Maths Policy

INTRODUCTION & RATIONALE

All members of the teaching staff of NETNS drew up this document. It describes our agreed approach to the teaching of Maths in this school. It is intended primarily for ourselves as a staff to ensure consistency and continuity in our approach and to help improve the children's learning of Maths. It is also intended to serve as part of an induction to the school for new teachers and for other partners in the education process.

The Board of Management approved this policy in 2012 and it will be reviewed in the 2016/2017 school year.

VISION

One of our principal aims at NETNS is to help each child to develop to his/her best potential. We want each child who leaves the school in 6th class to be able to recall basic number facts, think logically and solve day to day problems as they meet them. We hope that each child will be able to interpret data and have the skills to lead a full life as a child, and later as an adult.

We need to look at outcomes for the children in each class which will allow children to achieve without stress the standard suitable to their ability.

AIMS

Our primary aims in the teaching of maths are:

- To develop a positive attitude towards maths and an appreciation of both its practical and aesthetic aspects.
- To develop problem solving abilities and a facility for the application of maths to everyday life.
- To enable children to use mathematical language effectively and accurately.
- To enable children to acquire an understanding of mathematical concepts and processes to his/her appropriate level of development and ability.
- To enable the child to acquire proficiency in fundamental maths skills and in recalling basic number facts.
- To enable all children to reach their full potential in maths.

STRANDS & STRAND UNITS

Each teacher should be familiar with the maths curriculum and its objectives appropriate to their class level, and the overviews, all outlined in appendix 1.

At present we are using the Planet Maths textbook throughout the school. This textbook covers all the strand units in each class. Teachers do not rely totally on the textbook and use active learning wherever possible. Each teacher has other resources/materials to supplement the class core book. Mental and oral maths form an intrinsic part of each maths lesson.

PLANNING

Teachers each have a planning curriculum folder. Areas and objectives of the maths curriculum will be highlighted to show what has been covered. Each teacher will have individual fortnightly short term planning. A Cuntas Míosúil will be filled in at the end of every month and given to the Principal.

METHODS

We believe that it is very important for children to discuss maths problems together in class, to explore differing points of view and to reach correct solutions in a process of working out rather than by learning by rote. This will require talk and discussion. There is a place for rote learning in the memorisation of number facts, but only after a child has fully understood these. We believe that children usually learn best through the use of concrete materials, and these will be available and will be used where appropriate. Our approach to the teaching of maths is a collaborative one where children are allowed to discuss together, help each other, and through the use of games, and indeed the everyday environment such as timetables, shopping lists, tourist brochures, etc. learn maths in a way that is relevant to their own experiences.

Children will be encouraged to use a variety of strategies to solve problems. These will include making a chart or table of the information, looking for patterns in a problem, making a guess and testing their answer out, and solving a simpler version of the problem. Children will be encouraged to re-read the problem several times, and in class discussion they will always be taught to respect the ideas of others.

Layout of Work:

In Junior and Senior Infants, children will use squared paper for Maths and they will be taught to place one number in each box and one numerical sign in each box. They will leave a space between each sum.

In 1st and 2nd Class they will leave three boxes for a margin on each page.

In 3rd and 4th Class children will be able to write a headline on the page with the date, the topic being covered and the relevant page of the textbook (if necessary).

Children will be taught to show the process they used in all problem solving.

Mathematical Language:

Mathematical language that is to be introduced in different classes can be found in appendix 2.

Teaching Number Facts:

The teaching of number facts really begins in Junior Infants with number stories. We encourage children to know number stories to 10 by heart by the end of Senior Infants. Children begin to learn multiplication facts in 3rd Class.

Teaching Place Value:

Place value is fundamental to maths and we will put a special emphasis on its teaching. Children will write T U or H T U or Th H T U above the appropriate numerals in their written work until they have a solid grasp of place value.

