



Renfrewshire  
Council

Numeracy & Mathematics  
Skills Progression Through Second Level

**Estimation and Rounding****MNU 2-01a**

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.

**Pathway 1**

- I can round whole numbers to the nearest 100s, 1 000s, 10 000s
- I can use my knowledge of place value (supported by a number line) to help decide whether to round up or round down
- I can round decimal fractions to the nearest whole number e.g., 23.6 rounds to 24
- I can use rounding to estimate the answer to number problems and to check if my answer is reasonable

**Pathway 2**

- I can round whole numbers to the nearest 1 000s, 10 000s or 100 000s
- I can use my knowledge of place value (supported by a number line) to help decide whether to round up or round down
- I can round decimal fractions to the nearest tenth e.g., 76.27 rounds to 76.3
- I can use rounding to estimate the answer to number problems and to check if my answer is reasonable

**Pathway 3**

- I can use rounding to estimate the answer to number problems and to check if my answer is reasonable
- I can use my knowledge of place value to help decide how to round up or round down
- I can use an empty number line to help me decide whether to round up or round down
- I can round decimal fractions to the nearest hundredth e.g., 19.528 rounds to 19.53
- I can use rounding to estimate the answer to number problems and to check if my answer is reasonable

<b>Number &amp; Number Processes</b>		
<b>MNU 2-02a</b>		
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.		
Pathway 1	Pathway 2	Pathway 3
<ul style="list-style-type: none"> <li>• I can read a number correctly by working out the value of each digit in its position knowing zero is a placeholder</li> <li>• I can recognise and identify numerals in the range 0 to 10 000</li> <li>• I can arrange non-consecutive numbers in ascending and descending order in the range 0 to 10 000</li> <li>• I can recognise and build numbers up to 10 000 partitioned canonically using different resources e.g., place value counters and arrow cards</li> <li>• I can show and compare numbers on a number line and talk about their position, e.g., 1 414 is between 1 400 and 1 450</li> </ul> <p><b>Introduce tenths as decimal notation:</b></p> <ul style="list-style-type: none"> <li>• I can read a number correctly by working out the value of each digit in its position including decimals to tenths and knowing zero is a placeholder</li> <li>• I can use a decimal point in the correct place to separate whole numbers and tenths</li> <li>• I can talk about how decimal fractions are used in everyday life</li> </ul>	<ul style="list-style-type: none"> <li>• I can read a number correctly by working out the value of each digit in its position knowing zero is a placeholder</li> <li>• I can recognise and identify numerals in the range 0 to 1 000 000</li> <li>• I can arrange non-consecutive numbers in ascending and descending order in the range 1 000 000 to 0</li> <li>• I can state the number 1, 10, 100 and 1 000 more and less than a given number</li> <li>• I can show and compare numbers on a number line and talk about their position, e.g., 1 414 is between 1 400 and 1 450</li> </ul> <p><b>Introduce hundredths as decimal notation:</b></p> <ul style="list-style-type: none"> <li>• I can read a number correctly by working out the value of each digit in its position including decimals to hundredths and knowing zero is a placeholder</li> <li>• I can talk about how decimal fractions are used in everyday life</li> </ul>	<p><b>Introduce thousandths as decimal notation:</b></p> <ul style="list-style-type: none"> <li>• I can read a number correctly by working out the value of each digit in its position including decimals to hundredths and knowing zero is a placeholder</li> <li>• I can read, write and order sets of decimal fractions to 3 decimal places</li> <li>• I can partition a wide range of whole numbers and decimal fractions to three decimal places, e.g., <math>3 \cdot 6 = 3</math> ones and <math>6</math> tenths = <math>36</math> tenths</li> <li>• I can talk about how decimal fractions are used in everyday life</li> </ul>

**Number & Number Processes**

**MNU 2-03a Addition and Subtraction**

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.

Pathway 1	Pathway 2	Pathway 3
<ul style="list-style-type: none"><li>• I can add and subtract by partitioning 3 and 4-digit numbers into 1 000s, 100s, 10s and 1s</li><li>• I can add and subtract 2-digit whole numbers mentally using a variety of strategies (Number Talks)</li><li>• I can add and subtract using a range of strategies, using concrete and pictorial representations to support my thinking</li><li>• I am beginning to use my understanding of place value to add and subtract, using a standard written formal method</li><li>• I understand the inverse relationship between addition and subtraction and can use one fact to obtain related fact families e.g., if <math>311 - 55 = 256</math> then <math>256 + 55 = 311</math> and <math>55 + 256 = 311</math></li><li>• I can select the correct operations when solving word problems, explaining and justifying my strategy e.g., using a bar model, diagram, jottings etc.</li></ul>	<ul style="list-style-type: none"><li>• I can add and subtract 2-digit whole numbers mentally using a variety of strategies (Number Talks)</li><li>• I can add and subtract using a range of strategies, using concrete and pictorial representations to support my thinking</li><li>• I can use a standard written formal method to carry out addition and subtraction problems</li><li>• I can select the correct operations when solving 2 step word problems, explaining and justifying my strategy for example using a bar model, diagram, jottings etc</li><li>• I understand the inverse relationship between addition and subtraction and can use one fact to obtain related fact families e.g., if <math>4\ 221 - 525 = 3\ 696</math> then <math>3\ 696 + 525 = 4\ 221</math> and <math>525 + 3\ 969 = 4\ 221</math></li><li>• I can select the correct operations when solving 2-step word problems, explaining and justifying my strategy for example using a bar model, diagram, jottings etc.</li></ul>	<ul style="list-style-type: none"><li>• I can add or subtract up to 1 000 000</li><li>• I understand the inverse relationship between addition and subtraction and can use one fact to obtain related fact families e.g., if <math>40\ 321 - 2\ 844 = 37\ 477</math> then <math>37\ 477 + 2\ 844 = 40\ 321</math> and <math>2\ 844 + 37\ 477 = 40\ 321</math></li><li>• I can select the correct operations when solving multi-step word problems, explaining and justifying my strategy for example using a bar model, diagram, jottings etc.</li></ul>

## Number & Number Processes

### MNU 2-03a Multiplication and Division

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.

