## Numicon and the PYP

## Your guide to linking Numicon to the International Baccalaureate Primary Years Programme Mathematics Scope and Sequence



## This guide will show you how to use Numicon to support your teaching of the PYP Mathematics Scope and Sequence.

| This flow diagram provides an example of how to use the Curriculum Mapping Tables in your classroom. <br> The Curriculum Mapping Tables link all the activities from the Numicon Teaching Resource Handbooks to the PYP Phases, Continuum and General Concept Goals. |  |
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 Numicon Affiliated Trainer.
David has a strong interest and deep pedagogical knowledge in mathematical difficulties, prevention and intervention, as well as ways to support gifted and talented students.
He has developed a successful customized mathematics intervention programme using Numicon that caters for students from Grades 1 to 7 . He has been instrumental in the training and utilization of Numicon at ISD as a classroom resource and as an enrichment tool.
David became a certified Numicon Affiliated Trainer in August 2015 and has extensive experience teaching staff, modelling, observing, assessing, and assisting teachers both at ISD and beyond. He continues to lead regular successful Numicon CPD workshops at ISD, as well as providing inset training to other International Schools in Europe. He appreciates the overall versatility and utility of Numicon to complement any mathematics programme at all levels. He values how Numicon helps make the underlying patterns in numbers real.
For more information on Numicon Professional Development available near you, please email training.international@oup.com

How to use the Curriculum Mapping Tables: An example lesson


Curriculum Mapping Table: Number, Pattern and Calculating 1 Teaching Resource Handbook

| Numicon |  | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| SF 1 | Learning about Numicon shapes | 1:Number | Numbers are connected | Transferring: Names to numerals to quantities | Form, Function |
| SF 2 | Naming Numicon shapes | 1:Number | Numbers are a naming system | Transferring: Names to numerals to quantities | Connection |
| SF 3 | Building Numicon shapes | 1: Pattern \& Function | Patterns repeat and grow | Applying: Extend and create patterns | Change, Form |
| SF 4 | Comparing and ordering | 1: Pattern \& Function | Patterns repeat and grow | Transferring: Describe patterns in various ways | Function, Change |
| SF 5 | Describing relationships - adding | 1:Number | Numbers are a naming system | Constructing: Understand 1-to-1 correspondence | Causation |
| SF 6 | Naming number rods and teens | 1:Number | Numbers are connected | Transferring: Names to numerals to quantities | Connection, Form |
| SF 7 | Teen numbers and patterns | 1:Number | Connections to build number sense | Transferring: Names to numerals to quantities | Function, Connection |
| SF 8 | Introduction to subtraction | 1:Number | Numbers can be used in many ways | Constructing: Relative magnitude | Function |
| SF9 | Sorting and practical subtracting | 1:Number | Numbers can be used in many ways | Applying: Use number in real life situations | Connection |
| SF 10 | Comparing lengths and weights | 1: Measurement | Objects have attributes | Transferring: Compare and describe attributes | Function |
| SF 11 | Counting and adding | 1:Number | Numbers are connected | Applying: Count to determine objects in sets | Connection |
| SF 12 | The'+'symbol \& seeing patterns | 1:Number | Numbers are connected | Applying: Numbers represent quantities | Function |
| P\&A 1 | Preparing for equivalence | 1: Measurement <br> 1: Number | Measurement is comparing objects Numbers are connected | Transferring: Compare and describe attributes Constructing: Use language of maths to compare | Function Change |
| P\&A 2 | Reasoning with Numicon shapes | 1:Number | Numbers can be used in many ways | Applying: Count to determine objects in sets | Function |
| P\&A 3 | Odd and even | 2: Pattern \& Function | Whole numbers exhibit patterns | Constructing: Patterns can be found in Number | Form |
| P\&A 4 | Logic | 1: Pattern \& Function | Patterns occur in everyday situations | Applying: Extend and create patterns | Function, Connection |
| P\&A 5 | Finding possibilities | 1: Pattern \& Function | Patterns repeat and grow | Applying: Extend and create patterns | Connection |
| NNS 1 | Ordering numbers to 20 | 1:Number | Numbers are connected | Constructing: Understand 1 to 1 correspondence | Causation, Connection |
| NNS 2 | Finding how many by grouping | 1:Number | Numbers are connected | Applying: Count to determine objects in sets | Causation, Connection |
| NNS 3 | Exploring number lines \& step counting | 1:Number | Connections to build number sense | Constructing: Relative magnitude | Change, Form |
| NNS 4 | Structure of 2 digit numbers | 1:Number | Numbers are connected | Constructing: Relative magnitude | Function |
| C1 | Introducing the subtracting symbol | 1:Number | Numbers are connected | Constructing: Numbers are made different ways | Causation, Change |
| C2 | Adding and subtracting 1 and 2 | 1: Pattern \& Function | Patterns repeat and grow | Transferring: Describe patterns in various ways | Function, Change |
| C3 | Money | 1:Number | Connections to build number sense | Applying: Use numbers in real life situations | Connection |
| C4 | Exploring A\&S facts to 10 | 1:Number | Connections to build number sense | Constructing: Conservation of number | Form, Function |
| C5 | Halves and quarters of wholes | 1:Number | Numbers are connected | Applying: Use simple fraction names in real life | Form, Function |
| C6 | Introduction to 'difference' | 1:Number | Numbers are connected | Applying: Subitize in reallife situations | Connection, Perspective |
| C7 | Developing A\&S facts within 10 | 1:Number | Numbers are connected | Constructing: Numbers are made different ways | Causation, Perspective |
| C8 | Adding more than two numbers | 1:Number | Numbers are connected | Constructing: Relative magnitude | Change |
| C9 | Partitioning into tens and ones | 1:Number | Connections to build number sense | Constructing: Understand whole and part relationships | Form, Causation |