Mental Strategies:

An ability to calculate mentally lies at the heart of maths. There are three aspects to developing a range of mental strategies and ensuring that children become effective in deploying these strategies:

- raising children's awareness that there is a range of strategies;
- working on children's confidence and fluency with a range of strategies;
- developing efficient methods.

Each class teacher will have a booklet 'Teaching mental calculation strategies' that they can use with the children, and work on mental calculation strategies will form a part of every maths lesson.

Standard Written Methods:

Standard written methods are reliable and efficient procedures for calculating which, once mastered, can be used in many different contexts. But they are of no use to someone who applies them inaccurately and who cannot judge whether the answer is reasonable. For each operation (= - x ÷), **at least one** standard written method will be taught in the later primary years, but the progression towards these methods is crucial, since they are based on steps which are done mentally and which need to be secured first.

Teaching Addition:

Horizontal addition will start in Junior Infants. Vertical addition will start in Senior Infants.

The standard written method for vertical addition will be as follows:

A : First check the sign, and then read the sum. Children will be taught that the sign

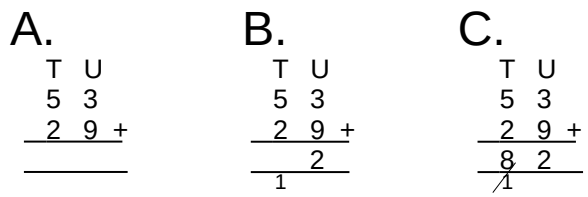
can be placed on either side.

Starting at the top unit, we say three add nine equals...twelve, one ten and two units.

B : We write down the two units in the units column.

We carry the one ten which we record in various places(above or below the line, etc)

C : We then look at the tens column and say five add two equals seven, add one, is eight. We write the eight in the tens column. The answer is 82.



Teaching Subtraction:

The minus symbol is introduced in 1st Class. The children should be comfortable with all take away terms especially as they enter the higher classes.

Children will learn subtraction with re-grouping in 2nd Class. We will teach it as follows:

A : First check the sign, and then read the sum. Children will be taught that the

sign can be placed on either side.

Starting at the top unit, we say one unit take away nine units.

B : This cannot be done so we need to take one ten and put it with the units.

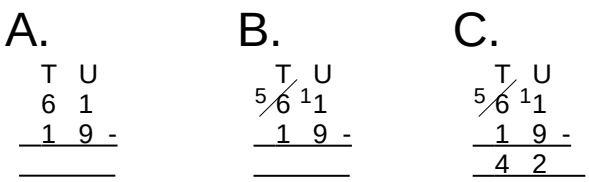
This makes five tens and eleven units

C : At the top unit we now say eleven units take away nine units.

This makes two units and is entered under the line in the units column.

At the top ten we say five (tens) take away one (ten).

This makes four (tens) and is entered under the line in the tens column.



Teaching Multiplication:

In short multiplication we will write the T U on top:

A : First check the sign and then read the sum. Children will be taught that the sign

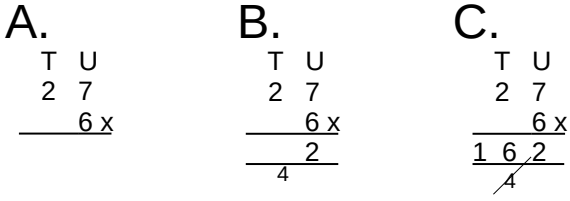
can be placed on either side.

Starting with the units we say six times seven is 42, four tens and two units.

B : We write down the two units in the units column.

We carry the four tens which we record in various places (above/below the line etc)

C : We then say six times two is twelve, add the four, is sixteen.



In long multiplication we will use a variety of methods.

We will use the distributive method i.e. 36 x 24 will be written first of all as 36 x 4 plus 36 x 20. We will place a lot of emphasis on estimation (rounding off).

The standard written method we will use for long multiplication will be as follows:

A : First we check the sign, and then read the sum. Children will be taught that the sign

can be placed on either side.

Starting with the units we say four times six is 24, two tens and four units.

B : We write down the four units in the units column.

