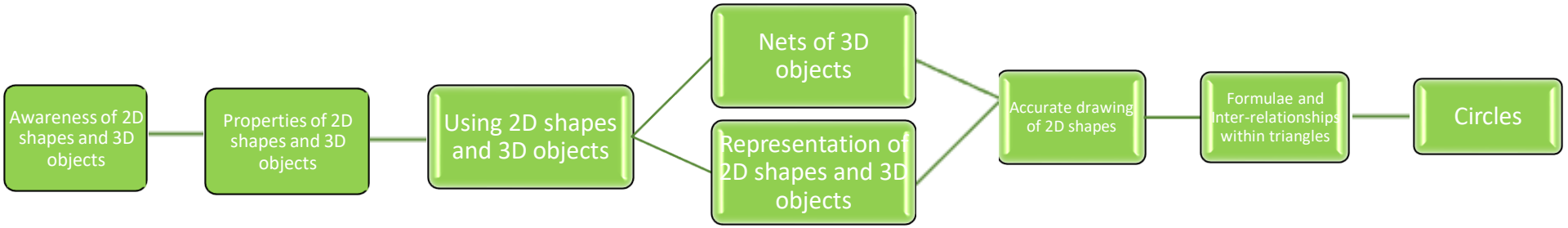
Numeracy and Mathematics

Lesson Guidance Notes

Third Level

Organiser	Properties of 2D Shapes and 3D Objects

Experience and Outcome	*Having investigated a range of methods, I can accurately draw 2D shapes using appropriate mathematical instruments and methods.*	MTH 3-16a



At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **use** a ruler and protractor to **accurately draw** rectangles and squares within ± 2 mm and ± 2°.	I can: • **use** a ruler and protractor to **accurately draw** a triangle when given the length of one side and two internal angles within ± 2 mm and ± 2°. • **use** a ruler and protractor to **accurately draw** a triangle when given the length of two sides and the interior angle within ± 2 mm and ± 2°.	I can: • **use** a ruler and compass to **accurately draw** a triangle when given the lengths of all three sides within ± 2 mm. • **use** a ruler, compass and protractor to **accurately draw** a regular polygon, when given the interior angle and the length of the sides, within ± 2 mm and ± 2°.	Demonstrates a variety of methods to accurately draw 2D shapes, including triangles and regular polygons (given the interior angle), using mathematical instruments.

Concrete, Pictorial, Abstract (CPA)

SEAL/DNK

Number Talks

CLPL

MNU 3-01a | MNU 3-04a | MNU 3-08a | MNU 3-10a | MNU 3-20a | MNU 2-22a | MTH 3-05a | MNU 3-12a | MTH 3-14a | MTH 3-16a | MTH 3-18a

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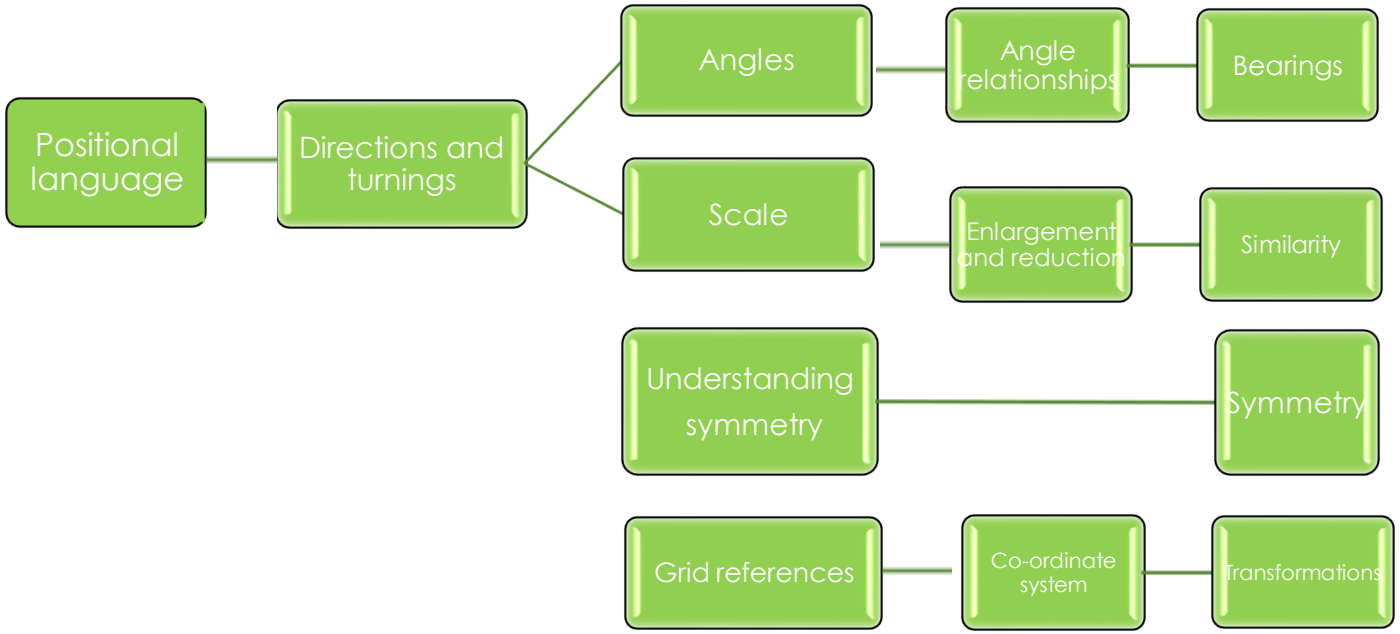
Second Level

