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Updated Whole School Policy for Maths

Introductory Statement

This Mathematics Policy was drawn up in collaboration with staff members during the 2012-2013 academic year. It was updated in the 2018-2019 school year.

This Maths Policy was discussed, accepted and ratified by the Board of Management of Scoil Chéile Chríost, Rathmore N.S. on 4th February 2019.

Chairperson of B.O.M.:

Rationale

This revised policy incorporates material contained in the existing maths policy. The revision of this policy was undertaken to ensure all changes introduced since the last review are reflected in these documents.

Aims:

We endorse the aims of the Primary School Curriculum for Mathematics which are:

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

Objectives

Please see our school's maths yearly plan for strand/strand unit objectives for each class level.

1. Strands and Strand Units

All teachers are familiar with the strands, strand units and content objectives in the Maths Curriculum and refer to them regularly when planning for their classes ensuring all strands and strand units are covered.

The curriculum comprises five strands, which should be seen and taught as interrelated units in which understanding in one area is dependent on and supportive of ideas and concepts in other strands. Linkage within the subject is essential and while number is essential as the medium for maths calculations, all other areas should receive a corresponding degree of emphasis.

The Number strand begins with a section called Early Mathematical Activities which is distinct to the infant syllabus and is listed hereunder as if it is a separate strand.

Strands		Infant Classes		1st & 2ndClass		3rd & 4th Class		5th & 6th Class
Early Mathematical Activities		Classifying Matching Comparing Ordering						
Number		Counting Comparing and Ordering Analysis of Number		Counting and Numeration Comparing and Ordering Place Value Operations *Addition*		Place Value Operations *Addition* *Subtraction* *Multiplication* *Division* Fractions		Place Value Operations *Addition* *Subtraction* *Multiplication* *Division* Fractions

		Subtraction Fractions	Decimals	Decimals Percentages Number Theory
Algebra	Extending Patterns	Exploring and Using Patterns	Number Patterns and Sequences Number Sentences	Directed Numbers Rules and Properties Variables Equations
Shape and Space	Spatial Awareness 2D Shapes 3D Shapes	Spatial Awareness 2D Shapes 3D Shapes Symmetry Angles	2D Shapes 3D Shapes Symmetry Lines and Angles	2D Shapes 3D Shapes Symmetry Lines and Angles
Measures	Length Weight Capacity Time Money	Length Area Weight Capacity Time Money	Length Area Weight Capacity Time Money	Length Area Weight Capacity Time Money
Data	Recognising and Interpreting Data	Representing and Interpreting Data	Representing and Interpreting Data Chance	Representing and Interpreting Data Chance

2: Maths Skills

Spanning the content are the skills that the child should develop while engaging with the maths curriculum. These skills are:

- Applying and problem-solving
- Communicating and expressing
- Integrating and connecting
- Reasoning
- Implementing
- Understanding and recalling

3: Approaches and Methodologies

The approaches and methodologies that teachers will use in their delivery of the maths curriculum will include:

The use of Manipulatives – Where practical and possible, children should have access to and use a broad range of mathematical equipment during lessons.

Talk and Discussion as an integral part of the learning process. Opportunities should be provided during maths class for children to discuss problems with the teacher, in pairs, in groups.

Active Learning and Guided Discovery: As part of the Maths programme for each class, children are provided with structured opportunities to engage in exploratory activities under the guidance of the teacher: to construct meaning, to develop mathematical strategies for solving problems and to develop self motivation in mathematical activities.

Collaborative and Cooperative Learning: Collaborative and co-operative learning is promoted using the following strategies:

- Encouraging children to listen
- Encouraging children to take turns
- Seeing that others' opinions are important
- Children working in pairs/small groups while playing mathematical games.

ICT is very important in the teaching of maths with opportunities for the pupils to engage in interactive activities, programmes and games developing understanding of mathematical concepts, problem solving skills and self motivation in mathematical activities. The Planet Maths programme has interactives to use with each class level.

Using the environment/community as a learning resource: The school building is used as a resource to support the Maths programme. Teachers use the school environment to provide opportunities for mathematical problem solving e.g. numbers on doors, using hula hoops to sort children in PE, games on the playground, count trees in the garden, count windows, observe shapes of windows, doors etc. Mathematical Trails are used outdoors to help teach mathematical concepts to children and make them aware of mathematics in their environment. Children display their mathematical work in their classrooms.