Pathway 1	Pathway 2	Pathway 3
<ul style="list-style-type: none"><li>• I can use arrays and make links between the 2, 4 and 8 times tables</li><li>• I can use arrays and make links between the 3, 6 and 9 times tables</li><li>• I can use arrays and make links between the 9 and 10 times tables</li><li>• I can demonstrate the commutative law using arrays e.g., <math>6 \times 2</math> is the same as <math>2 \times 6</math></li><li>• I can recall the multiplication and division facts for the 6, 7, 8 and 9 times tables</li><li>• I can use my knowledge of doubles and halves to solve multiplication and division problems</li><li>• I have had opportunities to explore concrete materials and pictorial representations when multiplying 3-digit numbers by a 1-digit number e.g., base 10, place value counters and an area model</li><li>• I can use repeated addition or subtraction to solve division problems using a number line</li><li>• I can solve division problems by a single digit using a bar model</li><li>• I can select the most appropriate method for calculating mentally (Number Talks)</li><li>• I can multiply and divide by 10 and 100 (use the Gattegno chart to support this)</li><li>• I can interpret and solve worded problems</li></ul>	<ul style="list-style-type: none"><li>• I can multiply by a single digit using partitioning, an area model and a standard formal written method</li><li>• I can divide by a single digit using a standard formal written method</li><li>• I can select the most appropriate method for calculating mentally (Number Talks)</li><li>• I can multiply and divide by 10, 100 and 1 000 (use the Gattegno chart to support this)</li><li>• I can multiply by multiples of 10 and 100 e.g., <math>9 \times 30</math>, <math>12 \times 40</math>, <math>4 \times 700</math></li><li>• I can interpret and solve multi-step worded problems</li><li>• I can use the inverse relationship to help solve multiplication and division problems e.g., <math>280 \div \text{by } 7 = 40</math> because <math>7 \times 40 = 280</math></li><li>• I can partition numbers to help me solve a 1-digit by 2-digit calculation e.g., <math>9 \times 50</math> can be broken into <math>5 \times 50 + 4 \times 50</math></li><li>• I can use factors to help me solve a 2-digit by 1-digit calculation e.g., <math>50 \times 6</math> can be broken into <math>50 \times 3 \times 2</math></li></ul>	<ul style="list-style-type: none"><li>• I can multiply by a single digit using partitioning, an area model and a standard formal written method</li><li>• I can divide by a single digit using a standard formal written method</li><li>• I can multiply and divide by multiples of 10, 100 and 1 000 e.g., <math>27 \times 30</math>, <math>180 \div 20</math></li><li>• I can recite and recall the table facts up to the 10 times table</li><li>• I can multiply to a 2-digit number by a 2-digit number</li><li>• I can interpret and solve multi-step worded problems</li><li>• I can use the inverse relationship to help solve multiplication and division problems e.g., <math>280 \div \text{by } 7 = 40</math> because <math>7 \times 40 = 280</math></li><li>• I can partition numbers to help me solve a 2-digit by 2-digit calculation e.g., <math>50 \times 12</math> can be broken into <math>50 \times 10 + 50 \times 2</math> or <math>50 \times 6 + 50 \times 6</math></li><li>• I can use factors to help me solve a 2-digit by 2-digit calculation e.g., <math>50 \times 12</math> can be broken into <math>50 \times 6 \times 2</math> or <math>50 \times 3 \times 4</math></li></ul>