|  | Numicon | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| G1 | Recognizing and naming 2D shapes | 1:Shape \& Space | Shapes can be described and organized | Constructing: 2D and 3D shapes can be described and compared | Connection |
| G2 | Making pictures, shapes \& patterns | 1:Shape \& Space | Shapes can be described and organized | Transferring: Sort and compare shapes | Form |
| G3 | Imagining common 3D shapes | 1:Shape \& Space | Shapes can be described and organized | Constructing: 2D and 3D shapes can be described and compared | Connection |
| G4 | Comparing and naming 3D shapes | 1: Shape \& Space | Shapes can be described and organized | Transferring: Sort and compare shapes | Form |
| G5 | Position, direction, and movement | 1:Shape \& Space | Objects have a position in space | Constructing: Understand language of position | Responsibility |
| M1 | Comparing, ordering \& measuring length | 1:Measurement | Objects can be measured non-standard | Applying: Describe observations in real life | Connection |
| M2 | Introducing 1p, 2p, 5p, \& 10p coins | 1:Number | Numbers can be used in many ways | Constructing: Conservation of number | Form |
| M3 | Units of time | 1:Measurement | M involves comparing objects, events | Constructing: Daily routines can be sequenced | Form |
| M4 | Comparing and ordering heaviness | 1:Measurement | M involves comparing objects, events | Constructing: Identify and describe attributes | Function |
| M5 | Comparing and ordering capacity | 1:Measurement | M involves comparing objects, events | Applying: Solve real life problems of mass | Function |
| M6 | Telling the time | 1:Measurement | Events can be ordered and sequenced | Transferring: Sequence events in daily routine | Change, Responsibility |

Curriculum Mapping Table: Number, Pattern and Calculating 2 Teaching Resource Handbook

|  | Numicon | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| GS 1 | Intro to number, pattern \& calc 2 | 2: Pattern \& Function | Whole numbers exhibit patterns | Applying: Extend and create patterns | Causation, Function |
| P\&A 1 | Exploring different patterns | 1: Pattern \& Function | Patterns repeat and grow | Transferring: Describe patterns in various ways | Function, Change |
| P\&A 2 | Exploring inverse relationships | 2: Pattern \& Function | Whole numbers exhibit patterns | Constructing: Understand the inverse relationships of A\&S | Form, Connection |
| P\&A 3 | Exploring equivalence | 2: Pattern \& Function | Patterns are seen in numbers \& symbols | Transferring: Represent patterns in various ways | Form, Connection |
| P\&A 4 | Odd and even | 2: Pattern \& Function | Whole numbers exhibit patterns | Constructing: Patterns can be found in numbers | Form |
| P\&A 5 | Patterns and sequences 2, 3, 5, 10 | 2: Pattern \& Function | Whole numbers exhibit patterns | Applying: Extend and create patterns | Change, Connection |
| P\&A 6 | Logic | 1: Pattern \& Function | Patterns occur in everyday situations | Applying: Extend and create patterns | Function, Connection |
| P\&A 7 | Finding all possibilities | 2: Pattern \& Function | Whole numbers exhibit patterns | Applying: Use properties of A \&S to solve problems | Reflection, Causation |
| NNS 1 | Counting to 100 and beyond | 1:Number | Numbers are a naming system | Constructing: Last object counted is the quantity | Form, Change |
| NNS 2 | 2-digit numbers | 1:Number | Numbers are a naming system | Constructing: Understand relative magnitude | Function |
| NNS 3 | More 2-digit numbers | 1:Number | Numbers are a naming system | Transferring: Connect names to quantities | Connection |
| NNS 4 | Comparing and ordering numbers | 1:Number | Numbers are connected | Applying: Use language of mathematics in real-life | Change |
| NNS 5 | Rounding | 2: Number | Methods for approximation and answers | Constructing: Estimate sums and differences | Reflection, Connection |
| NNS 6 | Introducing fractions as numbers | 1:Number | Numbers can be used in many ways | Applying: Use simple fractions in real-life | Form, Connection |
| C1 | Adding and writing sentences | 2: Pattern \& Function | Patterns are seen in numbers and symbols | Constructing: Understand commutative properties | Connection |
| C2 | Subtracting and writing sentences | 2: Number | Operations of A\&S and M\&D are related | Constructing: Model A\&S of whole numbers | Change |
| C3 | Ordering adding and subtracting facts | 2: Pattern \& Function | Whole numbers exhibit patterns | Applying: Extend and create patterns | Connection |
| C4 | Adding and subtracting whole 10 s | 2: Number | Base-ten system shows relationships | Constructing: Model numbers to 100 with base-ten | Function, Causation |
| C5 | Adding and subtracting 1 and 10 | 2: Number | Operations of A\&S and M\&D are related | Constructing: Model A \& of whole numbers | Change |
| C6 | Partitioning 10s and units | 2: Number | Base-ten system shows relationships | Transferring: Describe written strategies for A\&S | Form, Connection |
| C7 | A\&S 1 digit numbers from 2 digit | 2: Number | Base-ten system shows relationships | Applying: Use mental and written strategies for A\&S | Responsibility |
| C8 | Multiplying is repeated addition | 2: Number | Operations of A\&S and M\&D are related | Constructing: Understand situations involving M\&D | Form |
| C9 | Learn times tables with arrays | 2: Number | Operations of A\&S and M\&D are related | Applying: Selecting appropriate methods for solving | Perspective |
| C 10 | Mental strategies - near doubles | 1:Number | Numbers are connected | Constructing: Numbers are made in different ways | Connection |
| C 11 | Bridging with multiples of 10 | 2: Number | Operations are modelled in many ways | Constructing: Model A\&S of whole numbers | Perspective |
| C 12 | Adding 3 or more 1 digit numbers | 1:Number | Numbers are connected | Constructing: Numbers are built in a variety of ways | Connection, Change |
| C 13 | A\&S 2 digit numbers to 100 | 2: Number | Operations are modelled in many ways | Applying: Use mental and written strategies for A\&S | Function |
| C 14 | Adding and subtracting to 20 | 1:Number | Mental methods for answers | Constructing: Memorising A\&S number facts | Reflection |
| C 15 | Dividing is 'How many ... in ...' | 2: Number | Operations of A\&S and M\&D are related | Constructing: Understand situations involving M\&D | Responsibility |
| C 16 | Halves, quarters and thirds of wholes | 2: Number | Fractions represent part-whole ideas | Constructing: Model simple fractional relationships | Form, Connection |