Problem solving: Children are encouraged to use their own ideas as a context for problem solving. (See Appendix 1 for our problem-solving strategies).

Language – Concepts/ Skills
There is a strong link between language and concept acquisition. We feel it is important to have a common approach to the terms used and the correct use of symbol names. This language has been agreed at whole school level (2015) in order to ensure consistency from one class to the next and to help avoid confusion for children having difficulties with Mathematic. It has been updated in this policy where deemed necessary.

The language contained in the "Ready, Set, Go" teachers' manual for Junior Infants and the language recommended in the "Planet Maths" teachers' manuals will be used throughout the school.

. Please see appendix 1 for our agreed strategies.

A pencil only is used for writing numbers, and problems in Maths right up until the end of 6th class. Children are allowed to use erasers. A red biro is introduced in 3rd class for correction purposes only.

4. Resources

We acknowledge the importance of concrete materials in the development of mathematical concepts for children in all classes.

- Resources for "The Ready, Set, Go Programme" are stored in the Junior Infant classrooms/ S.E.N. Rm 8.
- From Junior Infants to Second Class, teachers are assigned their own set of maths equipment stored in boxes in their classrooms. This equipment is assigned to that level and stays with that class level. Inventory of such equipment to be checked off at beginning and end of school year by the class teacher/ Maths coordinator. (Lists included in Appendix 1).
- If resources are borrowed from other classes, please return to the base class.
- Resources are stored in a central area in a specifically assigned Maths Store. (Store Room Rm 8).
- Each teacher is responsible for signing out these resources when borrowing and signing in when returning them. (Whiteboard in store room for that purpose).
- As courtesy towards others, teachers are asked to ensure that property is promptly returned to store room when finished with.
- A list of items that must be repaired/ replaced or additional items needed should be sent to Claire Power.
- All Maths equipment/books bought with school funds remain the property of the school.

Textbooks are in line with the content objectives for each class level. Textbooks reinforce the concept taught and give adequate practice in each activity.

- Teachers should not use the text chosen for the next class-level in the same scheme as this may lead to difficulties in terms of continuity and progression in the following year
- Where a teacher deems it necessary, supplementary materials will be designed/supplied.

  Junior Infants; *Ready, Set, Go Programme.*
  Sen. Infants- 6th Classes: *Planet Maths Scheme.*
  1st Class-6th class: "*Master Your Maths" mental math and problem-solving workbooks (Fallons)*
  1st-4th class: *Prim-Ed: "The Maths Box"* Activity cards with self-correcting answer cards.

ICT/Interactive whiteboard is a very valuable resource in teaching of maths. Teacher recommended websites are included in *Appendix 3*.

5. Assessment and Record Keeping:

- Assessment is used by teachers to inform their planning, selection and management of learning activities so that they can make the best possible provision for meeting the varied mathematical needs of the children in our school. Teachers use several tools for assessing pupils' work including self-assessment, conferencing, portfolio, concept-mapping, questioning, teacher observation, teacher designed tasks and tests, pupil profile, and standardised testing.
- From 2012, to meet the needs of all pupils in mathematics and to facilitate differentiation in the class, class teachers input the scores of Standardised Tests into Aladdin where a class graph is

generated to identify class averages in all strands and strand units, and specific areas of the Maths programme requiring attention.

The following are other assessment tools used by teachers:

- Teacher observation
- Worksheets and work in copies
- Assessment games
- Extension and enrichment activities based on the strand unit being taught. Samples can be seen in the Teacher's Manual.
- Ongoing teacher-designed tests. Children will bring the tests and the results of such tests home for signing. Test results are kept by the class teacher and passed on to the next teacher.
- Oral tests (tables, continuation of number patterns, ...)
- Problem solving exercises that use a variety of mathematical skills.
- ***The Sigma T standardised test is administered every year during May from 1st - 6th classes while teacher designed tests are used throughout the year.***
- Each child's score is entered on Aladdin. Class lists are printed and analysed by class teacher/principal/ S.E.N. team. Results of the standardised test are communicated to parents at the parent-teacher meetings/ end of year reports.
- ***The test booklets are stored in the pupil's individual test folder and passed on each year to new class teacher. This folder is kept for one year after the child leaves the school after which the folder is shredded.***
- Self-assessment

Following assessment, teachers may do the following:

- Give extra help to individual who needs it
- Decide to increase time spent using concrete materials
- Discuss the situation with forwarding teacher at the end of the school year and beginning of new school year
- Discuss concerns with parents and encourage parents to help children informally. (See section 12: Parental Involvement)
- Consult with the Learning Support team who will provide support when needed using available resources within the school.

