Prestwick Academy

Numeracy Toolkit

A Guide for Pupils, Parents and Staff

Scotland has a maths problem. Too many of us are happy to label ourselves as "no good with numbers." This attitude is deep-rooted and is holding our country back educationally and economically.

Rationale

In 2016, the Scottish Government commissioned a group to investigate why too many people are happy to label themselves as "no good with numbers". The *Making Maths Count* group found that we do indeed have a problem. This document forms part of a response by Prestwick Academy to improve the Numeracy skills of all pupils, parents and staff.

This document contains support and advice on key Numeracy skills as detailed in the Experience's and Outcomes. Furthermore, we have included a Mathematical Dictionary, details of the Numeracy Experiences and useful links.

Number Talks

In Maths/Numeracy, calculations can generally be carried out in two ways; mentally or by using an algorithm (a written method). Pupils in the Prestwick cluster have been using Number Talks to improve their strategies for carrying out calculations mentally.

What is a Number Talk?
A Number Talk is a strategy to build flexibility, accuracy and efficiency in mathematical thinking through the articulation of, and sharing of, mental math strategies. A Number Talk is a short (5-15 minute) daily routine.

A Number Talk is a powerful tool for helping pupils develop computational fluency because the expectation is that they will use number relationships and the structures of numbers to add, subtract, multiply and divide.

Key Features of a Number Talk
- A classroom conversation around a purposefully crafted computation problem that is solved mentally.
- The problems in a number talk are designed to elicit specific strategies that focus on number relationships and number theory.
- Pupils are provided with problems in a whole class, or small group setting and are expected to mentally solve them accurately, efficiently and flexibly.
- Pupils share and defend their solutions and strategies; they have the opportunity to collectively reason about numbers while building connections to key conceptual ideas in maths.
- It is a stand-alone activity.
- Conducted in five to fifteen minutes.

Benefits of a Number Talk
Through participating in number talks, the pupils have the opportunity to:
- Clarify their own thinking
- Consider and test other strategies to see if they are mathematically logical
- Investigate and apply mathematical relationships
- Build a repertoire of efficient strategies
- Make decisions about choosing efficient strategies for specific problems

Where possible, this toolkit will show both Number Talk Strategies and Written Methods.

Addition

Number Talk Strategies:

Adding Up in Chunks/Counting On	Reordering	Place Value - Partitioning	Making Tens/Bridging through 10
37 + 48	25 + 26 + 75 100 + 26 = 126	116 + 127 100 + 100= 200 10 + 20 = 30 6 + 7 = 13 200+30+13=243	49 + 38 1 7 50 + 37= 87
Compensation 67 + 28 +2 67 + 30 = 97 97-2 = 95	**Doubles/Near Doubles** 16 + 17 16 1 16 + 16= 32 32 + 1 = 33	**Friendly Numbers** 28+47 +2 -2 30 + 45= 75	**Bridging through 60** How many minutes is it to the next hour?

Written Method:

Example: 2346 + 865
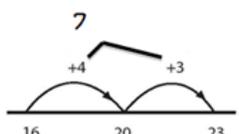
Line up the numbers according to place value

2 346 + 865

We add the numbers in each column from right to left

$$2 \quad 3 \quad 4 \quad 6$$
$$+ \quad _1 8_1 \quad 6_1 \quad 5$$
$$3 \quad 2 \quad 1 \quad 1$$

Carried numbers are written above the line

5

Subtraction

Number Talks Strategies:

Removal or Counting Back	Reordering	Place Value - Partitioning	Adding Up/Bridging through 10
123 - 69 123 - (20+40+3+6) 123 − 20 = 103 103 − 40 = 63 63 − 3 = 60 60 − 6 = 54	25 - 6 - 5 20 - 6 = 14	367 - 154 367 − 100 = 267 267 - 50 = 217 217 - 4 = 213 367 − 100 − 50 − 4 = 213	23 - 16 16 + 4 = 20 20 + 3 = 23 7 +4 +3 16 20 23
Place Value + Negative Numbers	**Adjusting for Easier Numbers**	**Keep a Constant Difference**	
399 - 254 (300+90+9) − (200+50+9) 300 + 90 + 9 - 200 + 50 + 4 100 + 40 + 5 = 145	123 - 59 +1 123 − 60 = 63 63 + 1 = 64	151 − 98 (151 + 2) − (98+2) 153 − 100 = 53 151 − 98 = 53	

Written Method:

To perform a written method of subtraction, schools use decomposition. To do this, we "exchange" tens for units etc. rather than "borrow and pay back".

