Dunlop Primary School & ECC
Numeracy: Third Level Parent Booklet

Estimation and Rounding

I can round a number using an appropriate degree of accuracy, having taken into account the context of the problem.

MNU 3-01a

Example	**Methodology**
Round to 3 significant figures: 65364 *6 5 3 6 4* *so the answer is 65400*	When rounding to a specified number of significant figures, draw a line after the number of significant figures that you need. If the digit to the right of the line is 5 or more round the digit to the left of the line up. If it is 4 or less the digit to the left stays the same.

Number and Number Processes

I can use a variety of methods to solve number problems in familiar contexts, clearly communicating my processes and solutions.

MNU 3-03a

I can continue to recall number facts quickly and use them accurately when making calculations.

MNU 3-03b

Example

$$\begin{array}{r} 47 \\ \times\ 56 \\ \hline 282 \\ 2350 \\ \hline 2632 \end{array}$$

Correct Use of Language

For multiplying by 10, promote the digits up a column and add a zero for place holder.
For dividing by 10, demote the digits down a column and add a zero in the units' column for place holder if necessary.

Methodology

Decimal point stays fixed and the numbers move when multiplying and dividing.

DO NOT say add on a zero, when multiplying by 10. This can result in $3{\cdot}6 \times 10 = 3{\cdot}60$.

Number and Number Processes

I can use my understanding of numbers less than zero to solve simple problems in context.

MNU 3-04a

Term/Definition

Negative numbers

Integer: all the positive whole numbers, negative whole numbers and zero
(…–3, –2, –1, 0, 1, 2, 3, …)

Correct Use of Language

Say negative four **NOT** minus four.
Use minus as an operation for subtract.
(For 4 – (-4) = 8 say four minus negative four equals eight)

Your child should be aware of this as a common mistake, even in the media e.g. the weather.

-20°C - Negative twenty degrees Celsius, **NOT** minus or centigrade.

Multiples, Factors and Primes

I have investigated strategies for identifying common multiples and common factors, explaining my ideas to others, and can apply my understanding to solve related problems.

MTH 3-05a

I can apply my understanding of factors to investigate and identify when a number is prime.

MTH 3-05b

Term/Definition

Prime numbers: numbers with exactly 2 factors.
One is not defined as a prime number.
2, 3, 5, 7, 11, 13, 17, 19, …

Factor: a factor divides exactly into a number leaving no remainder.

Example

Factors of 4 are 1, 2 and 4.

Powers and Roots

Having explored the notation and vocabulary associated with whole number powers and the advantages of writing numbers in this form, I can evaluate powers of whole numbers mentally or using technology.

MTH 3-06a

Term/Definition

Index: shows the number of times a number is multiplied by itself.

Example

2^3

Correct Use of Language

3 is the index.

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Fractions, Decimal Fractions and Percentages

I can solve problems by carrying out calculations with a wide range of fractions, decimal fractions and percentages, using my answers to make comparisons and informed choices for real-life situations.

MNU 3-07a

By applying my knowledge of equivalent fractions and common multiples, I can add and subtract commonly used fractions.

MTH 3-07b

Having used practical, pictorial and written methods to develop my understanding, I can convert between whole or mixed numbers and fractions.

MTH 3-07c

Fractions

Example

Start with $4\frac{1}{10}$ is written 4·1
$7\frac{9}{10}$ is written 7·9 etc.

Then $3\frac{37}{100}$ is written 3·37 etc.

Finally $6\frac{3}{4}$ is the same as $6\frac{75}{100}$ which is 6·75

Correct Use of Language

Pupils should be aware of: "state in lowest terms" or "reduce".

Talk about "decimal fractions" and "common fractions" to help pupils make the connection between the two.

Decimals

Term/Definition

Recurring decimals: a decimal which has a repeated digit or a repeating pattern of digits.

Example

Recurring decimals: $\frac{1}{9} = 0 \cdot 1\dot{1}$

Correct Use of Language

Methodology

Fractions

To find $\frac{3}{4}$ of a number, find one quarter first and then multiply by 3.

Simplifying fractions – Say what is the highest number that you can divide the numerator and denominator by? Check by asking, "Can you simplify again?"
Finding equivalent fractions, particularly tenths and hundredths.

Learn fractions first then introduce the relationship with decimals (tenths, hundredths emphasise connection to tens, units etc) then other common fractions e.g. $\frac{1}{4} = \frac{25}{100} = 0{\cdot}25$.

Recurring decimals: $\frac{1}{3}$ and $\frac{1}{9}$ link to decimals. Record the number three times and place a "dot" above the final digit.	

Percentages	*Percentages*
Example 1%= $\frac{1}{100}$, 10% = $\frac{1}{10}$ 25%= $\frac{1}{4}$, 50%= $\frac{1}{2}$ 20% = $\frac{1}{5}$, 75% = $\frac{3}{4}$ $33\frac{1}{3}\%$ = $\frac{1}{3}$ 30% of 80 = 24 Find 10% then multiply by 3. 15% of 60 = 9 Find 10% then half that to get 5%, then add. Find 23% of £300 $23 \div 100 \times 300$ = £69	Children need to be secure at finding common percentages of a quantity, by linking the percentage to fractions. e.g. 1%, 10%, 20%, 25%, 50%, 75% and 100%. Your child should be able to find common percentages by converting to a fraction. Pupils can then build other percentages from these. The aim here is to build up mental agility. Your child should, in time, be able to select the most appropriate strategy. **Percentages without a calculator** For more complicated percentages use the following method: **34%of 410 = 139·4 (working shown below)** 10% of 410 = 41 30% of 410 = 123 1% of 410 = 4·1 4% of 410 = 16·4 **Percentages with a calculator** Move towards: $0{\cdot}23 \times 300$ = £69 as pupils become secure in converting percentages to decimals.