We carry the two tens which we record in various places (above/below the line, etc)

C : We then say four times three is twelve, add the two, is fourteen.

D : Starting a new line we write a 0 in the units column (as we are multiplying in tens)

E : We then say two times six is twelve, one ten and two units.

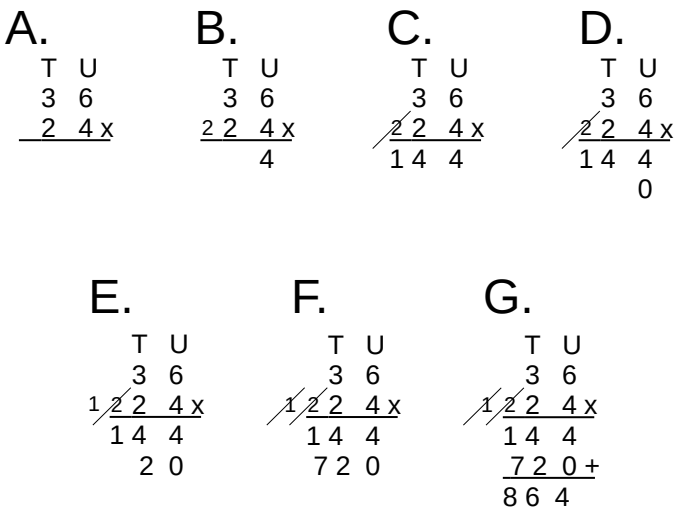
We write down the two units in the tens column.

We carry the one ten which we record in various places (above/below the line, etc)

F : We then say two times three is six, add the one, is seven.

G : Next we add together 144 and 720 starting with the units column...

….to get the answer 864



Teaching Short Division:

The standard written method for short division will be as follows:

A : We say three into five goes.....once.....with two remaining.

B : We write the one under the five and carry the remaining two to the next number

(the two becomes twenty two)

We then say three into twenty two goes.....seven times.....with one remaining.

C : We write the seven under the twenty two and carry the remaining one to the next number

(the eight becomes eighteen.)

We then say three into eighteen goes.....six times.

D : We write the six under the eighteen.

The answer is 176.

A.

$$3 \overline{)\,528}$$

B.

$$3 \overline{)\,\cancel{5}^{\,2}\,2\,8}$$
$$\quad 1$$

C.

$$3 \overline{)\,\cancel{5}^{\,\cancel{2}^{\,1}}\,2\,8}$$
$$\quad 1\,7$$

D.

$$3 \overline{)\,\cancel{5}^{\,\cancel{2}^{\,1}}\,2\,8}$$
$$\quad 1\,7\,6$$

Teaching Long Division:

Children will estimate first: 378 ÷ 14

380 ÷ 10 = 38

and then judge is this a good estimate or not?

The standard written method of long division will be set out in the following manner:

A : We say fourteen goes into three goes.....zero.

B : We write the zero above the three and zero below the three.

We subtract zero from three and write the answer (3) under the subtraction.

C : We bring down the next number (7) to beside the three to make 37.

We say fourteen into thirty seven goes.....twice (14x2=28)

D : We write the two above the seven and we write 28 (twice 14) under the 37.

E : We subtract 28 from 37 and write the answer (09) under the subtraction.