An example lesson for this activity can be found on page 3 of this guide.

|  | Numicon | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| G 1 | Making and classifying polygons | 2: Shape \& Space | Shapes can be described and organized | Constructing: 2D and 3D Shapes can be described and compared | Form |
| G 2 | Identifying faces, edges and vertices of 3D shapes | 2: Shape \& Space | Shapes are classified and named according to their properties | Constructing: There are relationships between 2D and 3D shapes | Connection |
| G 3 | Investigating symmetry | 2: Shape \& Space | Shapes are made up of parts that repeat in some way | Transferring: Identify lines of reflective symmetry | Causation |
| G 4 | Recognizing and naming prisms | 2: Shape \& Space | Shapes are classified and named according to their properties | Applying: Recognize simple symmetrical designs in the environment | Form |
| G 5 | Investigating and describing rotation | 2: Shape \& Space | Shapes are made up of parts that repeat in some way | Constructing: Understand that examples of symmetry and transformations can be found in our immediate environment | Connection |
| M 1 | Introducing cm | 2: Measurement | Standard units allow us to have a common language to identify, order, and compare | Constructing: Understand the use of standard units to measure | Function |
| M 2 | Introducing 20p, 50 p, and $£ 1$ coins | 2: Number | Operations are modelled in many ways | Applying: Use numbers up to 100 s in real life situations | Connection |
| M 3 | Intro to $£ 2$ coin and $£ 5, £ 10, £ 20$ notes | 2:Number | Operations are modelled in many ways | Applying: Use numbers up to 100 s in real life situations | Connection |
| M 4 | Introducing m | 2: Measurement | Standard units allow us to have a common language to identify, order, and compare | Constructing: Understand the use of standard units to measure | Function |
| M 5 | Introducing kg and g | 2: Measurement | Standard units allow us to have a common language to identify, order, and compare | Constructing: Understand the use of standard units to measure | Function |
| M 6 | Introducing L and ml \& units of temperature | 2: Measurement | Standard units allow us to have a common language to identify, order, and compare | Applying: Use standard units of measurement in real life situations | Connection |
| M 7 | Telling the time and adding and subtracting with units of time | 2: Measurement | We use tools to allow us to measure the attributes of objects and events | Transferring: Read and write the time to the hour, half hour, and quarter hour | Function |