Time

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

Term/Definition

Speed

Example

8km/h
4m/s

Correct Use of Language

Say eight kilometres per hour.
Say sixteen metres per second.

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Measurement

I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task and using a formula to calculate area or volume when required.

MNU 3-11a

Having investigated different routes to a solution, I can find the area of compound 2D shapes and the volume of compound 3D objects, applying my knowledge to solve practical problems.

MTH 3-11b

Term/Definition

1 hectare = $10000m^2$
100m by 100m

Example

A1 = lb
= 12 × 4
= $48cm^2$

A2 = lb
= 5 × 4
= $20cm^2$

Total Area = A1 + A2
= 48 + 20
= $68cm^2$

$1cm^3$=1ml
$1000cm^3$ = 1000ml
= 1litre

Correct Use of Language

$3cm^2$
Say 3 square centimetres not 3 centimetres squared or 3 cm two.

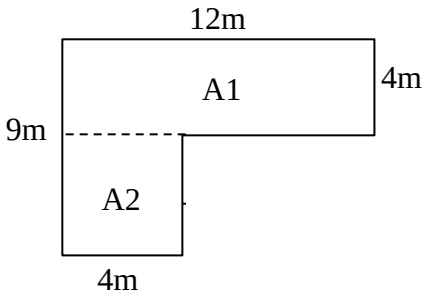
Abbreviation of *l* for litre.
Say 3 litres. *(3l)*

Abbreviation of ml for millilitres.
Say seven hundred millilitres. *(700ml)*

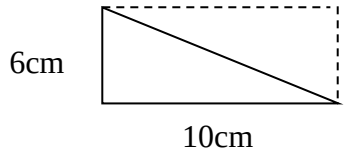
Methodology

To find the area of compound shapes:

- Split the shape into rectangles
- Label them as shown
- Fill in any missing lengths



2.30m *5·43m* *6·124kg*	

Your child should understand how to write measurements (in m, cm, kg, g), how to say them and what they mean e.g. 5 metres 43cm. Six kilograms and 124 grams, say six point one two four kilograms. Emphasise that perimeter is the distance around the <u>outside</u> of the shape. $A = l \times b$ Start with this and move to $A = lb$ when appropriate.  **DO NOT USE** $A = \frac{1}{2} l \times b$ or $A = \frac{1}{2} lb$ as this leads to confusion later on with the base and height of a triangle. $80\ cm^3$	Complete the surrounding rectangle if necessary. Area of rectangle = 10×6 $= 60cm^2$ Area of Triangle = $\frac{1}{2}$ the Area of rectangle = $\frac{1}{2}$ of 60 $= 30cm^2$ Say 80 cubic centimetres **NOT** 80 centimetres cubed. Use litres or millilitres for volume with liquids. Use cm^3 or m^3 for capacity.

Patterns and Relationships

Having explored number sequences, I can establish the set of numbers generated by a given rule and determine a rule for a given sequence, expressing it using appropriate notation.

MTH 3-13a

Example	**Methodology**
Find the n^{th} term for a sequence. Complete the table and find the 20^{th} term	Children need to be able to deal with numbers set out in a table vertically, horizontally or given as a sequence. A method should be used rather than trial and error.

Expressions and Equations

I can collect like algebraic terms, simplify expressions and evaluate using substitution.

MTH 3-14a

Term/Definition

Please refer to the Algebra Appendix

Example

3a+6+7a-5 *Expression*

2a+7=13 *Equation*

Correct Use of Language

make it clear the difference between an algebraic expression that can be simplified and an equation (which involves an equals sign).

Expressions and Equations

Having discussed ways to express problems or statements using mathematical language, I can construct, and use appropriate methods to solve, a range of simple equations.

MTH 3-15a

I can create and evaluate a simple formula representing information contained in a diagram, problem or statement.

MTH 3-15b

Please refer to the Algebra Appendix

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Angle symmetry and transformation

I can name angles and find their sizes using my knowledge of the properties of a range of 2D shapes and the angle properties associated with intersecting and parallel lines.

MTH 3-17a

Having investigated navigation in the world, I can apply my understanding of bearings and scale to interpret maps and plans and create accurate plans, and scale drawings of routes and journeys.

MTH 3-17b

I can apply my understanding of scale when enlarging or reducing pictures and shapes, using different methods, including technology.

MTH 3-17c

Example

Bearing: 060°

Correct Use of Language

For Bearings: Say zero six zero degrees.

Data and Analysis

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.

MTH 3-21a

Term/Definition	Methodology
Histogram: no spaces between the bars, unlike a bar graph. *(Used to display grouped data.)* **Continuous Data:** can have an infinite number of possible values within a selected range. *(Temperature, height or length)* **Discrete Data:** can only have a finite or limited number of possible values. *(Shoe size, number of siblings)* **Non-numerical data:** data which is non-numerical *(Favourite flavour of crisps)*	

Use a bar graph, pictogram or pie chart to display discrete data or non-numerical data.	

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