



Priorities for Development (as taken from subject plan)

1. To promote the process of correcting homework in class to provide greater opportunities for student learning. This to include the role of students in correcting and amending their own homework.
2. To encourage home study. It has been found that many students do well in class tests but then perform poorly in house tests.
3. To continue to raise the profile of Maths within the school through cross-curricular activities, quizzes, activities for Maths week, posters, projects and competitions
4. To put in place regular ongoing meetings to ease the transition from the old maths curriculum to Project Maths.
5. To review, update and develop Maths resources.
6. To carry out an audit of ICT skills and resources.
7. To address the following in further developing the Subject Plan: the integration of different areas of the syllabus, the choice of teaching methods, the use of ICT and other resources in teaching and learning, the use of homework and assessment, and the challenges inherent in teaching Mathematics in mixed ability settings.
8. To keep resources in a central location which are easily accessible for all maths teachers.
9. To keep an inventory of maths resources and appoint members of the Maths team to look after same.

Aims

1. To increase the level of literacy within the school.
2. To increase the level of numeracy within the school.
3. To increase the number of students taking higher level papers.

“Leaving Certificate Mathematics aims to develop mathematical knowledge, skills and understanding needed for continuing education, life and work. By teaching mathematics in contexts that allow learners to see connections within mathematics, between mathematics and other subjects, and between mathematics and its applications to real life, it is envisaged that learners will develop a flexible, disciplined way of thinking and the enthusiasm to search for creative solutions.”

(See *Leaving Certificate Mathematics Syllabus - Foundation, Ordinary and Higher Level – For Examination from 2015* – at www.ncca.ie).

Objectives

The objectives of Leaving Certificate Mathematics are that learners develop:

1. The ability to recall relevant mathematical facts.
2. Instrumental understanding (“knowing how”) and necessary psychomotor skills (skills of physical coordination).
3. Relational understanding (“knowing why”).
4. The ability to apply their mathematical knowledge and skill to solve problems in familiar and in unfamiliar contexts.
5. Analytical and creative powers in mathematics.
6. An appreciation of mathematics and its uses.
7. A positive disposition towards mathematics.

Learning Outcomes

For a detailed list of learning outcomes in each Strand (1 to 5), refer to:

Leaving Certificate Mathematics Syllabus - Foundation, Ordinary and Higher Level – For Examination from 2015 – to be found at www.ncca.ie).

Detailed Scheduling of 4th Year Ordinary Level Maths

Week (Year)	Week (Session)	Chapter Number	Chapter Title	Chapter Topics	Page (From)	Page (To)	Notes	
			Text & Tests 3	Text & Tests 3				
			Session 1					
1	1.1	1	Algebra 1	Variables, Constants and Coefficients Addition and Subtraction – Simplifying Expressions	9	11		
2	1.2	1	Algebra 1	Multiplication	12	14		
3	1.3	1	Algebra 1	Factorising	15	18		
4	1.4	1	Algebra 1	Factorising	19	21		
5	1.5	1	Algebra 1	Adding and Subtracting Algebraic Fractions Simplifying Algebraic Fractions	22	25		
6	1.6	1	Algebra 1	Evaluating Expressions Chapter Revision	26	28		
7	1.7	13	Probability	Scales and Terms, Predicting Outcomes	365	369		
8	1.8	13	Probability	Estimating Probability from Experiments, Mutually Exclusive Events	370	373		
			Mid-Term Break 1					
			Session 2					
9	2.1	13	Probability	Non-Mutually Exclusive Events	374	376		
10	2.2	13	Probability	Independent Events, Dependent Events	377	382		
11	2.3	13	Probability	Sample Spaces	383	389		
12	2.4	13	Probability	Bernoulli Trials	390	392		
13	2.5	13	Probability	Expected Value, Set Theory and Probability	393	399		
14	2.6	13	Probability	The Fundamental Principal of Counting and Permutations	400	405		
15	2.7	13	Probability	Combinations	406	408		
16	2.8		Christmas Exams					
			Christmas Holidays					