Example:

Line up the numbers according to place value

7286 – 5857

Estimate
7 300 – 5 900 = 1 400

$$^6\!7 \quad ^1\!2 \quad ^7\!8 \quad ^1\!6$$
$$- \quad 5 \quad 8 \quad 5 \quad 7$$
$$ \quad 1 \quad 4 \quad 2 \quad 9$$

We subtract the numbers in each column from right to left

Multiplication and Division

It is vital that all of the multiplication tables from 1 to 10 (at least) are known. These are shown in the multiplication square below:

X	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Number Talks Strategies:

Friendly Numbers	Repeated Addition	Partial Products	Doubling and Halving
9×15 $10 \times 15 = 150$ $150 - 15 = 135$ Don't forget to 'undo' your change!	6×15 $15+15+15+15+15+15$ $15 + 15 = 30$ $30 + 15 = 45$ $45 + 15 = 60$ $60 + 15 = 75$ $75 + 15 = 90$	6×125 $6 \times (100 + 20 + 5)$ $(6 \times 100) + (6 \times 20) + (6 \times 5)$ $600 + 120 + 30 = 750$	24×8 x2 ÷2 48×4 x2 ÷2 96×2 x2 ÷2 192
Breaking Factors into Smaller Factors 12×25 $\wedge$ 2×6 $2 \times 25 = 50$ $50 \times 6 = 300$	**Grid Method** 35×7 | × | 30 | 5 | | 7 | 210 | 35 | $210 + 35 = 245$	**Partial Quotients** 36 R 10 15) 550 - 150 (10 x 15) 400 - 300 (20 x 15) 100 - 30 (2 x 15) 70 - 60 (4 x 15) 10	**Multiplying Up** $72 \div 8$ 8 X $\underline{5} = 40$ $8 \times \underline{4} = 32$ $(\underline{5} + \underline{4}) = (40 + 32)$ $8 \times \underline{9} = 72$
Repeated Subtraction $24 \div 6$ $24 - 6 - 6 - 6 - 6$ $6 \times 4 = 24$ SO $24 \div 6 = 4$				

Multiplication by 10, 100 and 1000

When multiplying numbers by 10, 100 and 1000 the **digits** move to **left.**

Multiplying by 10 - Move every digit **one** place to the left
Multiplying by 100 - Move every digit **two** places to the left
Multiplying by 1000 - Move every digit **three** places to the left

Example 1

$46 \times 10 = 460$

Th	H	T	U
		4	6
	4	6	0

A zero is used to fill the gap in the units column

Example 2

$23 \times 100 = 2\ 300$

Th	H	T	U
		2	3
2	3	0	0

Zeroes are used to fill gaps in the units and tens columns

Example 3   This rule also works for decimals

$3\cdot45 \times 10 = 34\cdot5$

Th	H	T	U	.	$\frac{1}{10}$	$\frac{1}{100}$
			3	.	4	5
		3	4	.	5	

We can multiply by multiples of 10, 100 and 1000 using the same rules as above:

Example 4   Find 24 x 20   (multiply by 2 then by 10)

24 x 2 = 48

48 x 10 = 480

$68 \times 10 = 680$

Th	H	T	U
		4	8
	4	8	0

Multiplication by a Single Digit

Written Method:

Example

257 x 8

Estimate
250 × 2 × 4 = 500 × 4 = 2 000

```
  2  5  7
×    4  5  8
  2  0  5  6
```

Carried numbers go above the line

The number you are multiplying by goes under the last digit on the right

Multiplication by two or more digits (long multiplication)

Written Method:

Example: 319 × 32 ⟶   Estimate: 300 × 30 = 9000

```
  319
x  32
  ---
  638
```

Multiply by the 2 first (from Right to Left)

```
  319
x  32
   1
  ---
  638
    0
```

Put a zero here before multiplying by the 3

```
  319
x  32
   1
  ---
  638
9 5 7 0
```

```
  319
x  32
   1
  ---
  638
9 5 7 0
------
10 20 8
```

Add these two rows

Division by 10, 100 and 1000

When dividing numbers by 10, 100 and 1000 the **digits** move to **right**

Dividing by 10 - Move every digit **one** place to the right
Dividing by 100 - Move every digit **two** places to the right
Dividing by 1000 - Move every digit **three** places to the right

Example 1

$260 \div 10 = 26$

H	T	U	.	$\frac{1}{10}$	$\frac{1}{100}$
2	6	0	.		
	2	6	.		

Zeros are not generally needed in empty columns after the decimal point except in cases where a specified degree of accuracy is required

Example 2

$439 \div 100 = 4.39$

H	T	U	.	$\frac{1}{10}$	$\frac{1}{100}$
4	3	9	.		
		4	.	3	9

Example 3   This rule also works for decimals

$32.9 \div 10 = 3.29$

H	T	U	.	$\frac{1}{10}$	$\frac{1}{100}$
	3	2	.	9	
		3	.	2	9

Example 4   Find $48.6 \div 20$

$48.6 \div 2 = 24.3$
$24.3 \div 10 = 2.43$

$24.3 \div 10 = 2.43$

H	T	U	.	$\frac{1}{10}$	$\frac{1}{100}$
	2	4	.	3	
		2	.	4	3

Division by a Single Digit

Example 1

$$816 \div 6$$

$$\begin{array}{c} \quad 1 \quad 3 \quad 6 \\ 6\overline{)8 \;\; {}^{2}1 \;\; {}^{3}6} \end{array}$$

so $816 \div 6 = 136$

Example 2

When dividing a decimal by a whole number the **decimal points must stay in line**.