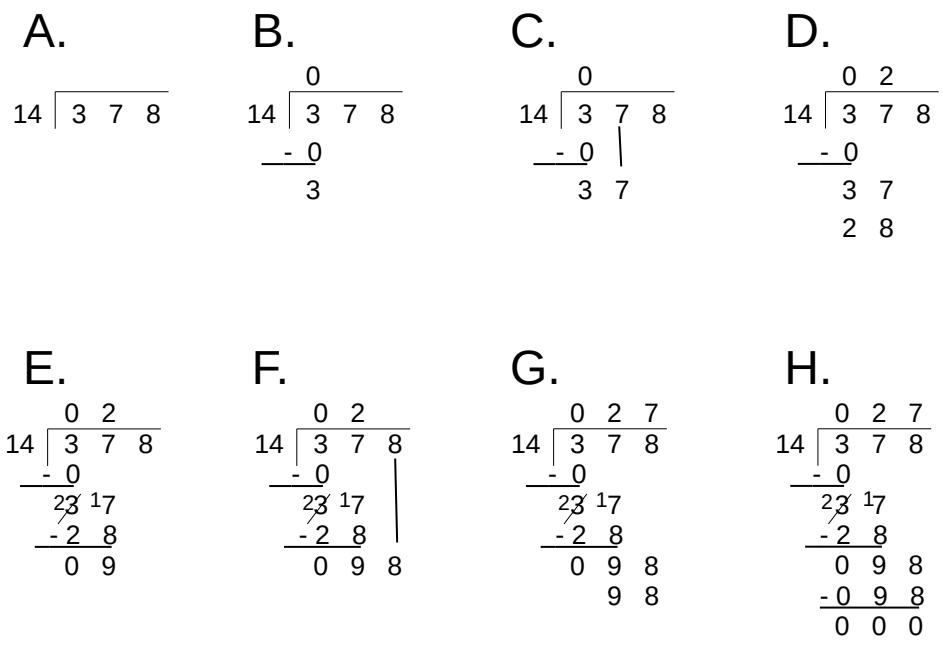
F : We bring down the next number (8) to beside the nine to make 98.

We say fourteen into 98 goes.....seven times (14x7=98)

G : We write seven above the eight and we write 98 (14x7) under the 98.

H : We subtract 98 from 98 and write the answer (000) under the subtraction.

The answer is twenty seven.



It may help the child if the child shows the multiplication process in the margin:

1 x 14 = 14

2 x 14 = 28

3 x 14 = 42

4 x 14 = 56 etc....

Teaching Fractions:

Fractions are introduced in 1st Class with halves, quarters in 2nd Class, eighths and tenths in 3rd Class, and the other fractions from 4th Class. In 4th Class children will learn simple addition of fractions and equivalent forms of fractions.

Teaching Improper Fractions:

Improper fractions will only be introduced when children are very familiar with equivalent fractions.

Use of Calculators:

Calculators will be used from 4th Class upwards in accordance with the revised curriculum. It should be the aim that each child should know as many tables as their ability allows and the calculator should only supplement tables learning.

ASSESSMENT, RECORD KEEPING AND REPORTING

The following methods of assessment will be used:

- Teacher observations
- Weekly tests
- Annual Drumcondra Tests

Assessment in Infant Classes will be done through teacher observations.

Weekly Tests

From 1st to 6th Class children will have a tables test and mental maths test every Friday morning.

- 1st class will be tested on addition tables, and later on, the subtraction tables.
- 2nd class will be tested on the addition and subtraction tables.
- 3rd and 4th class will be tested on the addition, subtraction, multiplication and division tables.
- 5th and 6th class will be tested on all the tables, incorporating fractions, decimals and percentages etc.

Records from tests are to be kept by class teachers to diagnose children's difficulties. Parents will be encouraged to check pupils weekly test results and to help their children with tables work.

Annual Tests

Monitoring and evaluation of how outcomes for children are achieved will be by the Drumcondra test in May/June. Tests will be administered in the classrooms by a member of staff other than the class teacher. They will then be marked, graphed and collated and kept on file in the Principals Office.

We will use standardised test results in maths to inform our school's self evaluation and school improvement plan. Aggregated results of standardised tests will be reported to the Board of Management and Department of Education and Skills once annually. Progress will be communicated to parents at Parent/Teacher meetings in November/December and

in the end of term/year reports. Teachers will also communicate as necessary with parents informally throughout the year.