6. Children with Different Needs

- The Maths programme aims to meet the needs of all children in the school. This will be achieved by teachers varying pace, content and methodologies to ensure learning for all children. The introduction and development of each topic will be structured in a graded, sequential way to allow the individual child to develop and participate at his/her own level and pace.
- When a child demonstrates a particular difficulty, either with a topic, strand or overall, the class teacher will provide extra support and assistance to the child.
- Those children who receive scores at or below the 12th percentile on the standardised tests will have priority in attending the Learning Support teacher for supplementary teaching for Maths. The availability of supplementary teaching for Maths, however, depends on the case load of the Learning Support teacher. Arrangement will be in accordance with the recommended selection criteria as determined by the DES and laid out in the school's SEN

policy. Support will include various models depending on needs of child/class. Should it be decided that withdrawal is required, parents will be notified. Permission slips will be signed.

- Children with exceptional ability in Maths will be given extra work based on the concept being taught in class to enable them to reach their full potential. ICT allows children to work at their own level and challenges children of all abilities. Parents will be consulted and opportunities for further development will be explored i.**e. Centre for Talented Youth.** Teachers should keep a record of the differentiated approach adopted for these children.

7. Time-table

In line with the requirements as set out by Circular (0056/2011), the time spent on Mathematics shall be 3hours and 25 minutes per week for Infants and 4 hours and 10 minutes per week for students with a full day.

Where possible the Learning Support Team and principal will facilitate team-teaching, giving priority to split-level classes.

8. Homework

See the school Homework Policy which is synopsised in the children's school journal.
Teachers are mindful of the different levels of ability when setting homework assignments.
Parents are encouraged to liaise with teachers and advise of difficulties with homework assignments so that the quantity of work can be amended if deemed necessary.

9. ICT

ICT is **very** important in the teaching of maths with opportunities for the pupils to engage in interactive activities and games developing understanding of mathematical concepts, problem solving skills and self motivation in mathematical activities
The Planet Maths Programme has comprehensive ICT interactive exercises for all concepts at each level.

Interactive White Board is a very valuable resource in teaching of maths, with opportunities for the pupils to engage in interactive activities and games developing understanding of mathematical concepts and problem-solving skills. For this review, teachers compiled a list of recommended, frequently used websites. These are included in **Appendix 3.**

10. Individual Teachers' Planning

Teachers should base their yearly and short-term plans on the approaches set out in this whole school plan for Maths and curriculum documents. Each class teacher will familiarise themselves with the objectives for their own class level.
Each teacher will bear in mind that in planning, a balance between the strands should be kept throughout the year. Work covered will be outlined in the Cuntas Míosúil which will be submitted to the principal.

11. 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.

12. Parental Involvement

Parents are encouraged to support the school's programme for Maths. As parents are the primary educators, their involvement is considered an important aspect of successful implementation of the maths curriculum. Through exposure to common math concepts in the home and local environment, children can be equipped with necessary mathematical skills.

Individual parent/teacher meetings are held annually at the end of November. 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. Parents will be informed if a child is following a differentiated maths programme in the classroom/for homework.

13. Success Criteria

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

- On-going assessment, formal and informal, will show that pupils are acquiring an understanding of mathematical concepts and a proficiency in maths skills appropriate to their age and ability.
- Implementation of the school plan will be evident in teachers' preparation and monthly reports.

14. Implementation and Review

Class teachers are responsible for the implementation of the Maths programme for their own classes. The post holder with responsibility for Maths, Ms. Claire Power (November 2017), supports the implementation of the Maths programme and is responsible for the distribution and monitoring of resources.

Progress made during the school year will be reviewed in June of each year and will be based on results of assessments across all classes and on teachers' views as to the effectiveness of the plan.