$$12.24 \div 4 = 4\overline{)12.24}^{\,3.06}$$

Carry out a normal division

$$12.24 \div 4 = 3.06$$

Example 3

If you have a remainder at the end of a calculation, add "extra zeros" at the end of the decimal and keep going!
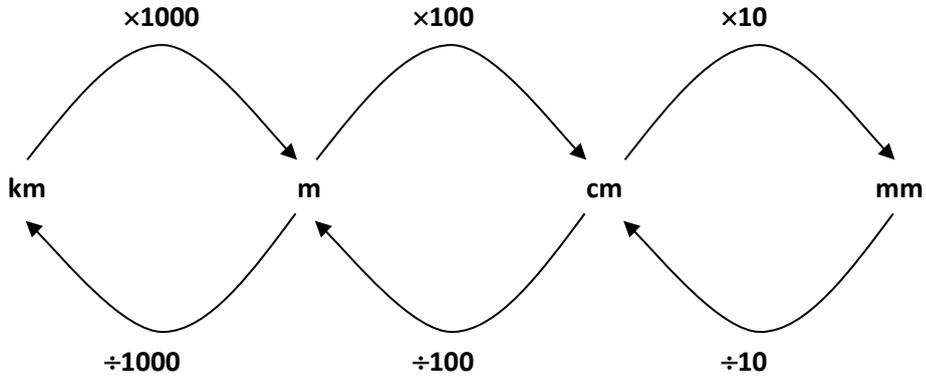
Calculate $2 \cdot 2 \div 8$

$$8\overline{)2 \cdot {}^{2}2\,{}^{6}0\,{}^{4}0}^{\,0 \cdot 2\,7\,5}$$

Two "extra zeros"

Metric Measures
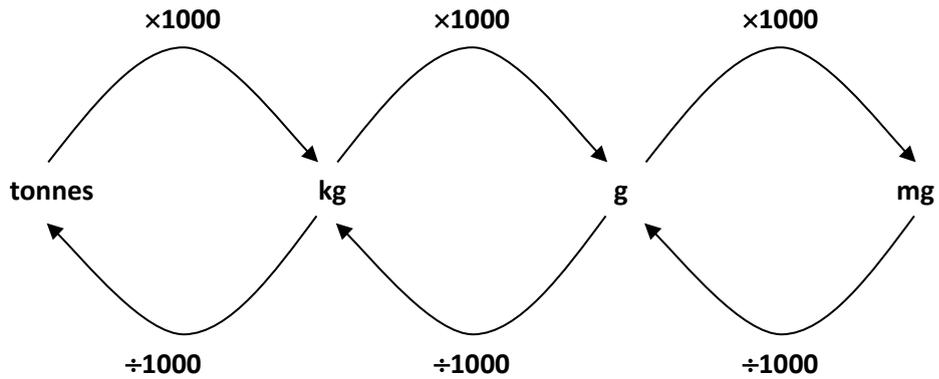
It is important to note that only metric measures are taught. Here are two of the most common conversions that are used:

Length:

	×1000		×100		×10	
km		m		cm		mm
	÷1000		÷100		÷10	

Example: Convert 3km into metres: 3km × 1000 = 3000 m

Weight:

	×1000		×1000		×1000	
tonnes		kg		g		mg
	÷1000		÷1000		÷1000	

Rounding

Numbers can be rounded to give an approximation. The rules for rounding are as follows:

less than 5 **ROUND DOWN**
5 or more **ROUND UP**

Example 1   Round the following to the nearest **ten**:

a)   33   b)   78   c)   174

The number beside the one you are rounding to helps you decide whether to round UP or DOWN

a) 3 <u>3</u>   **30** to the nearest ten

b) 7 <u>8</u>   **80** to the nearest ten

More than 5 – ROUND UP

c) 17 <u>4</u>   **170** to the nearest ten

Example 2   Round the following to the nearest **hundred**:

a)   467   b)   651   c)   4391

a) 4 <u>6</u> 7   **500** to the nearest hundred

b) 6 <u>5</u> 1   **700** to the nearest hundred

c) 4 3 <u>9</u> 1   **4400** to the nearest hundred

Example 3

When rounding decimals to a specific number of decimal places, we use the same rule as before.

Round the following to **one decimal place**:

a)   3.72   b)   15.28   c)   0.369

a) 3 . 7 <u>2</u>   **3.7** to one decimal place

b) 1 5 . 2 <u>8</u>   **15.3** to one decimal place

c) 0 . 3 <u>6</u> 9   **0.4** to one decimal place

Order of Operations

Care has to be taken when performing calculations involving more than one operation.

For example, is the answer to 3 + 4 x 2 equal to 14 or 11?