ASSISTING CHILDREN WITH SPECIAL NEEDS

The resource, learning support and/or EAL teacher will work closely with the class teacher to establish the nature of the learning needs, and they will liaise together on how to support the child who has needs. The child will work with the EAL/Resource/LS teacher outside of the classroom in individual lessons or in a small group outside or within the classroom. Provision will be made in each class for the individual needs of each child. Extension material is available in the central resource cupboard for gifted children who finish work early or who need additional challenges. Work at simpler levels will also be available for those who need it.

HOMEWORK

Homework is given four nights a week (Mon – Thurs), no homework will be given on Fridays. Oral homework regarding tables to be learned will be given from 1st to 6th class.

Written homework is as follows (this may change slightly from year to year):

1st Class : Maths Challenge or Planet Maths Activity Book four times a week.

2nd Class : Maths Challenge twice a week

Planet Maths Activity Book once a week.

3rd Class : Maths Challenge two/four times a week.

Planet Maths Activity Book once a week.

4th Class : Maths Challenge two/four times a week.

5th Class : Maths Challenge four times a week.

6th Class : Maths Challenge four times a week.

In Infant classes it is up to the individual class teacher to assess whether any maths homework is necessary.

TIME ALLOCATION

Maths will be taught for 3 hours and 25 minutes a week in Infant Classes and 4 hours and 10 minutes a week in 1st to 6th Class. Maths will be taught as a lesson in its own right as well as being integrated with other curriculum areas and some use of discretionary curriculum time for extra numeracy activities.

INTEGRATION

Each teacher will actively seek opportunities to integrate maths with other subject areas. Maths skills will be used in Science, Geography and Art in particular. We will also make every effort to ensure that maths work is taught within the context of the child's daily life.

MARKING

Marking will be done by the teacher and occasionally by the children themselves. On the occasions when the children mark its own or each other's work, the teacher will see every child's work. Corrections will be done either orally or in writing.

RESOURCES & ICT

We acknowledge the importance of concrete materials in the development of mathematical concepts for children in all classes. Some equipment, especially early mathematical activities equipment for infants, is kept in the classrooms, but generally maths equipment is stored in a maths cupboard which is situated in Room 0ne in the main building and operates on a sign out basis. Supplementary books and resources are available in the central resource cupboard (past the Principals Office) Below is a list of equipment that can be found in the maths cupboard:

The school uses I.C.T regularly to support the teaching of maths. As well as Cd roms such as Numbershark, Maths Worksheets Wizard, which are kept in the computer room, we also use the following websites, among others:

folensonline.ie

Planet maths interactive

topmarks.co.uk

primary strategy interactive

primaryresources.co.uk

STAFF DEVELOPMENT

Teachers are made aware of any opportunities for further professional development through participation in courses available in Education Centres or other venues. Skills and expertise within the school are shared and developed through inputs at staff meetings.

PARENTAL INVOLVEMENT

Parents are encouraged to support the school's programme for maths and supervise and be involved in maths homework. This Policy will be made available for parents to look at and parents will be invited to attend school events such as activities held in Maths Week. Individual Parent/Teacher meetings are held annually in November/December. Teachers and parents are afforded this chance to discuss each individual child's progress in maths and other areas, and ways of assisting that progress. Parents and teachers are welcome to make individual arrangements to discuss matters of relevance at other times throughout the year. An End of Term Progress Report will be sent out at Christmas and Easter. Annual written reports are sent to all parents in June of every year. These provide details of a child's progress in maths and the Sten of the Drumcondra Maths results. Parents with particular expertise may be invited to address classes.

COMMUNITY LINKS

Members of the local community may be invited to assist the school's maths programme. Proposed invitation must be discussed in advance with the Principal.

SUCCESS CRITERIA

The success of this policy will be measured using the following criteria:

- ongoing assessment, formal and informal, will show that children are acquiring an understanding of mathematical concepts and a proficiency in maths skills appropriate to their age and/or ability,
- implementation of the school policy will be evident in teachers preparation and monthly reports,
- teachers will know from their new classes in September that work/approaches as outlined in the policy have been covered by the previous teacher.

Ratification

This policy will be subjected to periodic review.