| Numicon |  | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| GS 1 | Intro to number, pattern \& calc 3 | 1: Pattern \& Function | Patterns and sequences occur | Transferring: Describe patterns in various ways | Causation, Function |
| P\&A 1 | Explore inverse relationships of A\&S | 2: Pattern \& Function | Whole numbers exhibit patterns | Constructing: Understand inverse relationships | Connection |
| P\&A 2 | Steps of constant size with multiples | 2: Pattern \& Function | Whole numbers exhibit patterns | Constructing: Patterns can be found in numbers | Form |
| P\&A 3 | Reading and creating scales | 2: Data Handling | Information is expressed as structured data | Transferring: Represent data in graph forms | Connection |
| P\&A 4 | Extend sequences and differences | 2: Pattern \& Function | Whole numbers exhibit patterns | Applying: Extend and create patterns | Change, Connection |
| P\&A 5 | Investigating general statement | 2: Pattern \& Function | Whole numbers exhibit patterns | Applying: Use number patterns in real life | Reflection |
| NNS 1 | How many groups 10s \& 100s | 2: Number | Base-ten system shows relationships | Constructing: Model numbers to 100 \& beyond base-ten | Function, Causation |
| NNS 2 | Using base 10 apparatus | 2: Number | Base-ten system shows relationships | Constructing: Model numbers to 100 \& beyond base-ten | Change |
| NNS 3 | Keeping count, writing numbers | 1: Data Handling | Organize objects and events to solve | Transferring: Represent information with pics \& tally marks | Connection |
| NNS 4 | Partitioning 2 and 3 digit numbers | 1:Number | Connections builds number sense | Constructing: Numbers can be partitioned | Change |
| NNS 5 | Ordering numbers to 1000 | 2:Number | Operations are modelled in many ways | Transferring: Compare and order cardinal numbers | Form |
| NNS 6 | Finding half way and rounding | 2:Number | Methods for approximation and answers | Constructing: Estimate sums and differences | Reflection, Connection |
| NNS 7 | Fractions of whole and sets | 2: Number | Fractions represent part-whole ideas | Constructing: Model simple fractional relationships | Reflection, Connection |
| NNS 8 | Using fractions for discrete sets | 2:Number | Fractions represent part-whole ideas | Applying: Use fractions in real-life situations | Form, Connection |
| C1 | Developing fluency A\&S to 10 | 2: Number | Operations of A\&S and M\&D are related | Applying: Fast recall of A\&S number facts | Responsibility |
| C2 | Developing fluency A\&S to 20 | 2:Number | Operations of A\&S and M\&D are related | Applying: Fast recall of A\&S number facts | Responsibility |
| C3 | Mental methods for adding | 2: Number | Apply mental computation methods | Applying: Use mental methods for A\&S in real life | Change |
| C4 | Mental methods for subtracting | 2:Number | Apply mental computation methods | Applying: Use mental methods for A\&S in real life | Change |
| C5 | Revise multiplying as repeat adding | 3: Pattern \& Function | Functions associate two related things | Constructing: Multiplication is repeat adding | Connection |
| C6 | Multiplying through arrays | 3:Number | Complex operations can be modelled | Constructing: Model M\&D of whole numbers | Form. Function |
| C7 | Dividing is 'How many ... in ...' | 2:Number | Operations of A\&S and M\&D are related | Constructing: Understand situations involving M\&D | Function |
| C8 | A\&S multiples of 10 and 100 | 2:Number | Operations of A\&S and M\&D are related | Constructing: Understand situations involving M\&D | Form |
| C9 | Patterns with A\&S calculations | 2: Number | Operations are modelled in many ways | Constructing: Use language of $\mathrm{A} \& \mathrm{~S}$ | Perspective |
| C 10 | Multiplication facts with patterns | 2: Pattern \& Function | Whole numbers exhibit patterns | Transferring: Describe number patterns | Form |
| C 11 | The sharing structure of division | 2: Number | Operations of A\&S and M\&D are related | Constructing: Understand situations involving M\&D | Function |
| C 12 | Partitioning strategies for A\&S | 2:Number | Base-ten system shows relationships | Applying: Select appropriate method for solving | Reflection |
| C 13 | Introducing column method A\&S | 2:Number | Operations are modelled in many ways | Constructing: Model A\&S of whole numbers | Connection |
| C 14 | Supporting column subtraction | 2:Number | Operations are modelled in many ways | Transferring: Describe written A\&S strategies | Form |
| C 15 | Explore ratio and scaling | 3: Pattern \& Function | Analysing patterns help predictions | Transferring: Describe a rule for a pattern | Causation |
| C 16 | Connection: division to fractions | 2: Number | Fractions represent part-whole ideas | Applying: Read, write, and compare fractions | Connection |


|  | Numicon | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| G 1 | Parts and properties of polygons and polyhedra | 3: Shape \& Space | Shapes can be transformed in different ways | Transferring: Sort, describe and model regular and irregular polygons | Form |
| G 2 | Identifying and comparing angles by size | 3: Measurement | Object and events have attributes that can be measured | Constructing: Understand an angle as a measure of rotation | Perspective |
| G 3 | Sorting and classifying 2D and 3D shapes | 2: Shape \& Space | Shapes are classified and named according to their properties | Constructing: Recognize relationships among and between 2D and 3D shapes | Form |
| G 4 | Using grids and grid references | 2: Shape \& Space | Specific vocabulary can be used to describe an object's position and space | Applying: Interpret and create simple directions | Change |
| M 1 | Telling the time on 12 hr clock | 2: Measurement | Standard units allow us to have a common language to identify, order, and compare | Constructing: Understand that time is measured using universal units | Form |
| M 2 | Exploring units of time | 2: Measurement | Standard units allow us to have a common language to identify, order, and compare | Transferring: Estimate and compare lengths of time | Connection |
| M 3 | Measuring with $\mathrm{m}, \mathrm{cm}$, and mm | 2: Measurement | We use tools to measure the attributes of objects and events | Applying: Use standard units of measurement in real life situations | Function |
| M 4 | Handling money | 2: Measurement | We use tools to measure the attributes of objects and events | Applying: Use standard units of measurement in real life situations | Function |
| M 5 | Measuring and calculating kg , and g | 2: Measurement | We use tools to measure the attributes of objects and events | Applying: Use standard units of measurement in real life situations | Function |
| M 6 | Measuring and calculating L , and ml | 2: Measurement | We use tools to measure the attributes of objects and events | Applying: Use standard units of measurement in real life situations | Function |