The correct answer is 11. This is because, if we follow the correct order of operations, we have to **M**ultiply before we **A**dd.

Calculations should be performed in a particular order following the rules shown below:

Brackets	Orders	Division	Multiplication	Addition	Subtraction
(…)	$\sqrt{x}$ x^2	$\div$	$\times$	$+$	-
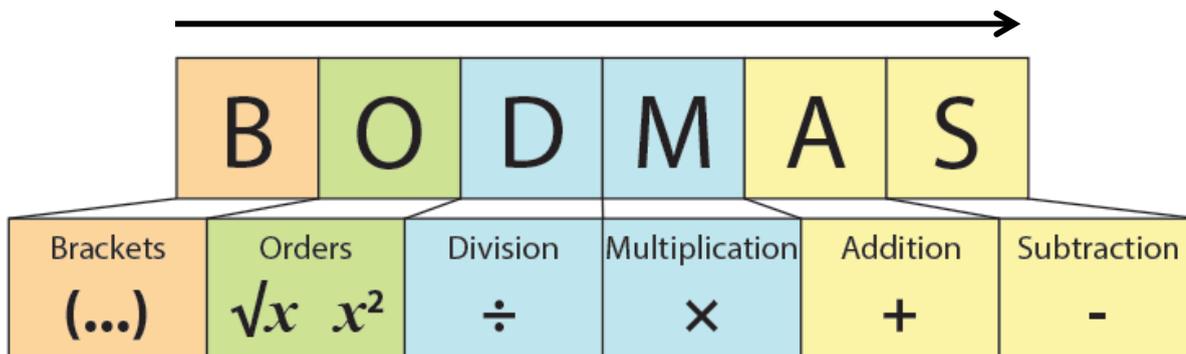
Examples:

a) $3 + 4 \times 2$
$= 3 + 8$
$= 11$

b) $3 + 8 \div 4 - 1$
$= 3 + 2 - 1$
$= 4$

c) $27 \div 3^2 + 2$
$= 27 \div 9 + 2$
$= 3 + 2$
$= 5$

d) $4 \times (7 - 5) + 3$
$= 4 \times 2 + 3$
$= 8 + 3$
$= 11$

While at Prestwick Academy we usually use BODMAS, BOMDAS and BIDMAS are alternative acronyms. Ultimately, they all mean the same.

Integers

Integers are positive and negative whole numbers. Negative numbers are numbers less than zero. They are referred to as "negative" numbers as opposed to "minus" numbers.

Adding/Subtracting a Negative

When adding or subtracting a negative the following rules apply:

- Adding a negative is the same as subtracting

Examples: a) 5 + (-2) = 5 − 2 = 3   b) 8 + (-3) = 8 − 3 = 5

- Subtracting a negative is the same as adding

Examples: a) 6 - (-2) = 6 + 2 = 8   b) (-6) - (-3) = (-6) + 3 = -3

Multiplying / Dividing Integers

When multiplying or dividing Integers, the following rules apply:

Multiplying	Dividing
$(+) \times (+) = (+)$ $(-) \times (-) = (+)$ $(+) \times (-) = (-)$ $(-) \times (+) = (-)$	$(+) \div (+) = (+)$ $(-) \div (-) = (+)$ $(+) \div (-) = (-)$ $(-) \div (+) = (-)$

Examples:			
3 x 4 = 12	(-3) x (-4) = 12	15 ÷ 5 = 3	(-15) ÷ (-5) = 3
3 x (-4) = -12	(-3) x 4 = -12	15 ÷ (-5) = -3	(-15) ÷ 5 = -3

Fractions

Equivalent Fractions
Equivalent fractions are fractions which have the same value. Equivalent fractions are found by multiplying the numerator (top number) and denominator (bottom number) by the same value.

Example: $\dfrac{1}{3} = \dfrac{3}{9} = \dfrac{5}{15} = \dfrac{100}{300}$

Simplifying Fractions
To simplify a fraction, divide the numerator and denominator by the **same number**.

Example: $\dfrac{16}{24} = \dfrac{2}{3}$ as we can divide 16 by 8 and 24 by 8.

Fraction of a Quantity
To find a fraction of a quantity, divide the quantity by the denominator and multiply the answer by the numerator.

$\dfrac{1}{4}$ of £20 One quarter → 20 ÷ 4 = 5		$\dfrac{5}{6}$ of £18 One sixth → 18 ÷ 6 = 3 Five sixths → 5 × 3 = £15

Percentages

Percent means "out of one hundred".