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| <ul style="list-style-type: none"><li>• I can use the inverse relationship to help solve multiplication and division problems e.g., <math>28 \div 7 = 4</math> because <math>7 \times 4 = 28</math></li><li>• I can partition numbers to help me solve multiplication facts e.g., <math>8 \times 7</math> can be broken into <math>8 \times 5 + 8 \times 2</math></li><li>• I can use factors to help me solve multiplications facts e.g., <math>50 \times 6</math> can be broken into <math>50 \times 3 \times 2</math></li></ul> |  |  |
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<b>Number &amp; Number Processes</b>		
<b>MNU 2-03b</b>		
I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods.		
Pathway 1	Pathway 2	Pathway 3
	<ul style="list-style-type: none"> <li>• I can partition a wide range of decimal fractions with up to at least 2 decimal places, for example, 3·6 is three and six tenths, 3·42 is three and forty-two hundredths</li> <li>• I can recognise where decimal fractions are used in everyday life and can apply my calculation strategies to problems involving money and measure</li> <li>• I can add or subtract 10, 100 and 1 000 to and from a decimal fraction to 2 decimal places</li> <li>• I can multiply or divide numbers up to 2 decimal places by 10, 100 and 1 000 using an efficient mental strategy</li> <li>• I can use my knowledge of related facts when multiplying by 10, 100 and 1 000 to create new facts e.g., <math>12 \times 6 = 72</math> therefore <math>1\cdot2 \times 6 = 7\cdot2</math>, <math>12 \times 0\cdot6 = 7\cdot2</math>, <math>0\cdot12 \times 6 = 0\cdot72</math>, etc.</li> <li>• I can use doubling and halving skills to multiply decimals by a single digit</li> <li>• I can carry out addition and subtraction with numbers containing up to 2 decimal places</li> <li>• I can carry out multiplication and division of number containing up to 2 decimal places by a single digit</li> </ul>	<ul style="list-style-type: none"> <li>• I can partition a wide range of decimal fractions with up to at least 2 decimal places, for example, 3·6 is three and six tenths, 3·42 is three and forty-two hundredths</li> <li>• I can recognise where decimal fractions are used in everyday life and can apply my calculation strategies to problems involving money and measure</li> <li>• I can add or subtract 10, 100 and 1 000 to and from a decimal fraction to 2 decimal places</li> <li>• I can multiply or divide numbers up to 2 decimal places by 10, 100 and 1 000 using an efficient mental strategy</li> <li>• I can use my knowledge of related facts when multiplying by 10, 100 and 1 000 to create new facts e.g., <math>12 \times 6 = 72</math> therefore <math>1\cdot2 \times 6 = 7\cdot2</math>, <math>12 \times 0\cdot6 = 7\cdot2</math>, <math>0\cdot12 \times 6 = \cdot72</math>, etc.</li> <li>• I can use doubling and halving skills to multiply decimals by a single digit</li> <li>• I can carry out addition and subtraction with numbers containing up to 2 decimal places</li> <li>• I can carry out multiplication and division of number containing up to 2 decimal places by a single digit</li> <li>• I can express a remainder as a decimal, e.g., <math>43 \div 5 = 8\cdot6</math></li> </ul>

**Number & Number Processes****MNU 2-03c**

Having explored the need for rules for the order of operations in number calculations, I can apply them correctly when solving simple problems.

Pathway 1

Pathway 2

Pathway 3

- I can use the order of operations to carry out calculations correctly
- I can look at a calculation and decide which numbers can be reordered
- I know that in some calculations the order cannot be changed
- I know that addition and multiplication are commutative but subtraction and division are not e.g.,  $3 \times 4 = 4 \times 3$
- I can solve problems that involve a combination of addition, subtraction, multiplication and division
- I know that I start by looking at multiplication and division before addition and subtraction and how the order of operations can change the answer e.g.,  $12 + 7 \times 3 = 33$  because we multiply before an addition
- I know that I can change the order of operations by using brackets



<b>Number &amp; Number Processes</b>		
<b>MTH 2-04a</b>		
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.		
Pathway 1	Pathway 2	Pathway 3
		<ul style="list-style-type: none"> <li>• I can talk about familiar contexts in which negative numbers are used</li> <li>• I can locate and order numbers less than zero</li> </ul>

**Multiples, Factors & Primes****MTH 2-05a**

Having explored the patterns and relationships in multiplication and division, I can investigate and identify the multiples and factors of numbers.

## Pathway 1

- I can explain the meaning of the word multiple
- I can continue a sequence of multiples by applying my knowledge of table facts, NWS or by counting on
- I can decide whether or not one number is a multiple of another by applying my understanding of the relationship between multiplication and division, e.g., 12 is a multiple of 3 because  $12 \div 3$  leaves no remainder OR because  $3 \times 4 = 12$
- I can explain the meaning of the word factor
- I can identify all the factors of a given number
- I can use divisibility rules for 2, 5 and 10 to help identify associated multiples and factors

## Pathway 2

- I can explain the meaning of the word multiple
- I can continue a sequence of multiples by applying my knowledge of table facts, NWS or by counting on
- I can decide whether or not one number is a multiple of another by applying my understanding of the relationship between multiplication and division, e.g., 12 is a multiple of 3 because  $12 \div 3$  leaves no remainder OR because  $3 \times 4 = 12$
- I can identify common multiples and the lowest common multiple
- I can explain the meaning of the word factor
- I can identify all the factors of a given number
- I can group factors in their factor pairs
- I can identify common factors and the highest common factor
- I can use divisibility rules for 2, 5, 10, 3, 4, 6, 8 and 9 to help identify associated multiples and factors

## Pathway 3

- I can calculate the lowest common multiple of 2 or more numbers
- I can calculate the highest common factor of 2 or more numbers

**Fractions, Decimal Fractions & Percentages**

**MNU 2-07a**

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 2-07b**

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.

**MTH 2-07c**

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.

**Pathway 1**

- I recognise the symbols and signs of fractions and decimals and understand their meaning
- I can find where fractions and decimals are in the world around me
- I can use concrete materials when calculating a fraction of a quantity
- I can compare and order fractions using a pictorial approach
- I can plot fractions and decimals on a number line
- I can find, compare and order numbers with one decimal place between 0 and 1
- I can identify and create equivalent fractions visually through a bar model and fraction wall
- I can find the decimal equivalent of a fraction (tenths)
- I can simplify a fraction using a fraction wall

**Pathway 2**

- I understand and can use the term percentage
- I can find where fractions, decimals and percentages are in the world around me
- I can compare and order fractions, decimals and percentages
- I can recognise, find and write decimal equivalents of any number of tenths and hundredths
- I can use a picture split into a hundredth and explain how to change a percentage into a fraction, e.g., 50% = 1/2, 25% = 1/4, 10% = 1/10, 75% = 3/4
- I can identify and create equivalent fractions using a fraction wall and by using common factors
- I can simplify fractions by dividing the denominator and numerator by the same amount
- I can convert between improper fractions and mixed fractions

