Language of Number Operations

Addition Algorithm (Written recording)	Language Used
Junior Infants	Junior Infants
3 + 4 = 7	Three and four altogether makes seven Three and four is the same as seven
Senior Infants	Senior Infants
3 + 4 = 7	Three and/plus four makes seven Three and/plus four equals seven
First Class	First Class
3 + 4 = 7	Three and/plus four equals seven
$\frac{3}{\frac{+4}{7}}$	Start at the top saying " three plus four equals seven"
	Children are also taught the Commutative Property informally using concrete materials
Explore, develop and apply the: <i>Commutative</i> : 6+2=8 / 2+6=8 <i>Associative</i> : (2+3)+5=10 / 2+(3+5)=10 <i>Zero</i> : 7+0=7	
properties of addition	
Addition with renaming:	
$ \frac{14}{23} $	Start at the top on the units side saying "Four plus nine is thirteen. Thirteen is one ten and three units. I put the three in the units place under the line. I put the ten with the other tens. One ten and one ten is two tens. I put the two under the line in the tens place". Note: The one ten is recorded ON the line between the tens and units.

Number Operations ~ Addition

Number Operations ~ Subtraction

Subtraction Algorithm (Written recording)	Language Used
First Class	First Class

Develop an understanding of subtraction as deducting, as complementing and as difference 0-200-20e.g.Deducting: I had 10 sweets, I ate 3. How many have I left?Complementing: There are 10 stickers in a set. I have 4. How many more do I need to make a full set?Difference: I have 12 crayons. Mary has 6 crayons. How many more have I? How many fewer has Mary?	Emphasis is placed on subtraction as the inverse of addition. Subtraction is recorded concretely, orally, pictorially, in number sentences, in jumps on the number line, and on notation boards.
Use the symbol '-' $5 = \frac{-2}{3}$ $16 = \frac{-4}{12}$	Formal introduction of the symbols occurs only after sufficient oral and exploratory work has been completed. The meaning of the symbols is discussed frequently. Children are taught that the equals sign does not signal `the answer comes next' but means `the same' or 'equivalent'. Start at the top saying "Five take away two leaves three. I write three under the line."
Second Class	Start at the top saying "Six take away four leaves two. I write two under the line in the units place. One ten take away zero tens leaves one ten. I write one under the line in the tens place."
Subtraction with renaming 01 12 <u>- 9</u> 3	Start at the top on the units side saying: "Two take away nine. I cannot do. I need more units. I go to my tens side. I change one ten for ten units. I have no tens left. I bring over my ten units. I had ten units. Now I have twelve units. I can take away. Twelve take away nine leaves 3. I write the three under the line in the unit's side. Zero tens take away zero tens is zero. I write zero under the line in the tens side."

Multiplication Algorithm (Written recording)	Language Used
Third – Sixth Class	Third – Sixth Class
Develop an understanding of multiplication as repeated addition and vice versa	Emphasis is placed on subtraction as the inverse of addition.
Explore, understand and apply the:	pictorially, in number sentences, in jumps on the number line, and on notation boards.
Zero: $5 \times 0 = 0 / 0 \times 7 = 0$ Commutative: $3 \times 4 = 4 \times 3$ Distributive: $5 \times 4 = (3 \times 4) + (2 \times 4)$	
properties of multiplication	
6	
<u>×5</u> 30	Start at the bottom saying: "Five groups of six equals 30. I write 30 under the line."
26 X 5	
26 <u>X 25</u> 130	Start at the bottom saying: "Five groups of six equals thirty. Thirty is three tens and zero units. I put the zero under the line in the units place. I put the three tens on the line to add to the other tens. Five groups of two tens are ten tens plus three tens is thirteen tens. I write thirteen under the line."
<u>+ 520</u> 650	Start at the bottom saying: "Five groups of six equals thirty. Thirty is three tens and zero units. I put the zero under the line in the units place. I put the three tens on the line to add to the other tens. Five groups of two tens are ten tens plus three tens is thirteen tens. I write thirteen under the line. Five groups of twenty six are one hundred and thirty. What am I multiplying by next? By two tens. Because I am multiplying by a multiple of ten, I put down a zero. Two groups of six are twelve. Two groups of two are four and one is five. Twenty groups of twenty six are five hundred and twenty.

Now I must add one hundred and thirty and five hundred and twenty".
Emphasis is placed on the teaching of multiplying by ten and how it changes a number e.g. 6 × 10 53 × 10 254 × 10
Children are taught that when a number is multiplied by ten, the number gets ten times bigger. Each digit is then moved one place to the left. In numbers with a decimal point, it is emphasised that the digits move and the decimal point always
remains in the same position.

Number Operations ~ Division

Division Algorithm (Written recording)	Language Used
Third - Sixth Class	Third - Sixth Class
as repeated subtraction, without and with remainders	
	"Six shared between six equals one".
6 ÷ 6 = 1	"Six divided by six equals one" (Sixth Class).
12 ÷ □ = 2	"Twelve shared between how many equals two".
	"Twelve divided by what number equals two" (Sixth Class)
□ ÷ 4 = 5	
	"How many shared between four equals five" or
	"What number divided by four equals five"
6 <u>32</u>	
05R 2	"Thirty two shared between six.
	Can I share three tens between six?
	L cannot. 1 write down zero below the line.
	Fach aets five
	There are two left over".

018	
25 458	
<u>25</u>	"Four hundred and fifty eight shared between
208	twenty five.
<u>200</u>	Can I share four hundreds between twenty five?
8	I cannot. I write zero above the line.
	Can I share forty five tens between twenty five?
	Yes, each gets one ten. I write one ten above the
Children are taught a number of strategies to help	line.
them become more efficient when working on long	Twenty five get one ten each - this is twenty five.
division:	I take away twenty five to see how many I have
	left.
1. Estimation – usina roundina	I write twenty five under forty five and I take
2. Calculating multiples of a number using the	away.
front-end strategy	, I bring down my eight units.
57	Two hundred and eight units shared between
	twenty five. Each aets eight. I write the eight
	above the line.
	Twenty five get eight units each. This is two
	hundred.
	I take away two hundred to see how many I have
	left.
	I have eight left.
	Four hundred and fifty eight shared between
	twenty five - each aets eighteen and there are
	eight left over.
	The answer is 18 R 8."