Numeracy and Mathematics

Organiser	Angle, Symmetry and Transformation	
Experience and Outcome	*I can name angles and find their sizes using my knowledge of the properties of a range of 2D shapes and the angle properties associated with intersecting and parallel lines.*	MTH 3-17a
	Having investigated navigation in the world, I can apply my understanding of bearings and scale to interpret maps and plans and create accurate plans, and scale drawings of routes and journeys.	MTH 3 – 17a
	I can apply my understanding of scale when enlarging or reducing pictures and shapes, using different methods, including technology.	MTH 3 – 17b
	I can use my knowledge of the coordinate system to plot and describe the location of a point on a grid.	MTH 3 – 18a
	I can illustrate the lines of symmetry for a range of 2D shapes and apply my understanding to create and complete symmetrical pictures and patterns.	MTH 3 – 19a



Numeracy and Mathematics

At the start of Third Level	Through Third Level	Towards the end of Third Level	Benchmarks
I can: • **identify** angles given certain criteria and **name** the angles using mathematical notation. • **identify** corresponding, alternate and vertically opposite angles and **understand** their properties. • **give** the 3 figure bearing for each of the 8 main compass points. • **find** and **draw** the lines of symmetry on pictures, patterns or objects.	I can: • **use** the properties of corresponding, alternate and vertically opposite angles to **determine** the size of missing angles. • **state** the sum of internal angles in triangle and quadrilateral. • **understand** the properties of the different types of triangles (e.g. equilateral, isosceles, scalene and right angled) and how these properties relate to the internal angles.	I can: • **use** the properties of triangles and quadrilaterals to **calculate** the size of missing angles. • **describe** a 3 figure bearing as a measure of turn clockwise from North. • **draw** any given 3 figure bearing and **use** it to describe a journey in a navigational context. • **identify**, **complete** and **create** symmetrical shapes and pictures and patterns with vertical, horizontal and diagonal lines of symmetry, with and without digital technology.	Names angles using mathematical notation, for example, ∠ABC Identifies corresponding, alternate and vertically opposite angles and uses this knowledge to calculate missing angles. Uses the angle properties of triangles and quadrilaterals to find missing angles. Applies knowledge and understanding of scale to enlarge and reduce objects in size showing understanding of linear scale factor.

MNU 3-01a MNU 3-04a MNU 3-08a MNU 3-10a MNU 3-20a MNU 2-22a MTH 3-05a MNU 3-12a MTH 3-14a MTH 3-16a MTH 3-18a
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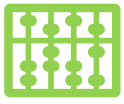
Second Level

Numeracy and Mathematics

Third Level

• **draw** a co-ordinate grid with x and y axes, 0 and a correct scale. • **use** and **understand** the terms enlargement and reduction in relation to scale.	• **understand** the properties of the different types of quadrilaterals and how these properties relate to the internal angles. • **identify** and **draw** lines of symmetry; horizontal, vertical and both diagonals. • **use** the notation of coordinate grids. • **plot** coordinates on a coordinate grid. • **move** shapes on a co-ordinate grid. • **compare** two corresponding measures to work out if there has been an enlargement or reduction in scale.	• **use** my knowledge of the compass points and angles to describe, follow and record directions. • **describe, plot** and **record** the location of a point in the first quadrant on Cartesian grid using co-ordinate notation. • **describe** how to move from one point on a grid to another point. • **use** my knowledge of scale to reduce or enlarge on object.	Uses bearings in a navigational context, including creating scale drawings. Identifies all lines of symmetry in 2D shapes. Creates symmetrical patterns and pictures.

Concrete, Pictorial, Abstract (CPA)



SEAL/DNK

Number Talks

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Second Level