Ratified by Board of Management on ……
(Date)

Signed: ……..
Chairperson, Board of Management

APPENDIX ONE

SKILLS DEVELOPMENT

	Infants	1st & 2nd Classes	3rd & 4th Classes	5th & 6th Classes
Applying & Problem Solving	• Select appropriate materials and processes for mathematical tasks • Select and apply appropriate strategies to complete tasks or solve problems • Recognise solutions to problems	• Select appropriate materials and processes for mathematical tasks/applications • Apply concepts and processes in a variety of contexts	• Select appropriate materials and processes for mathematical tasks and applications • Analyse problems and plan an approach to solving them • Select and apply a variety of strategies to complete tasks/projects or solve problems • Evaluate solutions to problems	• Reflect upon and evaluate solutions to problems
Communicating & Expressing	• Discuss and explain mathematical activities • Record results using diagrams, pictures and numbers • Discuss problems presented pictorally and orally	• Listen to and discuss othe children's descriptions/ explanations • Discuss and record using diagrams, pictures and symbols	• Discuss and explain the processes used or results of maths activities/projects/ problems • Discuss and record processes and results using a variety of methods • Discuss problems presented orally, pictorally or diagrammatically; carry out analyses	• Discuss and explain processes and results in an organised way • Discuss problems and carry out analyses
Intergrating & Connecting	• Connect informally aqcuired mathematical ideas with formal mathematical ideas • Recognise mathematics in the environment • Recognise the relationship between concrete, verbal, pictorial and symbolic modes of representing numbers • Carry out mathematical activities which involve other areas of the curriculum	• Understand the mathematical ideas behind the procedures he/she uses	• Connect informally aqcuired mathematical ideas and processes with formal mathematical ideas and processes • Understand the connections between mathematical procedures and concepts • Represent mathematical ideas and processes in different modes: verbal, pictorial, diagrammatic, symbolic • Recognise and apply mathematical ideas and processes in other areas of the curriculum	
Reasoning	• Classify objects into logical categories • Recognise and create sensory patterns • Justify the processes/results of activities	• Make guesses and carry out experiments to test them • Recognise and create mathematical patterns and relationships	• Make hypotheses and carry out experiments to test them • Make informal deductions involving a small number of steps • Explore and investigate mathematical patterns and relationships • Reasonsystematically in a maths context	• Search for and investigate mathematical patterns and relationships
Implementing	• Devise and use mental strategies/procedures for carrying out mathematical tasks • Use appropriate manipulatives to carry out tasks and procedures	• Execute procedures efficiently	• Execute standard procedures efficiently with a variety of tools	
Understanding & Recalling	• Understand and recall terminology	• Understand and recall terminology and facts	• Understand and recall terminology, facts and definitions	• Understand and recall facts, definitions and formulae

APPENDIX TWO

Mathematical Language : Number Strand

	J IN-FANTS	S IN-FANTS	1ST CLASS	2ND CLASS	3RD CLASS	4TH CLASS	5TH CLASS	6TH CLASS
Counting & Numeration	How many, count, number, zero one...ten	zero… .twenty	Zero....99	Zero.. .199				
Comparing & Ordering	More than, less than, same as, before, after, first, last	Next, between, first, second, third, last	First....tenth	Greater than				
Combining, Partitioning & Operations	And, is same as, makes	Count on, count down, count back, add, more, equals, altogether	Doubles, near doubles, sum, total, repeated addition,take away, how many left, difference between, how many more/ fewer,	Subtract, minus	Lots of, groups of, times, multiply, multiplied by, array, row, column, share, share equally, one each, two each..., divide, divided by, divided into, left over, remainder, repeated subtraction		Product, quotient	
Place Value			Units, ones, tens	hundreds	Round up/down , round to nearest	thousands		
Fractions, Decimals & Percentages			Fraction, part, equal part, one whole, one half, two halves	One quarter, two quarters, three quarters, four quarters	Eighths, tenths, decimal point, decimal place	Thirds, fifths, sixths, ninths, twelveths	Percentage, VAT, profit, loss, interest	
Number Theory							Prime number, composite number, factors, multiples, square number, rectangular numbers	Square roots, exponential form