Week (Year)	Week (Session)	Chapter Number	Chapter Title	Chapter Topics	Page (From)	Page (To)	Notes	
			Text & Tests 3	Text & Tests 3				
			Session 3					
17	3.1	2	Algebra 2	Solving Linear Equations Solving Linear Equations by Trial and Error	29	31		
18	3.2	2	Algebra 2	Equations with Fractions	32	32		
19	3.3	2	Algebra 2	Writing Expressions Solving Problems with Linear Equations	33	35		
20	3.4	1	Algebra 2	Simultaneous Linear Equations	36	37		
21	3.5	1	Algebra 2	Solving Simultaneous Equations by Trial and Error	38	38		
22	3.6	1	Algebra 2	Problem Solving using Simultaneous Equations	39	41		
			Mid-Term Break 2					
			Session 4					
23	4.1	2	Algebra 2	Solving Linear Equations using Graphs	42	44		
24	4.2	2	Algebra 2	Linear Inequalities	45	50		
25	4.3	2	Algebra 2	Revision	45	50		
			St. Patrick's Day					
26	4.4	11	Geometry 1	Names and Types of Angles Properties of Angles	302	308		
27	4.5	11	Geometry 1	Triangles and their Properties Congruent Triangles	303	308		
28	4.6	11	Geometry 1	Area of a Parallelogram Area of a Triangle	309	312		

Week (Year)	Week (Session)	Chapter Number	Chapter Title	Chapter Topics	Page (From)	Page (To)	Notes
			Text & Tests 3	Text & Tests 3			
			Easter Holidays				
			Session 5				
29	5.1	11	Geometry 1	<i>Proof of Theorem 7</i> (17) (A diagonal bisects the area of a parallelogram) <i>Proof of Theorem 8</i> (18) (The area of a parallelogram is the base by the height)	330 330	330 330	
30	5.2	11	Geometry 1	Angles and Sides Triangle Inequality Transversals	313	319	
			Public Holiday (May Day)				
31	5.3	11	Geometry 1	Line Parallel to a Side of a Triangle Similar Triangles <i>Proof of Theorem 6</i> (16) (For a triangle, base times height does not depend on the choice of base)	315 329	319 329	
32	5.4	11	Geometry 1	Tangents and Chords <i>Proof of Theorem 10</i> (21) (The perpendicular from the centre of a circle to a chord bisects the chord)	320 331	325 331	
33	5.5	11	Geometry 1	Tangents and Chords <i>Proof of Theorem 9</i> (20) (A tangent is perpendicular to the radius that goes to the point of contact)	320 330	325 331	
34	5.6		Summer Exams				

Skills to be Developed:

1. Numeracy in general
2. Self-Confidence
3. Critical thinking
4. Problem solving
5. Self Evaluation

Assessment

Formal:

1. Winter exam
2. Summer exam

Informal:

1. Question and answer
2. Regular class tests
3. Homework
4. Classwork
5. Classroom observation

Materials / Resources

1. Teaching Skills and Experience
2. Text Books
3. Photocopied Material (Worksheets and Handouts)
4. Mathematics Tables
5. Mathematical Instruments
6. Whiteboard Geometry Sets
7. Calculators
8. Whiteboards
9. Classroom PCs and Laptops (Windows 7)
10. Availability / Use of other ICT Facilities (3 Dedicated Computer Rooms)
12. Interactive Data Projectors (Epson 455Wi)
13. Internet (Broadband Access),
13. Digilearn Maths Solutions
14. CD of Marking Schemes (SEC) to State Examination Papers
15. Software (Microsoft Office 2010, Geogebra, EasiTeach, Web Browsers).

Methodology

1. Whole class teaching
2. Board work
3. Brainstorming
4. Group work
5. Paired work
6. Question and answer
7. Brainstorming / puzzles
8. Quizzes
9. Group work
10. Paired work
11. Project work - Problem Solving - Mathematical Modelling
12. Regular class tests
13. Homework
14. Use of ICT
15. Differentiated worksheets

Differentiation

Introduction:

In each strand the learning outcomes are set out in terms of Foundation level, Ordinary level and Higher level and each level is a subset of the next level. Therefore, learners studying Higher level are expected to achieve the Foundation level, Ordinary level and Higher level learning outcomes. Learners studying at Ordinary level are expected to achieve the Foundation level learning outcomes as well as those at Ordinary level. At each syllabus level, knowledge of the content and learning outcomes at the corresponding level in the Junior Certificate Mathematics syllabus is assumed.