Curriculum Mapping Table: Number, Pattern and Calculating 4 Teaching Resource Handbook

| Numicon |  | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| GS 1 | Intro to Number, Pattern \& Calc 4 | 2: Pattern \& Function | Whole numbers exhibit patterns | Applying: Extend and create patterns | Causation, Function |
| P\&A 1 | Explore sequences and patterns | 2: Pattern \& Function | Patterns shown by number and symbols | Constructing: Represent patterns in many ways | Connection, Change |
| P\&A 2 | Exploring inverse relationships | 2: Pattern \& Function | Whole numbers exhibit patterns | Constructing: Understand inverse relationships | Connection |
| P\&A 3 | Explore ' $=$ ' to balance sentences | 3: Pattern \& Function | Analyzing and identifying rules for patterns | Transferring: Represent rules for patterns | Reflection |
| P\&A 4 | Exploring multiples and factors | 3: Number | Operations of A\&S and M\&D are related | Constructing: Use language of M\&D e.g. factors | Perspective |
| P\&A 5 | Growth patterns in problem solving | 3: Pattern \& Function | Analysing and identifying rules for patterns | Applying: Use number patterns to make predictions | Connection |
| P\&A 6 | Solving puzzles systematically | 3: Pattern \& Function | Functions associate two related things | Transferring: Describe a rule for a pattern | Function |
| P\&A 7 | Exploring general rules and logic | 4: Pattern \& Function | Patterns can be generalized | Transferring: Use a function to find a pattern rule | Connection |
| NNS 1 | Place value of 4 digit numbers | 3: Number | Base-ten can be extended for magnitude | Constructing: Model numbers to 1000s an beyond | Function |
| NNS 2 | Ordering numbers beyond 1000 | 3: Number | Base-ten can be extended for magnitude | Transferring: Write, compare and order numbers | Connection |
| NNS 3 | Estimating and rounding | 3:Number | Operations of A\&S and M\&D are related | Applying: Estimate sum, difference etc. in real life | Change |
| NNS 4 | Introducing to negative numbers | 4:Number | The base-ten system extends both ways | Constructing: Model integers in appropriate context | Function |
| NNS 5 | Fractions and part-whole ideas | 3:Number | Fractions and decimals are part-whole ideas | Transferring: Read, write, and compare fractions | Causation |
| NNS 6 | Introducing decimal fractions | 3:Number | Fractions and decimals are part-whole ideas | Constructing: Model decimal fractions beyond 2dp | Change |
| NNS 7 | Equivalence in fractions \& proportion | 3:Number | Fractions and decimals are part-whole ideas | Constructing: Model equivalent fractions | Connection |
| NNS 8 | Decimal fractions to two decimal places | 3:Number | Fractions and decimals are part-whole ideas | Applying: Use decimal fractions in real life | Connection |
| C1 | A\&S facts with inverses | 2: Pattern \& Function | Whole numbers exhibit patterns | Constructing: Understand inverse relationships | Form |
| C2 | Bridging when adding and subtracting | 2: Number | Operations of A\&S and M\&D are related | Applying: Select appropriate method for solving | Connection |
| C3 | Fluency with mental adding ideas | 2:Number | Apply mental computation methods | Applying: Use mental methods for A\&S in real life | Function |
| C4 | Fluency with mental subtracting ideas | 2:Number | Apply mental computation methods | Applying: Use mental methods for A\&S in real life | Function |
| C5 | Fluency with multiplication to $12 \times 12$ | 3:Number | Operations of A\&S and M\&D are related | Applying: Fast recall of M\&D facts | Form |
| C6 | Fluency with division facts to $12 \times 12$ | 3:Number | Operations of A\&S and M\&D are related | Applying: Fast recall of M\&D facts | Form, Connection |
| C7 | M\&D by 10s and 100s | 3:Number | Complex operations can also be modelled | Constructing: Model M\&D of whole numbers | Function |
| C8 | Fluency with column method adding | 3:Number | Complex operations can also be modelled | Applying: Select efficient method for solving | Change |
| C9 | Fluency with column method subtracting | 3:Number | Complex operations can also be modelled | Applying: Select efficient method for solving | Change |
| C 10 | The distributive property multiplication | 3: Pattern \& Function | Analysing and identifying rules for patterns | Constructing: Understanding commutative properties | Function |
| C 11 | Using multiplication for division | 3: Pattern \& Function | Functions associate two related things | Constructing: Inverse relationship of M\&D | Perspective, Connection |
| C 12 | Short algorithm method of multiplication | 3:Number | Complex operations can also be modelled | Constructing: Model M\&D of whole numbers | Connection |
| C 13 | Short algorithm method of division | 3:Number | Complex operations can also be modelled | Constructing: Model M\&D of whole numbers | Connection |
| C 14 | Multi-step problems | 3:Number | Complex operations can also be modelled | Applying: Use M\&D strategies in real life | Responsibility |