Mathematical Language : Algebra Strand

	J IN-FANTS	S IN-FANTS	1ST CLASS	2ND CLASS	3RD CLASS	4TH CLASS	5TH CLASS	6TH CLASS
Extending & Using Patterns	Pattern, what comes next,		Odd, even					
Number Patterns & Sequences								
Number Sentences								
Directed Numbers							Positive, negative,	
Rules & Properties							brackets	
Variables & Equa-tions								formula

Mathematical Language : Data Strand

	J IN-FANTS	S IN-FANTS	1ST CLASS	2ND CLASS	3RD CLASS	4TH CLASS	5TH CLASS	6TH CLASS
Recognising & Interpret-ing Data	Enough, more, less, as many, count, sort,	Vote, 1ist, group,						
Representing & Interpret-ing Data				Tally, graph, table, pic-togram, block graphs	Bar chart,	Bar line graph, pie chart,		Trend graphs,
Chance					Possible, impossible, might, cer-tain, uncer-tain, likeli-hood, like-ly, unlikely, most likely, least likely	Never, definitely,	Frequency tables, equal chance, even chance,	Random, biased

Mathematical Language : Measures Strand

	J INFANTS	S INFANTS	1ST CLASS	2ND CLASS	3RD CLASS	4TH CLASS	5TH CLASS	6TH CLASS
Length	Long, short, tall, wide, narrow, longer/shorter/ wider than	Longest, shortest, as long as, as wide as,	Metre,	Centimetre,		Kilometre, perimeter	Milimetres,	
Area				Surface,	Square units,	Sq cm, sq m		Ares, hectares, scale, plan
Weight	Heavy, light, heavier, lighter, balance, weigh	Heaviest, lightest	Kilogram,	Half kg, quarter kg,	Grams,			
Capacity	Full, nearly full, empty, holds more, holds less, holds as much as, fill, empty, containers	Holds most, holds least	Litre,	Half litre, quarter litre,	Millilitres,			Volume,
Time	Morning, evening, day, night, lunchtime, bedtime, early, late, days of week, school days, weekend	Yesterday, today, tomorrow, seasons, soon, not yet, hour, o'clock	Months of year, minute, half past, calendar, date, month	Quarter to/past, digital, analogue			24 hour clock,	Time zone,
Money	Money, coin, cents, 1c, 2c, 5c, buy, sell, spend, coins, how much	10c, 20c, cost, price, change, cheap, expensive, too much, too little	50c	€1, €2, euro				

Mathematical Language : Shape & Space Strand

	J INFANTS	S INFANTS	1ST CLASS	2ND CLASS	3RD CLASS	4TH CLASS	5TH CLASS	6TH CLASS
Spatial Awareness	Over, under, up, down, on, beside, in,	Above, below, near, far, left, right, through, behind	Between, underneath, on top of, around					
2D Shape	Circle, square, triangle, rectangle, round, thick, thin	Straight, curved, flat, sides, corner	Semicircle,	Oval,	Hexagon, irregular shapes, parallel lines, non-parallel lines, tessallate	Triangles (equilateral, isosceles, scalene) parallelogram, rhombus, pentagon, octogon	Diameter, radius, compass	circumference
3D Shape	roll/do not roll, fit together/do not fit together	Cube, cuboid, sphere, cylinder, face, edge, corner, straight, curved, round	Verticies, stack/roll/slide	Cone,	Pyramid, triangular prism, net, flaps		tetrahedron	octahedron
Symmetry				Fold, match, line of symmetry, symmetrical	mirror	Horizontal, vertical, diagonal lines of symmetry		
Lines & Angles				Turn, half turn, quarter turn, right angle	Rotation, clockwise, anticlockwise	Oblique and perpendicular lines, acute and obtuse angles	Reflex angle, degrees, protractor	