Mathematics at Higher level is geared to the needs of learners who may proceed with their study of mathematics to third level. However, not all learners are future specialists or even future users of academic mathematics. Moreover, when they start to study the material, some of them are only beginning to deal with abstract concepts.

Provision must be made not only for the academic student of the future, but also for the citizen of a society in which mathematics appears in, and is applied to, everyday life. The syllabus therefore focuses on material that underlies academic mathematical studies, ensuring that learners have a chance to develop their mathematical abilities and interests to a high level. It also covers the more practical and obviously applicable topics that learners are meeting in their lives outside school.

For Higher level, particular emphasis can be placed on the development of powers of abstraction and generalisation and on the idea of rigorous proof, hence giving learners a feeling for the great mathematical concepts that span many centuries and cultures. Problem solving can be addressed in both mathematical and applied contexts.

Mathematics at Ordinary level is geared to the needs of learners who are beginning to deal with abstract ideas. However, many of them may go on to use and apply mathematics in their future careers, and all of them will meet the subject to a greater or lesser degree in their daily lives. Ordinary level Mathematics, therefore, must start by offering mathematics that is meaningful and accessible to learners at their present stage of development. It should also provide for the gradual introduction of more abstract ideas, leading the learners towards the use of academic mathematics in the context of further study.

Mathematics at Foundation level places particular emphasis on the development of mathematics as a body of knowledge and skills that makes sense, and that can be used in many different ways as an efficient system for solving problems and finding answers. Alongside this, adequate attention must be paid to the acquisition and consolidation of fundamental skills, in the absence of which the learners' development and progress will be hindered. Foundation level Mathematics is intended to equip learners with the knowledge and skills required in everyday life, and it is also intended to lay the groundwork

for learners who may proceed to further studies in areas in which specialist mathematics is not required.

Learners taking Foundation level Mathematics may have limited acquaintance with abstract mathematics. Thus, their experience of mathematics at Leaving Certificate should be approached in an exploratory and reflective manner, adopting a developmental and constructivist approach which prepares them for gradual progression to abstract concepts. An appeal should be made to different interests and ways of learning, for example by paying attention to visual and spatial as well as to numerical aspects.

Differentiation will also apply in how the strands are assessed at Foundation, Ordinary and Higher levels. Each level is a subset of the next level; differentiation at the point of assessment will be reflected in the depth of treatment of the questions. It will be achieved also through the language level in the examination questions and the amount of structured support provided for examination candidates at different syllabus levels, particularly at Foundation level.

Content:

1. Utilize pre-tests to assess where individual students need to begin study of a given topic or unit
2. Encourage thinking at various levels of Bloom's taxonomy
3. Use a variety of instructional delivery methods to address different learning styles
4. Break assignments into smaller, more manageable parts that include structured directions for each part
5. Choose broad instructional concepts and skills that lend themselves to understanding at various levels of complexity

Teaching Methods:

1. Provide access to a variety of materials which target different learning preferences and reading abilities
2. Develop activities that target auditory, visual, and kinesthetic learners
3. Establish stations for inquiry-based, independent learning activities
4. Create activities that vary in level of complexity and degree of abstract thinking required
5. Use flexible grouping to group and regroup students based on factors including content, ability, and assessment results
6. Question and answer
7. Brainstorming / puzzles
8. Quizzes
9. Project work
10. Regular class tests
11. Homework
12. Use of videos and DVDs
13. Use of IT
14. Differentiated worksheets
15. Team teaching catering for all levels of ability
16. One-to-one instruction

Assessment:

1. Use a variety of assessment strategies, including performance-based and open-ended assessment
2. Balance teacher-assigned and student-selected projects
3. Offer students a choice of projects that reflect a variety of learning styles and interests
4. Make assessment an ongoing, interactive process
5. Classroom observation
6. Oral questioning
7. Assignment and correction of class work and homework
8. Regular class tests
9. Differentiated tests
10. Formal examinations (Winter and Summer exams)

Literacy:

1. Pre-teach key words.

Numeracy:

1. Pre-teach key words with examples to demonstrate.