Curriculum Mapping Table: Geometry, Measurement and Statistics 4 Teaching Resource Handbook Age

|  | Numicon | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| G 1 | Classifying triangles and quadrilaterals | 3: Shape \& Space | Geometric shapes and vocabulary are useful to represent and describe objects or events in real world | Constructing: Understand congruent or similar shapes | Form |
| G 2 | Understanding reflective symmetry | 3: Shape \& Space | Shapes can be transformed in different ways | Constructing: Understand lines and axes of reflective and rotational symmetry | Connection |
| G 3 | Investigating angles in shapes | 4: Measurement | Accuracy of measurements depend on the situation and precision of the tool | Transferring: Measure and construct angles with a protractor | Reflection |
| G 4 | Reading and plotting positions using coordinates | 3: Shape \& Space | Geometric shapes and vocabulary are useful to represent and describe objects or events in real world | Transferring: Locate features on a grid using coordinates | Function |
| M 1 | Times and durations with 24 h clock | 3: Measurement | Relationships exist between standard units that measure the same attributes | Transferring: Read and write digital and analogue time on 12-hour and 24-hour clocks | Connection |
| M 2 | Calculating with money amounts | 3: Data Handling | Data can be collected, organized, displayed and analysed in different ways | Transferring: Collect, display and interpret data | Perspective |
| M 3 | Using units of length and distance | 3: Measurement | Relationships exist between standard units that measure the same attributes | Constructing: Understand the relationship between unit, e.g. $\mathrm{m}, \mathrm{cm}$ and mm | Connection |
| M 4 | Using units of mass | 3: Measurement | Relationships exist between standard units that measure the same attributes | Constructing: Understand that measures can fall between numbers on a measurement scale | Function |
| M 5 | Using units of capacity and volume | 3: Measurement | Relationships exist between standard units that measure the same attributes | Constructing: Understand that measures can fall between numbers on a measurement scale | Function |
| M 6 | Understanding perimeter and area | 3: Measurement | Objects and evens have attributes that can be measured using appropriate tools | Constructing: Understand the use of standard units to measure perimeter, area and volume | Connection |

## Curriculum Mapping Table: Number, Pattern and Calculating 5 Teaching Resource Handbook

| Numicon |  | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| GS 1 | Intro to Number, Pattern \& Calc 5 | 3: Pattern \& Function | Analysing and identifying patterns for rules | Applying: Use appropriate methods for patterns | Causation, Function |
| P\&A 1 | Explore sequences and patterns | 3: Pattern \& Function | Analysing and identifying patterns for rules | Transferring: Identify sequence of operations | Function |
| P\&A 2 | Using inverse relationships | 3: Pattern \& Function | Functions associate two related things | Constructing: Understand inverse relationships M\&D | Connection |
| P\&A 3 | Properties of number | 3: Pattern \& Function | Analysing and identifying patterns for rules | Applying: Appropriate methods for representing patterns | Connection |
| P\&A 4 | Patterns for generalization | 4: Pattern \& Function | Patterns can be generalized | Transferring: Use a function to find a pattern rule | Function |
| P\&A 5 | Using equivalence for solving problems | 3: Pattern \& Function | Analysing and identifying patterns for rules | Transferring: Describe a rule for a pattern | Connection |
| P\&A 6 | Logic and reasoning | 4: Pattern \& Function | Patterns can be generalized | Transferring: Represent a rule for a pattern | Causation |
| NNS 1 | Numbers up to a million | 4: Number | Base-ten extends infinitely both ways | Constructing: Model numbers to millions and beyond | Change |
| NNS 2 | Equivalence with fractions | 4:Number | Fractions and decimals are part-whole ideas | Constructing: Use improper fractions and mixed numbers | Function |
| NNS 3 | Understanding decimals | 4:Number | Fractions and decimals are part-whole ideas | Constructing: Model decimal fractions to 4dp + | Function |
| NNS 4 | Estimating and rounding | 3:Number | Complex operations can also be modelled | Applying: Estimate sum, difference etc. in real life | Connection |
| NNS 5 | Working with negative numbers | 4:Number | Base-ten extends infinitely both ways | Constructing: Model integers in appropriate context | Function |
| NNS 6 | Comparing and ordering fractions | 4:Number | Fractions and decimals are part-whole ideas | Applying: Simplify fractions in computation answers | Connection |
| NNS 7 | Problems with fractions and decimals | 4:Number | Fractions and decimals are part-whole ideas | Applying: Use fractions, decimals in real life | Function |
| C1 | Fluency with A\&S inverses | 3: Pattern \& Function | Functions associate two related things | Constructing: Understand inverse relationships | Connection |
| C2 | Bridging with A\&S mentally | 3:Number | Operations of A\&S and M\&D are related | Applying: Select efficient method for solving | Connection |
| C3 | Further strategies for A\&S | 3:Number | Operations of A\&S and M\&D are related | Applying: Select efficient method for solving | Form |
| C4 | Fluency with M\&D | 3:Number | Operations of A\&S and M\&D are related | Applying: Fast recall of M\&D facts | Connection |
| C5 | Written methods of adding | 3:Number | Complex operations can also be modelled | Applying: A\&S decimals in real life | Change |
| C6 | Written methods of subtracting | 3:Number | Complex operations can also be modelled | Applying: A\&S decimals in real life | Change |
| C7 | M\&D by 10,100 and 1000 | 3: Pattern \& Function | Analysing and identifying patterns for rules | Applying: Use properties and relationships to solve | Connection, Change |
| C8 | Mental methods for M\&D | 3:Number | Operations of A\&S and M\&D are related | Applying: Fast recall of M\&D facts | Form, Connection |
| C9 | Division with remainders | 3:Number | Complex operations can also be modelled | Applying: Use M\&D strategies in real life | Reflection |
| C 10 | Proportion and ratio | 4: Number | Ratios are a comparison of two quantities | Constructing: Model ratios | Change |
| C 11 | Percentages | 4: Number | Decimals and \% are part-whole ideas | Constructing: Model percentages | Function |
| C 12 | Written methods of multiplying | 3:Number | Operations of A\&S and M\&D are related | Applying: Use M\&D strategies in real life | Responsibility |
| C 13 | Written methods of dividing | 3:Number | Operations of A\&S and M\&D are related | Applying: Use M\&D strategies in real life | Responsibility |
| C 14 | Calculating fractions of amounts | 4:Number | Use whole number ideas for R\&P | Applying: Use fractions \& \% interchangeably in real life | Connection |
| C 15 | Calculating with fractions | 4: Number | Use whole number ideas for R\&P | Applying: Use fractions \& \% interchangeably in real life | Connection |
| C 16 | Multi-step problems | 4:Number | Use whole number ideas for R\&P | Applying: Use strategies to evaluate reasonableness | Reflection |