**Pathway 3**

- I can use equivalent forms of common fractions, decimal fractions and percentages, e.g.,  $\frac{3}{4} = 0.75 = 75\%$
- I can solve a fraction problem using fractions, decimals or percentages in everyday context, e.g.,  $\frac{3}{5}$  or 0.6 or 60% sale price in a store
- I can solve problems involving fractions of a quantity, e.g., find  $\frac{7}{9}$  of 162
- I can compare and order fraction (including improper), decimals and percentages
- I can identify and create equivalent fractions using a fraction wall and by using common factors
- I can express fractions in their simplest form by using common factors
- I can convert between improper fractions and mixed fractions
- I can convert between fractions, decimals and percentages, e.g.,  $0.6 = \frac{?}{?} = ?\%$

<ul style="list-style-type: none"> <li>I can use a bar model to help me solve worded problems involving fractions of a quantity</li> </ul>	<ul style="list-style-type: none"> <li>I understand that I can change a percentage to a fraction to help me calculate a percentage of any amount</li> <li>I can find, compare and order numbers with two decimal places between 0 and 1 and beyond</li> <li>I can use a bar model to help me solve worded problems involving fractions of a quantity</li> <li>I can solve problems by calculating the percentage of a quantity</li> <li>I can solve problems involving fractions of a quantity e.g., find <math>\frac{3}{5}</math> of 160</li> </ul>	<ul style="list-style-type: none"> <li>I can convert a decimal fraction into a fraction in its simplest form, e.g., <math>0.25 = \frac{25}{100} = \frac{1}{4}</math></li> <li>I can use a picture split into a hundredth and explain how to change a simple percentage into a fraction, e.g., <math>50\% = \frac{1}{2}</math> , <math>25\% = \frac{1}{4}</math> , <math>10\% = \frac{1}{10}</math> , <math>75\% = \frac{3}{4}</math></li> <li>I can work out 10% by dividing the amount by 10 and 1% by dividing by 100</li> <li>I can use a bar model to solve calculations involving percentages</li> <li>I can find any percentage of an amount by chunking multiples of 10%, 5% and 1%, e.g., 17%, find 10%, find 5%, find 1% and multiply by 2 I can convert between fractions, decimals and percentages, e.g., <math>0.6 = \frac{6}{10} = 60\%</math></li> <li>I can convert a decimal fraction into a fraction in its simplest form, e.g., <math>0.25 = \frac{25}{100} = \frac{1}{4}</math></li> <li>I can use a picture split into a hundredth and explain how to change a simple percentage into a fraction, e.g., <math>50\% = \frac{1}{2}</math> , <math>25\% = \frac{1}{4}</math> , <math>10\% = \frac{1}{10}</math> , <math>75\% = \frac{3}{4}</math></li> <li>I can work out 10% by dividing the amount by 10 and 1% by dividing by 100</li> <li>I can use a bar model to solve calculations involving percentages</li> <li>I can find any percentage of an amount by chunking multiples of 10%, 5% and</li> </ul>
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		1%, e.g., 17%, find 10%, find 5%, find 1% and multiply by 2
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<b>Money</b>		
<b>MNU 2-09a</b> I can manage money, compare costs from different retailers, and determine what I can afford to buy.		
<b>MNU 2-09b</b> I understand the costs, benefits and risks of using bank cards to purchase goods or obtain cash and realise that budgeting is important.		
<b>MNU 2-09c</b> I can use the terms profit and loss in buying and selling activities and can make simple calculations for this.		
<b>Pathway 1</b>	<b>Pathway 2</b>	<b>Pathway 3</b>
<ul style="list-style-type: none"> <li>• I can record an amount of money using decimal notation</li> <li>• I can carry out money calculations involving the four operations, including using a calculator to solve problems</li> <li>• I can identify offers and decide which one is most cost effective, e.g., buy one get one free, 3 for 2 or finding the difference between cost per item and individual item prices</li> <li>• I have investigated ways in which people earn or obtain money</li> </ul>	<ul style="list-style-type: none"> <li>• I can compare prices of various items in various shops/online stores in order to make an informed purchase within my budget</li> <li>• I can work to a budget to buy certain items prioritising my wants and needs and explain why it is an important skill</li> <li>• I can carry out money calculations involving the four operations, including using a calculator to solve problems</li> <li>• I understand the terms credit, debit and debt</li> <li>• I can talk about how and why I might save to be able to afford something and when it's appropriate to borrow money and how its paid back</li> </ul>	<ul style="list-style-type: none"> <li>• I can carry out money calculations involving the four operations, including using a calculator to solve problems</li> <li>• I can identify offers and decide which one is most cost effective, e.g., is it more cost effective to book individual flights, hotel and accommodation or using a travel agent</li> <li>• I understand the benefits and risks of using bank cards and digital technologies</li> <li>• I can interpret, discuss and check a bank statement in different formats</li> <li>• I can record and calculate my spending by using different means, e.g., excel, account book, online banking, etc.</li> <li>• I understand the terms profit and loss and how I would calculate them in buying and selling activities</li> <li>• I can create a business plan for an enterprise activity, using supporting calculations to forecast my profit and loss</li> </ul>