A percentage can be converted to an equivalent fraction or decimal by dividing by 100.
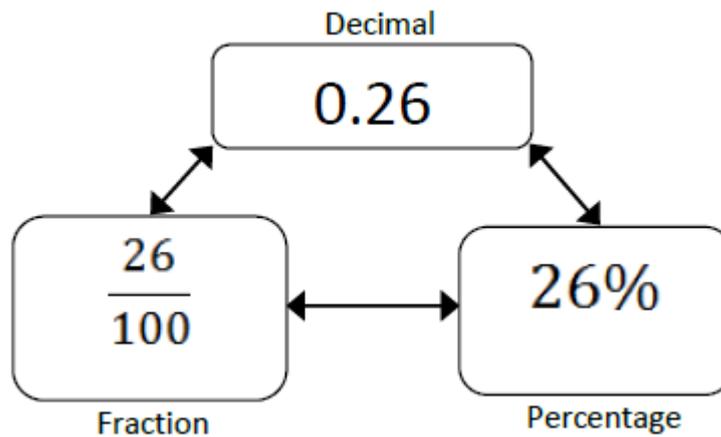
Common Percentages

There are many common percentages. The table below shows the link between percentages, fractions and decimals very clearly:

Percentage	Fraction (simplified)	Decimal		Percentage	Fraction (simplified)	Decimal
50%	$\frac{1}{2}$	0.5		20%	$\frac{1}{5}$	0.2
25%	$\frac{1}{4}$	0.25		40%	$\frac{2}{5}$	0.4
75%	$\frac{3}{4}$	0.75		60%	$\frac{3}{5}$	0.6
10%	$\frac{1}{10}$	0.1		80%	$\frac{4}{5}$	0.8
1%	$\frac{1}{100}$	0.01		30%	$\frac{3}{10}$	0.3
$33\frac{1}{3}\%$	$\frac{1}{3}$	0.333…		70%	$\frac{7}{10}$	0.7
$66\frac{2}{3}\%$	$\frac{2}{3}$	0.666…		90%	$\frac{9}{10}$	0.9

Calculating Percentages – without a calculator

When calculating common percentages of a quantity, the fractional equivalents are used as follows:

Examples: a) 25% of 192 b) 30% of 320

$= \frac{1}{4}$ of 192 $= \frac{3}{10}$ of 320

$= 192 \div 4$ $= 320 \div 10 \times 3$

$= 48$ $= 96$

More complicated percentages can be calculated by breaking the percentage into bits. For example, 35% can be found by:

35% = 25% + 10% OR 35% = 30% + 5% OR 35% = 20% + 10% + 5%

Calculating Percentages – with a calculator

To find a percentage of a quantity using a calculator, divide the percentage by 100 multiply by the amount. **Do NOT use the percentage button on the calculator.**

Examples: a) 22% of 3400 b) 78% of 5200

$= 22 \div 100 \times 3400$ $= 78 \div 100 \times 5200$

$= 748$ $= 4056$

Information Handling – Histograms / Bar Graphs

Bar graphs and histograms are often used to display information. The horizontal axis should show the categories or class intervals and the vertical axis should show the frequency.

All graphs should have a title and each axis must be labelled.

Example 1: The **histogram** below shows the height of P7 pupils
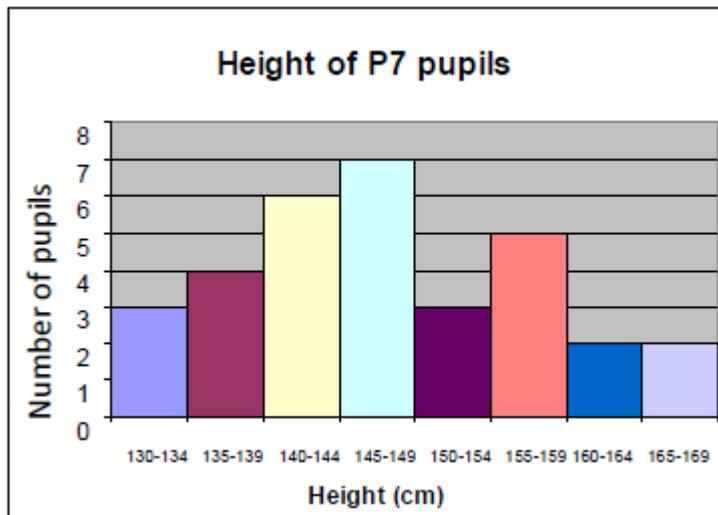
Note that the histogram has **no gaps** between the bars as the data is continuous i.e. the scale has meaning at all values in between the ranges given. The intervals used must be evenly spaced (it must remain in this order).

Example 2: The **bar graph** below shows the results of a survey on favourite sports.
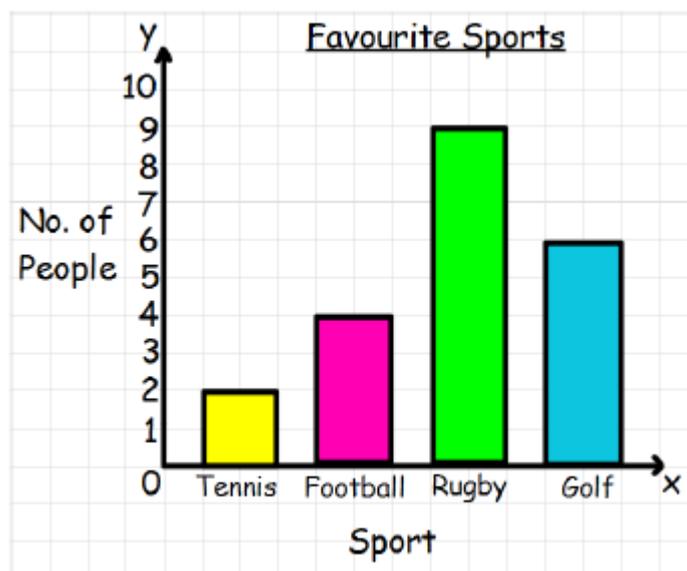
Information Handling – Line Graphs