|  | Numicon | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| G 1 | Measuring angles | 4: Measurement | Accuracy of measurements depend on the situation and precision of the tool | Transferring: Measure and construct angles with a protractor | Responsibility |
| G 2 | Transformations | 3: Shape \& Space | Shapes can be transformed in different ways | Constructing: Visualization of shape and space helps us solve problems | Causation |
| G 3 | Exploring angles | 4: Measurement | Accuracy of measurements depend on the situation and precision of the tool | Applying: Determine and justify level of accuracy required to solve real-life problems | Function |
| M 1 | Metric and imperial units | 4: Measurement | Conversions of units and measurements allow us to make sense of the world we live in | Constructing: Understand unit conversions within measurement systems | Perspective |
| M 2 | Interpreting charts and graphs | 3: Data Handling | Different graph forms highlight different aspects of data more accurately | Constructing: Data can be collected, displayed and interpreted in many ways | Function, Change |
| M 3 | Calculating area and perimeter | 4: Measurement | A range of procedures exist to measure different attributes of objects and events | Constructing: Understand the relationship between area, perimeter, volume and capacity. | Function |
| M 4 | Estimating volume and capacity | 4: Measurement | A range of procedures exist to measure different attributes of objects and events | Constructing: Understand the relationship between unit, e.g. $\mathrm{m}, \mathrm{cm}$ and mm | Connection |
| M 5 | Working with area and perimeter | 4: Measurement | A range of procedures exist to measure different attributes of objects and events | Transferring: Develop and describe formulas for finding perimeter area and volume | Connection |
| M 6 | Scale drawing | 4: Shape \& Space | Manipulation of shape and space takes place for a particular purpose | Constructing: Understand how scale is used to enlarge and reduce shapes | Form |
| M 7 | Solving problems with time and money | 4: Measurement | A range of procedures exist to measure different attributes of objects and events | Applying: Using timetables and schedules in real life situations | Responsibility |

Curriculum Mapping Table: Number, Pattern and Calculating 6 Teaching Resource Handbook