Time		
<p><b>MNU 2-10a</b> 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.</p> <p><b>MNU 2-10b</b> I can carry out practical tasks and investigations involving timed events and can explain which unit of time would be most appropriate to use.</p> <p><b>MNU 2-10c</b> 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.</p>		
Pathway 1	Pathway 2	Pathway 3
<ul style="list-style-type: none"> <li>• I can tell the time in 5 minutes increments and in 1 minute increments using both analogue and digital clocks</li> <li>• I can use and interpret timetables set out in both 12 and 24 hour notation</li> <li>• I have explored advantages and disadvantages of a variety of electronic and paper-based timetables and schedules</li> <li>• I use a range of time vocabulary (seconds, minutes, hours, days, weeks, months, years)</li> <li>• I can find corresponding analogue and digital times</li> <li>• I can make conversions between minutes and hours</li> <li>• I can select appropriate devices to use to time events, e.g., stopwatch, use timer on phone/tablet device, sand timer</li> </ul>	<ul style="list-style-type: none"> <li>• I can read and record 12 and 24 hour notation and convert between the two</li> <li>• I know that there are 24 hours in a day split into two 12 hour cycles which gives am and pm times</li> <li>• I can make conversions between seconds, minutes and hours</li> <li>• I can sequence and order 24 clock times</li> <li>• I can give examples of different time calculations people do, in order to organise their lives</li> </ul>	<ul style="list-style-type: none"> <li>• I can select the most appropriate unit of time for a given task and justifies choice</li> <li>• I can calculate durations of activities and events, including situations bridging across several hours and parts of hours using both 12 hour clock and 24 hour notation</li> <li>• I have undertaken practical investigation involving speed and I know that speed is the distance travelled in a given time</li> <li>• I can use and interpret electronic and paper-based timetables, diaries and calendars and apply my learning to help me solve real life problems</li> <li>• I can estimate the duration of a journey based on knowledge of the link between speed, distance and time</li> </ul>

Measurement		
<p><b>MNU 2-11a</b> I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure.</p> <p><b>MNU 2-11b</b> I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems.</p>		
Pathway 1	Pathway 2	Pathway 3
<ul style="list-style-type: none"> <li>• I can use different measurement systems to measure length, mass and capacity</li> <li>• I have investigated the relationship between the units of measure, e.g., between milli and kilo</li> <li>• I can convert between metric units of measure, e.g., milli to kilo and vice versa</li> <li>• I can correctly label my measurements in my calculations</li> <li>• I can use the comparative size of familiar object to make reasonable estimations of length and mass</li> <li>• I can read a variety of scales accurately to <math>\frac{1}{2}</math> and <math>\frac{1}{4}</math></li> <li>• I can estimate the lengths of objects in centimetres (cm) and metres (m)</li> <li>• I can measure objects in centimetres and metres with increasing accuracy using an appropriate device</li> <li>• I can estimate the mass of objects in grams (g) and kilograms (kg)</li> <li>• I can measure objects in g and kg with increasing accuracy using an appropriate device</li> <li>• I can add/subtract different measurements of the same metric unit, and convert where appropriate, recording results in the correct</li> </ul>	<ul style="list-style-type: none"> <li>• I can use the comparative size of familiar object to make reasonable estimations of length, mass, area and capacity</li> <li>• I can read a variety of scales accurately to <math>\frac{3}{4}</math> and <math>\frac{1}{10}</math></li> <li>• I know that the prefix to a metric unit describes its quantity such as centi (100s) Milli (1 000s) which helps me convert</li> <li>• I can estimate the lengths of objects in millimetres (mm), centimetres (cm) and metres (m)</li> <li>• I can measure an object's length using the most appropriate unit with increasing accuracy with a suitable device</li> <li>• I can estimate the mass of items in grams (g) and kilograms (kg)</li> <li>• I can measure an object's mass using the most appropriate unit with increasing accuracy with a suitable device</li> <li>• I can estimate the capacity of vessel in millilitres (ml) and litres (l)</li> <li>• I can measure an object's capacity using the most appropriate unit with increasing accuracy with a suitable device</li> </ul>	<ul style="list-style-type: none"> <li>• I can estimate the lengths of items in centimetres (cm) and metres (m), then measure each item accurately, including millimetres with an appropriate device</li> <li>• I can estimate the lengths of objects using metric units, then measure accurately with an appropriate device</li> <li>• I can estimate the mass of objects using metric units, then measure accurately with an appropriate device</li> <li>• I can estimate the capacity of objects using metric units, then measure accurately with an appropriate device</li> <li>• I can add together different measurements and convert where appropriate, recording results in the correct unit, e.g., 321ml + 35cl + 870ml = 1 541ml (1·541l)</li> <li>• I can solve worded problems involving capacity, length and mass</li> <li>• I can calculate the capacity and volume of cuboid containers (length x breadth x height)</li> <li>• I can convert between common units of measurement using decimal notation, e.g., 550cm = 5·5m; 3·009kg = 3009g</li> <li>• I am aware of imperial units and how they are used in everyday life, e.g., miles or stones</li> </ul>



