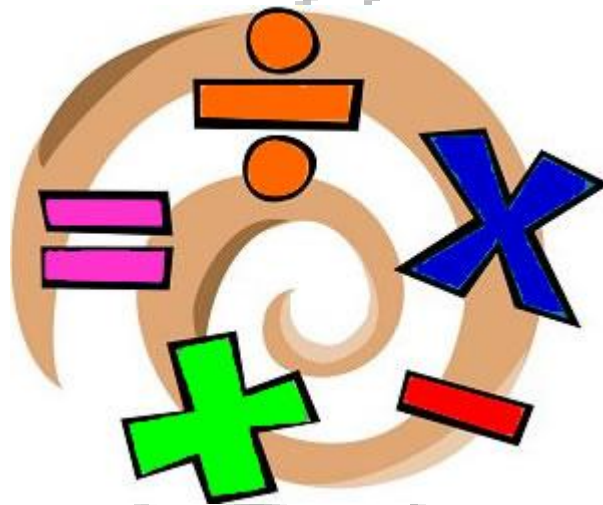


Written Calculations Strategy



North Dublin Muslim National School

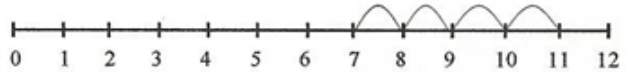
Ratoath Road, Dublin 7

Addition

Stage 1

Use a number line to count on in ones.

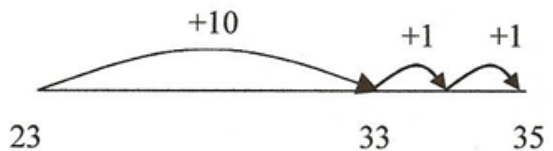
$$7 + 4 = 11$$



Stage 2

Count on a number line in tens and then ones.

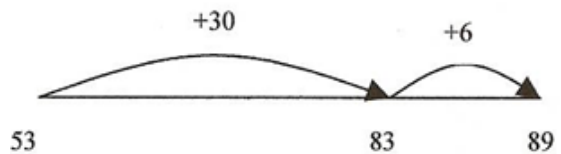
$$\begin{aligned} 23 + 12 &= \\ 23 + 10 + 1 + 1 &= \\ 33 + 1 + 1 &= 35 \end{aligned}$$



Stage 3

Partition into tens and ones and recombine

$$53 + 36 = 91$$



Stage 4

Use the vertical method, labelling columns

$$\begin{array}{r} \text{HTU} \\ 523 \\ + 245 \\ \hline 768 \end{array}$$

Stage 5

Extend the vertical method to include larger numbers and decimals in different contexts.

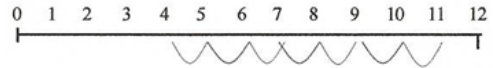
$$\begin{array}{r} \text{€ } 543.27 \\ + \text{€ } 145.46 \\ \hline \text{€ } 688.73 \end{array}$$

Subtraction

Stage 1

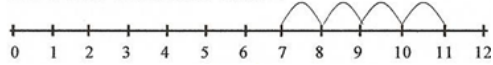
a) Use a number line to count back in ones.

$$11 - 7 = 4$$



b) Counting on using a number line to find a difference.

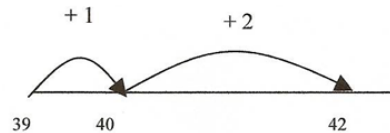
$$11 - 7 = 4$$



Stage 2

Find a small difference by counting up.

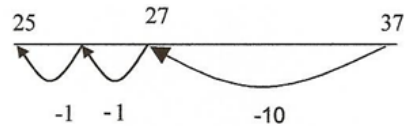
$$42 - 39 = 3$$



Stage 3

Count back in tens and ones.