| Numicon |  | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| P\&A 1 | Multiples, factors and primes | 4: Pattern \& Function | Patterns can be generalized | Applying: Appropriate methods for representing patterns | Function |
| P\&A 2 | Exploring sequences and relationships | 4: Pattern \& Function | Exponents show repeated products | Constructing: Inverse relationships exponents \& roots | Change |
| P\&A 3 | Using algebra to solve problems | 4: Pattern \& Function | Patterns can be generalized | Applying: Appropriate methods for representing patterns | Connection |
| P\&A 4 | Variables with symbol and letters | 4: Pattern \& Function | Patterns can be generalized | Applying: Using functions to solve problems | Causation |
| NNS 1 | Numbers beyond 1 million | 4: Number | Base-ten extends infinitely both ways | Constructing: Model numbers to millions and beyond | Change |
| NNS 2 | Fractions | 4: Number | Fractions and decimals are part-whole ideas | Applying: Use fractions and decimals in real life | Reflection |
| C 1 | A\&S negative numbers in context | 4: Number | Base-ten extends infinitely both ways | Transferring: Read and write integers in context | Form |
| C 2 | Multiplying and dividing | 3: Number | Operations of A\&S and M\&D are related | Applying: Select efficient method for solving | Perspective |
| C3 | Estimating, rounding and equivalence | 4: Number | Decimals use whole number calculations | Applying: Estimate and approximate in real life | Responsibility |
| C 4 | Column methods for A\&S | 4: Number | Decimals use whole number calculations | Constructing: Model A\&S and M\&D of decimals | Form |
| C 5 | Percentages | 4: Number | Decimals and \% are part-whole ideas | Transferring: Compare and order percentages | Connection |
| C 6 | Multi-step non routine problems | 4: Number | Base-ten extends infinitely both ways | Applying: Use strategies to evaluate reasonableness | Reflection |
| C 7 | Ratio and proportion | 4: Number | Ratios are a comparison of 2 quantities | Applying: Use fractions and \% interchangeably in real life | Connection |
| C 8 | Converting fractions and decimals | 4: Number | Decimals and \% are part-whole ideas | Applying: Use fractions and decimals in real life | Function |
| C 9 | Column methods of multiplying | 4: Number | Decimals use whole number calculations | Applying: Select efficient method for solving | Connection |
| C 10 | Long division | 4: Number | Decimals use whole number calculations | Applying: Select efficient method for solving | Connection |
| C 11 | A\&S with fractions | 4: Number | Fractions and decimals are part-whole ideas | Applying: Use A\&S, M\&D fraction strategies in real life | Form |
| C 12 | M\&D with fractions | 4: Number | Fractions and decimals are part-whole ideas | Applying: Use A\&S, M\&D fraction strategies in real life | Form |
| C 13 | Unusual problems with all operations | 4: Number | Fractions and decimals are part-whole ideas | Applying: Use A\&S, M\&D fraction strategies in real life | Reflection |
| PFT 1 | Self assessment and imagery | 3: Number | Complex operations can also be modelled | Applying: Use strategies to evaluate reasonableness | Reflection |
| PFT 2 | Problem solving strategies | 3: Number | Operations of A\&S and M\&D are related | Applying: Fast recall of M\&D facts in real life | Perspective |
| PFT 3 | Calculating whole numbers \& DP | 3: Number | Operations of A\&S and M\&D are related | Applying: Fast recall of M\&D facts | Form |
| PFT 4 | Calculating fractions and decimals | 4: Number | Decimals use whole number calculations | Applying: Select and use appropriate operations | Form |
| PFT 5 | Preparing for math test conditions | 4: Pattern \& Function | Patterns can be generalized | Applying: Appropriate methods for representing patterns | Reflection |
| 11 | Making squares | 4: Pattern \& Function | Patterns can be generalized | Transferring: Analyse the rule of a pattern | Connection |
| 12 | What did I do? | 4: Pattern \& Function | Patterns can be generalized | Transferring: Analyse the rule of a pattern | Reflection |
| 13 | How many ways? | 4: Pattern \& Function | Patterns can be generalized | Transferring: Represent rule or pattern with a function | Responsibility |
| 14 | Decimal Patterns | 4: Pattern \& Function | Patterns can be generalized | Constructing: Patterns can be analysed and generalized | Connection |
| 15 | Which is the best value? | 4: Measurement | A range of procedures measure attributes | Applying: Justify accuracy in real life problems | Perspective |
| 16 | An enterprise project | 4: Number | Ratios are a comparison of 2 quantities | Applying: Estimate and approximate in real life | Function | $\mathrm{P} \& A=$ Pattern and Algebra $\quad$ PFT $=$ Preparing formal Testing

Curriculum Mapping Table: Geometry, Measurement and Statistics 6 Teaching Resource Handbook Age

| Numicon |  | Suggested PYP Links |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Activity Group | Activity Group Title (Short) | Phase \& Continuum | Continuum Conceptual Understanding | Continuum Learning Outcome Option | General Concept Goal |
| G 1 | 2D shapes and angles | 4: Shape \& Space | Geometric tools and methods can be used to solve problems relating to shape and space | Transferring: Analyse, describe, classify, and visualize 2D and 3D shapes using geometric vocabulary | Function |
| G 2 | Circles | 4: Shape \& Space | Consolidating what we know of geometric concepts allows us to make sense and interact with our world | Constructing: Understand the properties of circles | Connection |
| G 3 | Transformations in the four quadrants | 4: Shape \& Space | Shapes can be transformed in different ways | Applying: Apply knowledge of transformations to problem-solving situations | Change |
| M 1 | Statistics, charts and graphs | 4: Data Handling | Data can be presented effectively for valid interpretation and communication | Constructing: Understand different types of graphs have special purposes | Perspective |
| M 2 | Areas of 2D shapes | 4: Shape \& Space | Geometric tools and methods can be used to solve problems relating to shape and space | Transferring: Explore and use geometric ideas and relationships to solve problems in other areas of mathematics | Connection |
| M 3 | 3D shapes - nets and surface area | 4: Shape \& Space | A range of procedures exist to measure different attributes of objects and events | Transferring: Create and model how a 2D net converts into a 3D shape and vice versa | Function |
| M 4 | Volume and scaling | 4: Shape \& Space | Manipulation of shape and space takes place for a particular purpose | Constructing: Understand how scale is used to enlarge and reduce shapes | Connection |
| 11 | Shape shifting | 4: Shape \& Space | Manipulation of shape and space takes place for a particular purpose | Constructing: Understanding the properties of regular and irregular polyhedra | Form |
| 12 | Macro maths | 4: Measurement | A range of procedures exists to measure different attributes of objects and events | Applying: Select and use appropriate units of measurement and tools to solve problems in real-life situations | Responsibility |
| 13 | Interesting information | 4: Pattern \& Function | Patterns can be generalized | Applying: Use functions to solve problems | Reflection |

Note In Numicon, Statistics is interwoven into the Geometry and Measurement activity groups, rather that being covered as a separate strand.

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