<p>unit, e.g., <math>320\text{ml} + 321\text{ml} + 870\text{ml} = 1511\text{ml}</math> (1·511l)</p> <ul style="list-style-type: none"><li>• I can choose and use suitable units to measure, converting when appropriate</li><li>• I can use imperial measurements in everyday life and I understand how they compare to metric system</li></ul>	<ul style="list-style-type: none"><li>• I can choose and use suitable units to measure, converting when appropriate, when presenting an answer</li><li>• I can correctly label my measurements in kilometre (km), metre (m), centimetre (cm), millimetre (mm), grams (g) and kilograms (kg) in my calculations</li><li>• I can make a cuboid with blocks when given a capacity and check my accuracy by volume and count its layers</li><li>• I can use imperial measurements in everyday life, and I understand how they compare to metric system</li></ul>	
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<b>Measurement</b>		
<b>MNU 2-11C</b>		
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.		
Pathway 1	Pathway 2	Pathway 3
<p><b>Area</b></p> <ul style="list-style-type: none"> <li>• I can use the comparative size of familiar object to make reasonable estimations of area</li> <li>• I can multiply using an array to help me calculate the area of squares and rectangles</li> <li>• I can calculate the area of squares and rectangles in square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>)</li> <li>• I have explored how to work out the area of any triangle using my knowledge of areas of squares and rectangles</li> <li>• I can create a square or rectangle accurately with a given area</li> <li>• I have investigated how to work out the area of squares and rectangles within a compound shape and can combine them to find the total area</li> </ul>	<p><b>Perimeter</b></p> <ul style="list-style-type: none"> <li>• I can estimate the perimeter of regular shapes</li> <li>• I can measure a perimeter accurately using an appropriate device</li> <li>• I can calculate the perimeter of regular shapes using an appropriate device</li> <li>• I can calculate the perimeter of a straight sided 2D shape by adding the lengths in centimetres (cm) and metres (m)</li> <li>• I can create squares and rectangles accurately with a given perimeter</li> </ul> <p><b>Volume</b></p> <ul style="list-style-type: none"> <li>• I know that the volume is the space taken up by a 3D object</li> <li>• I can make a cube or cuboid with a given volume using blocks in cubic centimetres (cm<sup>3</sup>)</li> <li>• I can work out the volume of a shape by counting layers</li> <li>• I can use the correct notation of cubic centimetres (cm<sup>3</sup>)</li> <li>• I can find the volume of a cube or cuboid by using my knowledge of arrays and multiplication facts</li> <li>• I know that 1cm<sup>3</sup> is equal to 1ml</li> </ul>	<p><b>Area</b></p> <ul style="list-style-type: none"> <li>• I can use the formula area = length x breadth to calculate area of rectangles and squares</li> <li>I can calculate the area of squares, rectangles and right-angled triangles in square millimetres (mm<sup>2</sup>), square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>)</li> <li>• I can calculate the area of composite shapes</li> <li>• I can work out the area of any triangle using my knowledge of areas of squares and rectangles</li> <li>• I can use the formula area = <math>\frac{1}{2}</math> x length x breadth to calculate area of any triangle</li> <li>• I can draw a square, rectangle or triangle accurately with a given area</li> <li>• I can work out the area of squares, rectangles and triangles within a compound shape and can combine them to find the total area</li> <li>• I can demonstrate my understanding of the conservation of measurement, e.g., draw three different rectangles each with an area of 24 cm<sup>2</sup></li> </ul> <p><b>Perimeter</b></p> <ul style="list-style-type: none"> <li>• I can measure a perimeter accurately using an appropriate device</li> </ul>

		<ul style="list-style-type: none"><li>• I can calculate the perimeter of a straight sided 2D shape by adding the lengths in millimetres (mm), centimetres (cm) and metres (m)</li><li>• I can draw squares and rectangles accurately with a given perimeter</li><li>• I can demonstrate my understanding of the conservation of measurement, e.g., draw three different rectangles each with a perimeter of 30 cm</li></ul> <p><b>Volume</b></p> <ul style="list-style-type: none"><li>• I can calculate the volume of cubes and cuboids in cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>) using length x breadth x height (l x b x h)</li><li>• I can use the correct notation of cubic centimetres and cubic metres</li><li>• I can make two or more different solid shapes with the same volume using centimetre cubes</li><li>• I can find the volume of composite cuboids</li></ul>
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**Mathematics – its impact on the world, past, present and future**

**MTH 2-12a**

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.

Pathway 1	Pathway 2	Pathway 3
<ul style="list-style-type: none"><li>• I can research and present examples of the impact mathematics has in the world of life and work</li><li>• I can contribute to discussions and activities on the role of mathematics in the creation of important inventions, now and in the past</li></ul>		

<b>Patterns &amp; Relationships</b>		
<b>MTH 2-13a</b>		
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.		
Pathway 1	Pathway 2	Pathway 3
<ul style="list-style-type: none"> <li>• I can use the appropriate vocabulary to describe a pattern: term, difference, next, previous</li> <li>• I understand that a linear pattern is one where we add or subtract the same number each time to obtain the next term</li> <li>• I can recognise, extend or create linear patterns</li> <li>• I have explored triangular numbers using a concrete and pictorial approach</li> <li>• I understand that the pattern of triangular numbers is non-linear</li> </ul>	<ul style="list-style-type: none"> <li>• I understand that a non-linear pattern is one where the value added or subtracted to obtain the next term changes each time e.g., Fibonacci and squared numbers</li> <li>• I can recognise, extend or create non-linear patterns e.g., multiples and square numbers</li> <li>• I can use squared notation</li> <li>• I can create different representations of triangular numbers</li> <li>• I can use the differences to solve out a linear or non-linear pattern</li> <li>• I can continue a sequence by looking at the previous terms and working out the rule</li> <li>• I can work out missing numbers in a sequence by working out the rule of the patterns</li> </ul>	

<b>Expressions &amp; Equations</b>		
<b>MTH 2-15a</b>		
I can apply my knowledge of number facts to solve problems where an unknown value is represented by a symbol or letter.		
Pathway 1	Pathway 2	Pathway 3
		<ul style="list-style-type: none"> <li>• I understand that a letter or symbol can be used to represent an unknown quantity</li> <li>• I can describe a collection of Cuisenaire rods using algebraic notation (stress that the letter represents the rod's quantity not its colour)</li> <li>• I can use my knowledge of inverse relationships to solve one-step equations by using the balance method</li> </ul>