Results from the standardised maths tests (Sigma T) will be analysed every year and areas of concern/weakness will be highlighted and discussed.

This policy will be monitored on an ongoing basis. It will be formally reviewed in three years (2022) (or sooner if deemed necessary by the introduction of the new curriculum).

The staff are currently researching new textbooks to aid implementation of the new maths curriculum. The policy will be amended accordingly when a decision is made on this.

Please see the following appendices for

A.1 Agreed Procedures/ Language
A.2: Tables
A.3: Websites/Online games

Appendix 1

Agreed Procedures/Language

Please refer to our yearly maths plan for objectives, strands and strand units for each class level.

Number:
The following number limits for each class will be adhered to:

Class	Numerals
Junior Infants	0 – 5
Senior Infants	6 – 10
1st Class	to 99
2nd class	to 199
3rd class	to 999
4th class	to 9999

A pencil only is used for writing numbers, and problems in Maths right up until the end of 6th class. Children are allowed to use erasers. A red biro is introduced in 3rd class for correction purposes only.

Presentation of work
There is an agreed approach to numeral formation in the junior classes. The rhymes or stories may vary but the formation is as follows:

- 1: Straight down from the star
- 2: Around from the star, then down, then straight
- 3: Start at the star, then round and round
- 4: Straight down from the star it goes, then across and put on its nose
- 5: Go down from the star, around and put its hat on
- 6: Start at the star then down we go, then all around halfway or so
- 7: The star's on his nose, go across, then straight down to his toe
- 8: Around and around and up it goes until his tail can touch his nose
- 9: Start at the star and around I go, then down a stick handle down below

In all classes Maths work is presented using a variety of formats namely:

- Oral Presentation
    - Teacher designed work sheets based on strand unit being taught.
    - Work in class Maths Book which is filled in as an activity book up to 3rd Class.
    - Recording work in copy books particularly in senior classes.
    - Using concrete materials to draw a picture, pictogram
    - Number stories, Number rhymes (Junior classes)
    - Birthday chart/ graph of favourite fruit/ colour etc.

Data:
Children are encouraged to collect real data i.e. infant classes collect personal information and

represent it on a pictogram for example; older children create and interpret bar charts and pie charts. Children are made aware of the importance of entering relevant data and asking clear question to extract the required information from the data.

Problem Solving
Children are encouraged to use their own ideas as a context for problem solving.

THE RUDE WAY OF SOLVING A MATHS PROBLEM: Children from 1st – 6th classes, throughout the school are encouraged to use the following abbreviated model for solving a Maths problem –

- **R**ead,
- **U**nderline the key words,
- **D**raw a diagram of the problem,
- **E**stimate your answer and then attempt to solve the problem.

All children should be exposed to this model regularly and be very familiar with it by the time they reach 6th class.

Resources used for problem solving with classes include the following:

Prim-Ed. "Maths Boxes"; Brain Snack (R.I.C. Publications: problem-solving cards for age 8+), Teacher designed booklets, Interactive Whiteboard, *Planet Maths* scheme.

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Language/Resources

Language – Concepts/ Skills
There is a strong link between language and concept acquisition. We feel it is important to have a common approach to the terms used and the correct use of symbol names. This language has been agreed at whole school level in order to ensure consistency from one class to the next and also to help avoid confusion for children having difficulties with Mathematics. Our agreed strategies/language are:

Language recommended in the Planet Maths Teachers' Manuals and Ready Set Go Manuals (Infants) is used throughout the school.

JUNIOR INFANTS:

No signs used

Addition:	Language: and, makes, add, is the same as, altogether makes More, less
Resources	"Ready, Set Go" manual and resources Concrete materials from central store Classroom set: unifix cubes:10 per child. Metre stick

SENIOR INFANTS:
Introduction of signs: +, =
Vocabulary to match this: plus, equals (and, makes initially used as in junior infants)

2 + 1 3	**Top down:** 2 plus 1 equals 3 2 + 1 equals 3
2+1 =3	reads 2 plus 1 equals 3 or 2 and 1 makes 3

Resources	Classroom set of: unifix cubes (20 per child)
	          Small clocks (1:2)
	          Metre stick
	Ready, Set, Go materials (shapes, sorting materials, links, compare bears)
	Concrete materials from central store as required.