Line graphs consist of a series of points which are plotted, then joined by a line. All graphs should have a title and each axis must be labelled. Numbers are written on a line and the scales are equally spaced and consistent. The trend of a graph is a general description of it.

Example: Temperature produced by central heating system
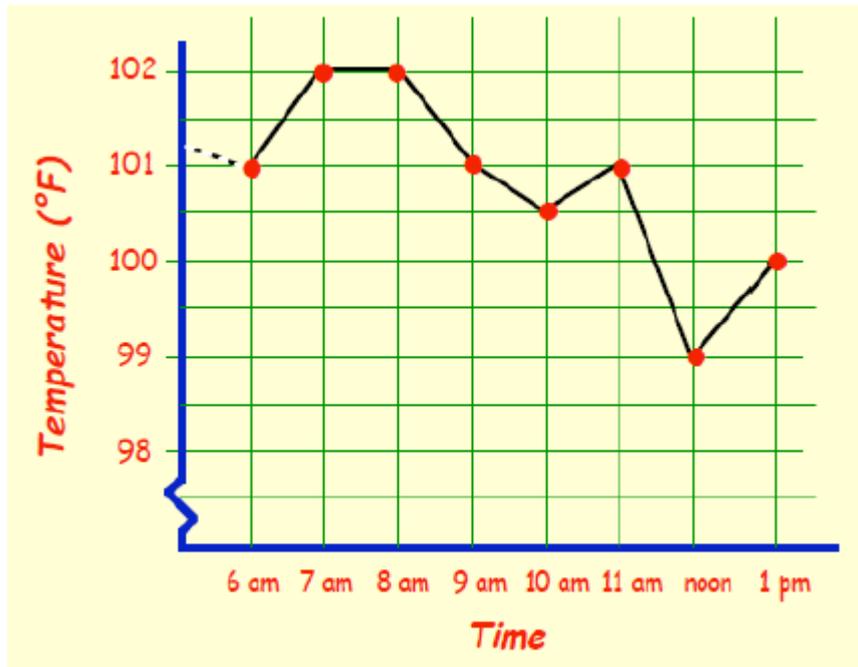
Information Handling – Pie Charts

A pie chart can be used to display information. Each sector of the pie chart represents a different category. The size of each category can be worked out as a fraction of the total using the number of divisions or by measuring angles.

Example: In a recent survey, 90 people were asked for their favourite colour. The results are as follows:

Colour	Frequency	Working	Angle
Green	35	$\frac{35}{90} \times 360 =$	140°
Blue	20	$\frac{20}{90} \times 360 =$	80°
Red	16	$\frac{16}{90} \times 360 =$	64°
Pink	11	$\frac{11}{90} \times 360 =$	44°
Other	8	$\frac{8}{90} \times 360 =$	32°
Total	90		360°

A Pie Chart always needs a clear title and each sector should either be labelled or a key should be used.
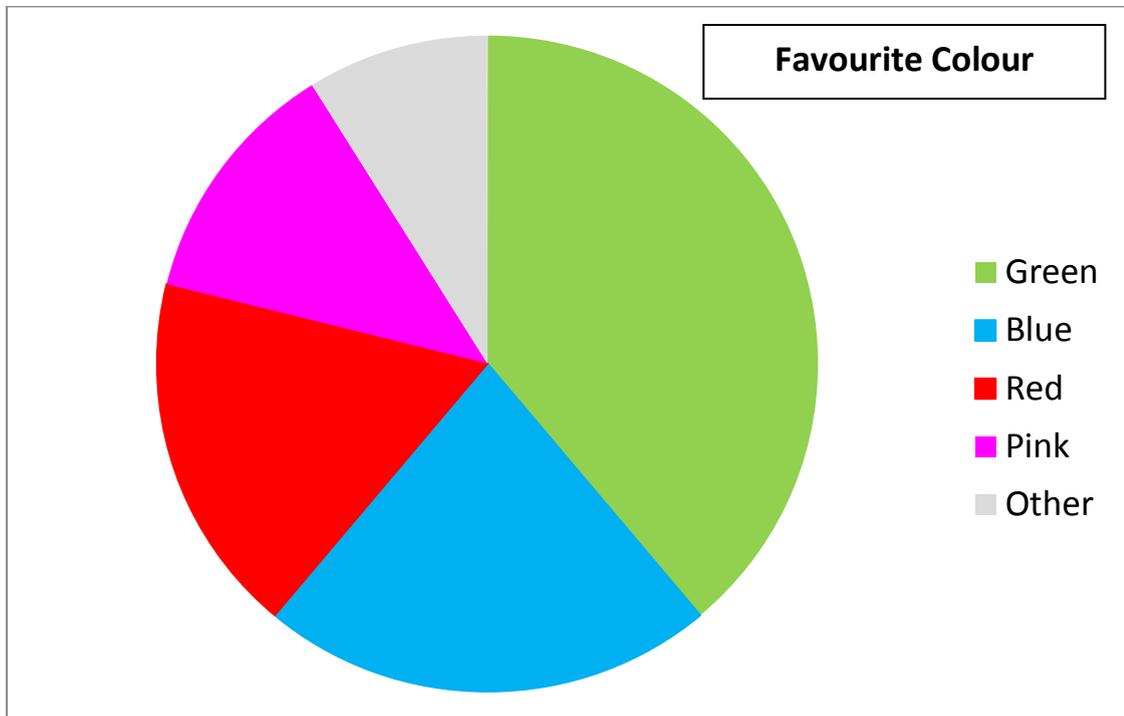
Information Handling – Averages