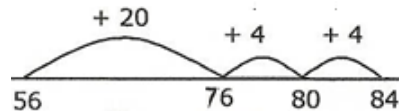
$$\begin{aligned} 37 - 12 &= \\ 37 - 10 - 1 - 1 &= \\ 27 - 1 - 1 &= 25 \end{aligned}$$



Stage 4

Count up from the smaller number to the larger

$$84 - 56 = 28$$



$$\text{Then } 20 + 4 + 4 = 28$$

Stage 5

Decomposition

Extend to include larger numbers and decimals in different contexts.

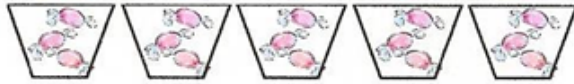
$$\begin{array}{r} \cancel{2}^1 \\ - \cancel{3}^1 \cancel{8} \\ \hline 54 \end{array} \qquad \begin{array}{r} \cancel{2}^2 \cancel{8}^1 \\ - \cancel{1}^2 \cancel{7}^1 \cancel{8} \\ \hline 174 \end{array}$$

Multiplication

Stage 1

Pictures and Symbols

There are 3 sweets in one bag. How many sweets are there in 5 bags?



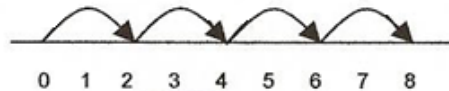
Stage 2

Arrays and repeated addition.



4×2 , 2×4 or $4 + 4$

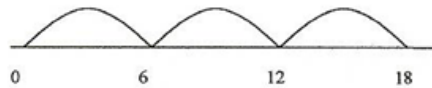
$$2 + 2 + 2 + 2$$



Stage 3

Use number lines to aid the recall of times tables.

$$6 \times 3 = 18$$



Stage 4

Use the grid method and then the vertical method to multiply two and three digit numbers by one digit.

$$35 \times 2 = 70$$

x	30	5	
2	60	10	= 70

progressing to

$$\begin{array}{r} 35 \\ \times 2 \\ \hline 70 \end{array}$$

Stage 5

Use the grid method and then the vertical method to multiply whole numbers and decimals by two digit numbers.

x	70	2	
30	2100	60	= 2160
8	560	16	= + 576
			2736

progressing to

$$\begin{array}{r} 72 \\ \times 38 \\ \hline 576 \\ + 2160 \\ \hline 2736 \end{array}$$

Division

Stage 1

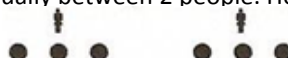
Pictures and Symbols

12 children get into teams of 4 to play a game. How many teams are there?



Stage 2

Sharing 6 sweets are shared equally between 2 people. How many do they each have? ($6 \div 2$)



Grouping There are 6 sweets. How many people can have two each? (How many 2s make 6?)



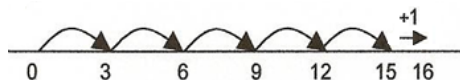
Stage 3

Division with remainders

Sharing - 16 shared between 3, how many left over?

Grouping - How many 3s make 16? How many left over?

5 leaps, 1 left over
 $16 \div 3 = 5 \text{ r}1$



Stage 4

Divide by one digit using the 'traditional' method.

$$4 \overline{)16} \quad \text{progressing to} \quad 5 \overline{)12:50}$$

Stage 5

Divide by more than one digit using the 'traditional' method.

Progress to include larger numbers, decimal numbers and numbers which will produce Remainders.

$$\begin{array}{r} 12 \\ 13 \overline{)156} \\ \underline{-13} \\ 26 \\ \underline{-26} \\ 0 \end{array}$$

Written Calculations Strategy Rationale

The *Written Calculations Strategy* has been written for use by teachers, parents, and all others who have a role in educating the children who attend the North Dublin Muslim National School.

It aims to:

- allow children a greater understanding of the four operations
- personalise the learning of each child
- provide consistent progression throughout classes

The different methods taught are intended to equip students with the tools they will require to solve mathematical problems in their academic and day-to-day lives.

All calculations require a firm understanding of number bonds and times tables; children should be encouraged to learn these facts rigorously in school and at home.

Should you have any questions about the methods contained within this policy, your child's class teacher would be happy to answer them.