<b>Properties of 2D Shapes &amp; 3D Objects</b>		
<p><b>MTH 1-16a</b> 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.</p> <p><b>MTH 1-16b</b> Through practical activities, I can show my understanding of the relationship between 3D objects and their nets.</p> <p><b>MTH 2-16c</b> I can draw 2D shapes and make representations of 3D objects using an appropriate range of methods and efficient use of resources.</p>		
Pathway 1	Pathway 2	Pathway 3
<ul style="list-style-type: none"> <li>• I can recognise and identify common 2D shapes (triangles, squares, rectangles, rhombi, kites, parallelograms, trapezia, regular and irregular polygons, and circles)</li> <li>• When describing 2D shapes, I can use the language of sides, vertices, diagonals and internal angles</li> <li>• I can recognize, identify and describe common 3D objects (cubes, cuboids, cylinders, cones, pyramids, spheres and triangular prisms) using the language of faces, edges and vertices</li> <li>• I can describe the properties of right angled, equilateral, isosceles and scalene triangles</li> <li>• I can recognise and identify 2D shapes and 3D objects in the environment, explaining their function where appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• I can describe 3D objects and 2D shapes using specific vocabulary including faces, edges, vertices, sides, internal angles, regular and irregular</li> <li>• I can describe the properties of circles using the terms centre, radius, diameter and circumference</li> <li>• I can explain the relationship between the radius and diameter and can calculate one when given the other</li> <li>• I can construct a circle using compasses, taking care to keep the arms at a fixed distance</li> <li>• I can construct an accurate circle with a given radius or diameter circle using compasses and a ruler</li> <li>• I can apply my knowledge of 2D shapes and 3D objects to visualise the net of common 3D objects</li> <li>• I can construct the net of a simple 3D object such as a cube or a cuboid</li> </ul>	<ul style="list-style-type: none"> <li>• I can recognise and identify common 2D shapes (triangles, squares, rectangles, rhombi, kites, parallelograms, trapezia, regular and irregular polygons, and circles)</li> <li>• When describing 2D shapes, I can use the language of sides, vertices, diagonals and internal angles</li> <li>• I can recognise, identify and describe common 3D objects (cubes, cuboids, cylinders, cones, pyramids, spheres and triangular prisms) using the language of faces, edges and vertices</li> <li>• When describing 3D objects, I can use the language of faces, edges and vertices</li> <li>• I can describe the properties of right angled, equilateral, isosceles and scalene triangles</li> <li>• I can recognise and identify 2D shapes and 3D objects in the environment, explaining their function where appropriate</li> </ul>

**Angle, Symmetry & Transformation****MTH 2-17a**

I have investigated angles in the environment, and can discuss, describe and classify angles using appropriate mathematical vocabulary

**MTH 2-17b**

I can accurately measure and draw angles using appropriate equipment, applying my skills to problems in context.

**MTH 2-17c**

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 2-17d**

Having investigated where, why and how scale is used and expressed, I can apply my understanding to interpret simple models, maps and plans.

Pathway 1	Pathway 2	Pathway 3
<p><b>Angles</b></p> <ul style="list-style-type: none"><li>• I can identify a right angle and know it is equal to <math>90^\circ</math></li><li>• I know that a right angle is a quarter turn and is equal to <math>90^\circ</math></li><li>• I can identify a straight angle and know it is equal to <math>180^\circ</math></li><li>• I can identify an acute angle as being smaller than a right angle</li><li>• I can identify an obtuse angle as being larger than a right angle but smaller than a straight angle</li><li>• I can use the words acute, obtuse and right angle to describe the angle</li><li>• I can use the words acute, obtuse and right angle to describe the angles of a 2D shape</li><li>• I have investigated the above angles in the environment and can discuss where and why they are used</li></ul> <p><b>Compass Points</b></p>	<p><b>Angles</b></p> <ul style="list-style-type: none"><li>• I can identify a reflex angle as being larger than a straight angle</li><li>• I can identify that a full turn is the same as <math>360^\circ</math></li><li>• I have investigated the above angles in the environment</li><li>• I can name angles using three letters</li><li>• I can use a protractor to draw and measure angles up to <math>180^\circ</math> (accurate to 5 degrees)</li><li>• I can use my knowledge of right angles to estimate the size of an angle</li><li>• When I know the size of an angle I can work out the size of its complementary angle (up to <math>90^\circ</math>)</li><li>• I can use a protractor to measure the angles within 2D shapes</li></ul>	<p><b>Angles</b></p> <ul style="list-style-type: none"><li>• I can identify a reflex angle as being larger than an obtuse angle but less than <math>360^\circ</math></li><li>• I can investigate the above angles in the environment</li><li>• I know that complementary angles add to <math>90^\circ</math> and supplementary angles add to <math>180^\circ</math></li><li>• I know that vertically opposite angles are equal</li><li>• I can compare the size of an angle with a right angle or straight line</li><li>• I can use the words acute, obtuse, reflex and right angle to describe the angle between a pair of lines I have drawn</li><li>• I can use the words acute, obtuse, reflex and right angle to describe the angles of a 2D shape</li><li>• I can name angles using three letters</li><li>• I can use a protractor to draw angles of a given size up to <math>180^\circ</math></li><li>• I can use a protractor to draw angles of a given size up to <math>360^\circ</math></li></ul>