To provide information about a set of data, the average value may be given. There are 4 ways of finding the average value – the mean, the median, the mode and the range.

The Mean

The mean is found by adding all of the values together and dividing by the number of values

Example: Find the mean of the following data set:

      7   9   7   5   6   7   12   9   10

Mean $= (7 + 9 + 7 + 5 + 6 + 7 + 12 + 9 + 8) \div 9$
         $= 72 \div 9$
         $= 8$

We divide by 9 as there are 9 numbers in this data set…

The Median

The median is the middle value when all of the data is written in numerical order.

Example: Find the median of the following data set:

      7   9   7   5   6   7   12   9   10

Firstly, the data should be re-written in numerical order:

5   6   7   7   （7）   9   9   10   12

In this example, the **median** is 7.

If there are two values in the middle, the median is the mean of those two values.

5   6   7   7   （7   9）   9   10   12   13

Median = (7 + 9) ÷ 2
= 16 ÷ 2
= 8

The Mode

The mode is the value that appears the most often.

5   6   （7   7   7）   9   9   10   12

Mode = 7

The Range

We can also calculate the range of a data set. This gives us a measure of spread.

5   6   7   7   7   9   9   10   12

The numbers in this data set range from 5 to 12. To calculate the range, we subtract the lowest from the highest.

Range = highest value – lowest value
= 12 – 5
= 7

Mathematical Dictionary

Add; Addition (+)	To combine two or more numbers to get one number (called the sum or the total) e.g. 23 + 34 = 57
a.m.	(ante meridiem) Any time in the morning (between midnight and 12 noon).
Approximate	An estimated answer, often obtained by rounding to the nearest 10, 100, 1000 or decimal place.
Calculate	Find the answer to a problem (this does not mean that you must use a calculator).
Data	A collection of information (may include facts, numbers or measurements).
Denominator	The bottom number in a fraction (the number of parts into which the whole is split).
Difference (-)	The amount between two numbers (subtraction). e.g. the difference between 18 and 7 is 11 18 – 7 = 11
Division (÷)	Sharing into equal parts e.g. 24 ÷ 6 = 4
Double	Multiply by 2.
Equals (=)	The same amount as.
Equivalent fractions	Fractions which have the same value e.g. 4 and 1 are equivalent fractions.
Estimate	To make an approximate or rough answer, often by rounding.
Evaluate	To work out the answer/find the value of.
Even	A number that is divisible by 2. Even numbers end in 0, 2, 4, 6, or 8.
Factor	A number which divides exactly into another number, leaving no remainder. e.g. The factors of 15 are 1, 3, 5 and 15.
Frequency	How often something happens. In a set of data, the number of times a number or category occurs.
Greater than (>)	Is bigger or more than e.g. 10 is greater than 6 i.e. 10 > 6
Greater than or equal to (≥)	Is bigger than OR equal to.
Least	The lowest (minimum).
Less than (<)	Is smaller or lower than e.g. 15 is less than 21 i.e. 15 < 21
Less than or equal to (≤)	Is smaller than OR equal to.
Maximum	The largest or highest number in a group.
Mean	The arithmetic average of a set of numbers
Median	Another type of average – the middle number of an ordered data set
Minimum	The smallest or lowest number in a group.
Minus (-)	To subtract.
Mode	Another type of average – the most frequent number or category
Most	The largest or highest number in a group (maximum).