FIRST CLASS

Addition:	Language: Count on, more than, total
Subtraction:	**- is introduced as a symbol in First class** Language: take away, less than, left
16 - 4	Vertical: start from the top using the words 'take away' 16 take away four equals
5 – 1=	Horizontal: Read from left to right using the words 'take away' 5 take away 1 equals
Comparing and Ordering	More than, less than, the same as.
Language	100 square; target board; rows; columns.

Resources	Classroom set of: unifix cubes (50 per child)
	          Small clocks (1 between 2)
	          1 large 100 square
	Dienes blocks, number lines, 100 squares,
	Lollipop sticks, counters, metre sticks
	Loop cards: Phillip + Tracey "Round the class "Maths Cards
	Materials from central store as required

PLACE VALUE: THE WORD 'UNITS' WILL BE USED RATHER THAN 'ONES'
RENAMING/GROUPING WILL BE THE METHOD USED THROUGHOUT THE SCHOOL

SECOND CLASS

All computation bigger than tables should be written vertically rather than horizontally (as in notation board) to aid comprehension of hundreds, tens and units.

Addition:	Language: sum of, addition
7+3+8= 18	7 plus 3 plus 8 equals 18 (7plus 3 equals 10 plus 8 equals 18)

6 3 +6	6 plus 3 plus 6 encourage 6 + 6 + 3
Subtraction	Language: subtraction, subtract, take away, from, less than, minus, difference
27 -18	7 take away 8 I cannot do so I rename a 'ten' to ten units, I now have 1 ten. 7units+10units= 17units. 17 take 8 equals 9. 1ten take away 1ten leaves O.

Resources	Classroom set of: unifix cubes (50 per child)
	                         Small clocks (1 between 2)
	                         1 large100 square

THIRD CLASS/ FOURTH CLASS

Rounding to nearest 10	**Rounding to nearest 100**
1, 2, 3 and 4 hey, ho, down we go	If the 10 digit is 1,2,3 or 4
5, 6, 7 8 and 9 hey, ho up we go	Leave the 100 as before,
Half way there which way we go?	If it's 6,7,8 or 9
Round me up hey, ho.	Round up to the next 100 on the number line

Addition and Subtraction	Language: to increase, what has to be added to?, add more, plus, sum of, total, altogether Subtract, minus, leave, less than, fewer, decrease, what's left, find the difference between.
Multiplication/ Division	**÷ and x are introduced as symbols in Third Class.**
Multiplication **14x7**	Language: lots of, times, multiply, groups of, product, repeated addition. The following vocabulary will be used: 14 groups of 7 all added together, 14 groups of 7, 14 times 7, 14 sevens, 14 by 7.
Short multiplication **Long multiplication** **Multiply by 10** **Multiply by 100:**	Multiply top row by single digit in order, starting with units, then tens, then 100's. From bottom, units first. Language as above. Carry box used to distinguish the number carried over to be added, from the number being multiplied. **When multiplying by 10**: Add one zero **When multiplying by 100**: Add two zeros
Division **14 ÷7** all signs used ÷, / etc.	Language: The following vocabulary will be used: Share equally, divided into equal groups of. How many groups of 7 in 14, how many 7s in 14, repeated subtraction(how many times can I take 7 from 14; 14-7-7) 14

	divided by 7,14 shared 7 times, 14 split 7 ways. Remainder.
Fractions	
¼ of 32 7/2	Share 32 among 4 and/or 32 divided by 4 7 divided by 2 ½ is equivalent to 2/4 (4th class) ½ is the same as 2/4 ½ is equal to 2/4
Decimals	1/10 is equal to 0.1 1/100 is equal to 0.01 ***Include zero before decimal point***
Tessellation	Fit together with no spaces
Resources	Prim-Ed. (middle Primary) "Follow Me" Loop card games. Concrete materials available from central store in Rm 8 as required.

Calculators From fourth class upwards children are permitted to use calculators alongside traditional paper-and-pencil methods. Calculators are particularly useful for handling larger numbers, to check answers, to explore the number system, to remove computational barriers for weaker children. They also allow the child to focus on the structure of the problem-solving questions. It is important that the skill of estimation is developed along with the use of the calculator.