<ul style="list-style-type: none"> <li>• I can recognise the eight main compass points (N, S, W, E, NE, NW, SE, SW)</li> <li>• I have investigated the size of the angles between the four main compass points</li> <li>• I can relate 90°, 180°, 270° and 360° angles to quarter, half, three quarter and one whole turns</li> <li>• I can use my knowledge of angles and rotation (clockwise and anticlockwise) to work out what compass point I will be facing after a particular turn or series of turns</li> <li>• I can use my knowledge of compass points to give, follow and record directions for journeys using a wide range of language</li> <li>• I can create and describe simple pathways</li> <li>• I can use this information to make the pathways with technologies, e.g., computer packages, roamer or beebot</li> </ul>		<ul style="list-style-type: none"> <li>• I can use my knowledge of right angles to check whether my drawn angle looks right</li> </ul> <p><b>Scale</b></p> <ul style="list-style-type: none"> <li>• I can convert simple scales 1:2, 1:10, 1:5 (with appropriate units – cm, m, km)</li> <li>• I have investigated where scale is used in real life, e.g., ordinance survey maps, architects drawings and who might use it</li> <li>• I can interpret and create drawings, plans and maps which use different scales and find the true size of an item</li> <li>• I can create a drawing, plan or map which uses a scale I have been given</li> <li>• I can apply my understanding of scale when representing objects in my drawings and model making</li> <li>• I can choose an appropriate scale and use it when creating a drawing, plan or map</li> </ul>
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<b>Angle, Symmetry &amp; Transformation</b>		
<b>MTH 2-18a</b>		
I can use my knowledge of the coordinate system to plot and describe the location of a point on a grid.		
Pathway 1	Pathway 2	Pathway 3
	<ul style="list-style-type: none"> <li>• I can construct the x-y axes knowing that x is the horizontal and y is the vertical</li> <li>• I can label the axes correctly with numbers on lines, not inside boxes</li> <li>• I understand the difference between describing a location on a grid reference</li> </ul>	

	system and the x-y axes, i.e., in a box versus on the lines <ul style="list-style-type: none"> <li>• I can plot and identify points using x-y coordinate notation (x,y)</li> </ul>	
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<b>Angle, Symmetry &amp; Transformation</b>		
<b>MTH 2-19a</b> 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.		
Pathway 1	Pathway 2	Pathway 3
	<ul style="list-style-type: none"> <li>• I can identify and illustrate line symmetry on a wide range of 2D shapes</li> <li>• I can complete a shape or pattern so that it is symmetrical</li> <li>• I can use digital technology to create symmetrical pictures or shapes</li> <li>• I can talk about what it means for a shape or pattern to be symmetrical</li> </ul>	
<b>Data &amp; Analysis</b>		
<b>MNU 2-20a</b> 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.		
<b>MNU 2-20b</b> 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.		
<b>MTH 2-21a</b> 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.		
Pathway 1	Pathway 2	Pathway 3

<ul style="list-style-type: none"> <li>• I can identify a graph that is appropriate for the data I want to present</li> <li>• I can discuss how data can become misleading when conventions aren't followed correctly</li> <li>• I can display data using an appropriate and consistent scale, axes labels, a title, and a key where necessary</li> <li>• I can collect, organise and display data accurately in a variety of ways including through the use of digital technologies, for example, creating surveys, tables, frequency tables, line graphs, stem and leaf diagrams, pie charts and spreadsheets</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify and create a graph that is appropriate for the data I want to present</li> <li>• I can discuss how data can become misleading when conventions aren't followed correctly</li> <li>• I can display data using an appropriate and consistent scale, axes labels, a title, and a key where necessary</li> <li>• I can collect, organise and display data accurately in a variety of ways including through the use of digital technologies, e.g., creating surveys, tables, frequency tables, line graphs, stem and leaf diagrams, pie charts and spreadsheets</li> <li>• I can create open and closed ended questions for a survey that will provide data I can organise and display</li> <li>• I can analyse, interpret and draw conclusions from data and communicate findings effectively</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify and create a graph that is appropriate for the data I want to present</li> <li>• I can display data using an appropriate and consistent scale, axes labels, a title, and a key where necessary</li> <li>• I can collect, organise and display data accurately in a variety of ways including through the use of digital technologies, for example, comparative line/bar graphs, frequency tables, pie charts and spreadsheets</li> <li>• I can create open and closed ended questions for a survey that will provide data I can organise and display</li> <li>• I can analyse, interpret and draw conclusions from a variety of data and communicate findings effectively</li> <li>• I can draw conclusions about the reliability of data taking into account, for e.g., the author, the audience, the scale and sample size used</li> </ul>
<b>Ideas of Chance &amp; Uncertainty</b>		
<b>MNU 2-22a</b> I can use appropriate vocabulary to describe the likelihood of events occurring, using the knowledge and experiences of myself and others to guide me.		
Pathway 1	Pathway 2	Pathway 3
		<ul style="list-style-type: none"> <li>• I understand that probability means the likelihood of an event occurring</li> <li>• I can use language such as even chance (or 50/50), likely and unlikely to describe probability</li> </ul>

		<ul style="list-style-type: none"><li>• I can order the likelihood of different events occurring from least likely to most likely</li><li>• I can assign a numerical value to the probability of a simple event (e.g., a coin landing on heads, rolling a 6, drawing a face card)</li><li>• I can make predictions about the likelihood of an event occurring based on my understanding of probability</li></ul>
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