Multiple	A number which can be divided by a particular number leaving no remainder e.g. the multiples of 3 are 3, 6, 9, 12, …
Multiply (x)	To combine an amount a particular number of times e.g. 6 x 4 = 24
Negative Number	A number less than zero e.g. – 3 is a negative number.
Numerator	The top number in a fraction.
Odd Number	A number which is not divisible by 2. Odd numbers end in 1, 3, 5, 7 or 9.
Operations	The four basic operations are: addition, subtraction, multiplication and division.
Order of Operations	The order in which operations should be carried out (BODMAS)
Place Value	The value of a digit depending on its place in the number e.g. 1 342 - the number 4 is in the tens column and represents 40
p.m.	(post meridiem) Anytime in the afternoon or evening (between 12 noon and midnight).
Polygon	A 2D shape which has 3 or more straight sides.
Prime number	A number that has exactly 2 factors (can only be divided by itself and 1). Note that 1 is not prime as it only has one factor.
Product	The answer when two numbers are multiplied together e.g. the product of 4 and 5 is 20.
Quadrilateral	A polygon with 4 sides.
Quotient	The number resulting by dividing one number by another e.g. 20 ÷ 10 = 2, the quotient is 2.
Remainder	The amount left over when dividing a number by one which is not a factor.
Share	To divide into equal groups.
Sum	The total of a group of numbers (found by adding).
Square Numbers	A number that results from multiplying a number by itself e.g. 6^2 = 6 x 6 = 36.
Total	The sum of a group of numbers (found by adding).

The Numeracy Experiences

The content of this toolkit is not a full list of the Numeracy Experiences. Below is a description of each Numeracy Experience from Level 2 (L2) to Level 4 L4).

TIME
- Reading and using timetables and schedules (L2)

- Choose and use appropriate units of time (L2)

- Carry out practical tasks and investigations in times events (L2)

- Estimate how long a journey will take, the speed travelled or the distance covered (L3)

- Use the link between time, distance and speed to carry out calculations (L4)

- Research, compare, contrast aspects of time management (L4)

ESTIMATION AND ROUNDING
- Routinely estimate an answer and decide if the answer is reasonable (L2)

- Round a number to an appropriate degree of accuracy (L3)

- Use the knowledge of tolerance and impact of error when choosing the required degree of accuracy (L4)

DATA AND ANALYSIS
- Interpret and draw conclusions from information (L2)

- Recognise that presentations may be misleading (L2)

- Carry out surveys etc. to collate and communicate results (L2)

- Use technology to source information presented in a range of ways (L3)

- Interpret information and discuss whether it is robust, vague or misleading (L3)

- Evaluate and interpret raw and graphical data (L4)

- Comment on relationships within data sets (L4)

MONEY

- Manage money, compare costs, know what you can afford to buy with your money. (L2)

- Understand costs and risks of using bank card to buy goods. (L2)

- Know that budgeting is important. (L2)

- Be able to source and compare different services. Be able to discuss the advantages/disadvantage of your findings – and explain which service offers the best value – to you. (L3)
- Be able to budget effectively. Be able to use technology and other methods to manage your money. (L3)

- Be able to discuss what facts should be considered when determining what you can afford,

including managing credit. Be able to know how to lead a responsible lifestyle. (L4)

- Be able to source information on earnings and be able to calculate a net income. (L4)

- Be able to research, compare and contrast a range of personal finance products. Be able to explain your preferred choice, after making appropriate calculations. (L4)

NUMBER AND NUMBER PROCESSES

- I can explain the link between a digit, its place and its value – in a decimal fraction. (L2)

- I can solve problems involving whole numbers. (L2)

- I can solve problems with decimal fractions which are in a context. (L2)

- I understand the order of numbers on a number line (including negative numbers). (L2)

- I can solve number problems within a context and can explain my working and solution. (L3)

- I can recall number facts and use them in calculations. (L3)

- I can solve simple problems (in context) which use negative numbers. (L3)

- I can use how I have solved problems in the past to solve new problems in an unfamiliar context. (L4)

CHANCE AND UNCERTAINTY

- I can carry out simple experiments involving change and communicate what happens using the language of probability. (L2)

- I can find the probability of a simple event happening. (L3)

- I can explain why the consequences of this probability should be considered when making choices. (L3)

- I can determine how many times I expect an outcome to occur, using probability. I can also use this information to make predications or informed choices. (L4)

MEASUREMENT

- I can use my existing knowledge of objects to help me estimate a measure. (L2)

- I can use common units of measure. (L2)

- I can convert between related units within the metric system. (L2)

- I can carry out calculations which involve units of measure. (L2)

- I can find the perimeter and the area of a simple shape. I can find the volume of a simple shape. I can explain how I calculated the perimeter or area or volume. (L2)

- I can choose an appropriate unit of measure when solving a practical problem. (L3)

- I can choose an appropriate degree of accuracy for a task. (L3)

- I can use a formula to calculate area or volume. (L3)

- I can appreciate the practical importance of accuracy when making calculations. (L4)

Useful Websites and Further Reading

There are numerous websites available. We particularly recommend the Maths and Numeracy Workouts. Links to these sites as well as other websites can be found at:

www.prestwick.sayr.sch.uk/mathematics