FIFTH/SIXTH CLASSES

Number: **Multiplication/Division**	Language: square, prime, composite, rectangular numbers. Finding common multiples by listing numbers Finding common factors by listing factors The words 'product' and 'quotient' are introduced. Problems involving sum, difference, products, quotients, Long division: **Does McDonalds Sell Burgers:** **D-divide; M-multiply; S-subtract; B-Bring down.**
Fractions:	**All children are taught to MEMORISE TABLE OF EQUIVALENT FRACTIONS, DECIMALS AND PERCENTAGES.** Numerator, denominator
½ + ¼ =	$\_ + \_ \_$ **4 4 = 4**
½ - ¼	$\_ - \_ \_$ **4 4 = 4**
Mixed numbers + and – 3 ½ - 1 ¾ =	Initially the children will be asked to deduce/hypothesise for themselves how to solve the addition and subtraction of mixed numbers. Those experiencing difficulties in this, through guided discovery by the teacher will be exposed to the following methods and from there will deduce the method they find logical to their thinking.

	Write sums vertically as well as horizontally.
	Addition of fractions **Subtraction of fractions**
	Method one: *Method one:*
	(a) 1 ½ + 2 ⅝ = (a) 3 ⅓ - 1 7/9 =
	1 4/8 + 2 ⅝ = 3 9/8 = 4 1/8 2 12/9 – 1 7/9 =
	(b) 1 ½ 1 5/9
	+ 2 ⅝ (b) 3 ⅓
	1 4/8 1 7/9
	+ 2 ⅝ 2 12/9
	3 9/8 = 4 ⅛ 1 7/9
	Method two: 1 5/9
	(a) 1 ½ + 2 ⅝ = 6/4 and 21/8 *Method two:*
	3 ⅓ - 1 7/9 = 10/3 – 16/9
	12 + 21 = 33 30 – 16 = 14 = 1 5/9
	8 8 = 4 ⅛ 9 9
	(b) 1 ½ + 2 ⅝ = 1 4/8 + 2 ⅝
	= 12/8 + 21/8 = 33/8 = 4 ⅛
Multiplication ⅓ x 1/5	Multiply top number by top number Bottom number by bottom number Simplify/ break down
Division of whole number by fraction: teaching fractions	5 ÷ ¼ = Change your whole number into a fraction and turn your second fraction upside down and multiply. How many quarters in 5 units 5 X 4 = 20 Visual aids used by teacher (see below) 1 1 1
Decimals	1/10, 1/100, 1/1000 – tenths, hundredths, thousandths
Addition and Subtraction. Rounding decimals	to 3 decimal places (with/without calculator) to 3 decimal places (with/without calculator)

Multiplication of decimals	to the nearest whole number to 1 decimal place to 2 decimal places. Multiplying a decimal by a whole number Multiplying a decimal by a decimal Count the numbers behind the decimal points in the question and make sure that there are the same amount of numbers behind the decimal point in the answer.
Division by decimals	Multiply the divisor by 10/100 to change to whole number. If you multiply the divisor by 10/100 you must multiply the dividend by 10/100.
Converting a fraction to a decimal	You divide the numerator by the denominator (divide the top by the bottom) or if possible you change the number to tenths/ hundredths and then convert to decimal. Look out for ½, ¼, 1/5, 1/10, 1/100
Percentages Converting a fraction to a percentage	You multiply by a 100/1 or if possible you change the fraction to hundredths.
Time Addition Subtraction	Add minutes to minutes Hours to hours and simplify (changing minutes to hours) hrs. mins. hrs. mins. 3 15 2 75 -2 33 - 2 33 If number of minutes is bigger on the bottom line, convert… Take hour and change to 60 minutes. Add to other minutes and rewrite sum.
Co-ordination	Introduce (x, y) axis: ***"Y to the Sky"*** Explain **x** comes before **y** in the alphabet. This will help them remember which comes first. "Along the corridor (x); Up the Stairs (y)"
Area	***Rectangle/ square*** Length x width (l x w). breadth = width Ares (1 Are = 100m, 1 hectare = 10, 000m) Relationship of sq.m to sq.cm. Area of room from scale plan ***Surface area*** Find the area of one face. Count the faces and multiply by number of faces. Cube and Cuboid

Circle	Radius, diameter, circumference, arc, sector, Relate the diameter of a circle to its circumference by measurement. Measure the circumference of a circle using a piece of string. Construct a circle of given radius/diameter Examine area by counting squares.
Length	*Irregular Shapes* Look for regular shapes. Divide the shape and draw diagrams. Add areas a, b and c. etc.
Lines and Angles	Right angle, acute, obtuse, reflex, straight, degrees, protractor, ruler. Draw out angle before measuring if it is in a shape.
2D shapes **3D shapes**	Sum of the angles in a triangle = 180 Sum of the angles in a quadrilateral = 360 Sum of angles in a circle = 360 Identify regular tetrahedrons, nets, construct
Resources	Past papers from entrance/scholarship exams for gifted students Concrete materials from central store room as required.
Online Games	Olympiad puzzles/word problems Maths perplexors (logic word problems-numeracy)

Appendix 2

Tables

- Addition/subtraction facts up to 10 will be memorised by the end of Second Class (review 2012 - 2013) and multiplication/division facts up to 12 by the end of Fourth Class. Both will be revised up to the end of Sixth Class.
- Multiplication is a natural progression from extended addition e.g. 3 groups of 3, 4 groups of 3, 5 groups of 3 etc. Thus tables are recited throughout the school as follows: 3x 3 = 9 (three threes are nine), 4x3=12 (four threes are 12), 5x3=15 (five threes are fifteen). All teachers are expected to teach tables this way in order to ensure consistency and avoid confusion as children move from one class to the next.
- A variety of methods will be used including counting 2s, 3s, 4s ..., reciting, using music tapes etc. Subtraction and division tables will be taught as the inverse of addition and multiplication.
- Children from 2nd – 4th classes recite their tables regularly and tables are reinforced every day. Children are encouraged to memorise tables and tables are given every night for homework. Class teachers identify children having difficulties with tables and with them set realistic targets ensuring steady progression.
- Children will have their tables discretely assessed (to avoid embarrassment) using teacher observation and weekly tests. Tables are continuously revised in 5th and 6th classes both incidentally through operations of various concepts/ core objectives but also formally through evaluations and games; "Fuzz Buzz", "Around the World! etc.
- Target Boards can be used to improve children's mental agility and confidence in using a wide range of mathematical vocabulary.
- Tables are practised incidentally in daily "***Master Your Maths***" mental exercises.
- Multiplication tables songs are available on www.msaglynn..weebly.com.
- www.topmarks.com : "Hit the Button" is very useful for all tables.
- **www.coolsciencelab.com** (Math Magician × ÷ games for tables)

Appendix 3

Websites recommended by teachers (Most are suitable for all age groups).

Click on relevant class/level

- **www.folensonline.ie/planetmaths**
- **www.twinkl.ie**
- **www.topmarks.com** ("hit the button")
- **www.khanacademy.org**
- **www.teachingmoney.co.uk**
- **www.teacherled.com**
- **www.mathsisfun.com**
- **www.twinkl.ie**
- **www.mathsplayground.com**
- **www.cjfallon.ie** (Busy at Maths activities)
- **www.sheppardsoftware.com**
- **www.ixl.com**
- **www.counton.org**
- **www.superkids.com/aweb/tools/math/** (maths worksheet creator)
- **www.nrich.maths.org**
- **www.nzmath.co.nz**
- **www.youtube.com**
- **www.worksheetworks.com** (free worksheets)
- **www.primaryhomeworkhelp.co.uk/maths/countdown/index.htm**
- **www.coolsciencelab.com** (Math Magician $\times \div$ games for tables)
- **www.bbc.com**
- **www.msaglynn.weebly.com** : songs for multiplication tables (Jingles sheet in maths folder on server)

(Extra websites as recommended by NIPT - National Induction Programme for Teachers)

- **www.primarygames.com**
- **www.nctm.org**
- **www.pbskids.org**
- **www.mathsphere.co.uk**
- **www.mad4maths.com/teachers/links**
- **www.haveyougotmatheyes.com**

- **www.clareed.ie/resources**
- **www.geogebra.org/trac/wiki//Primary**