

- 
- Numeracy Strategy
  - Computational Skills
  - Numeracy In-Service

# Resources for Developing an Integrated Numeracy Plan

Junior Certificate School Programme

Support Service



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## 1. Why an Integrated Approach to Numeracy Development?

Suggate et al. (2006) contend that one of the major functions of primary schooling is teaching and helping students “to become numerate”. The D.E.S. / N.C.C.A. (1999) also state that an important goal of our primary curriculum is “the development of the children’s numeracy skills”. However, despite the sustained and dedicated endeavour of primary schools, each year a significant number of students who transfer to second level have not yet developed and attained the required level of numerical and mathematical understanding, competency and skill to successfully engage with the second level mathematics curriculum and with those sections of other second level subjects which contain a numerical component (e.g. computation, measurement or data handling). Within the JCSP, there is a significant number of students who possess incomplete and inadequate numeracy skills and understanding. Consequently, these students experience substantial difficulty with learning across the curriculum.

Failure in numeracy is widely recognised as a major contributory factor to early school dropout.

There are no easy solutions to the problem and challenges of poor numeracy at second level. The task of teaching numeracy at second level has usually been undertaken by the Maths and Learning Support Departments. However, educational research literature strongly suggests that numeracy can be enhanced and improved by a school planning and implementing a school-wide, integrated and coordinated approach to numeracy development.

The DfEE (2001) define numeracy as “a proficiency, which is developed mainly in mathematics, but also in other subjects” and describe how inadequate competencies in numeracy will impede and impact negatively on learning across the curriculum.

The D.E.S. / N.C.C.A. (1999) advocate an integrated approach to numeracy teaching and claim that for students to really understand mathematics and numeracy “they must see it in context”. This can be done by drawing attention to the various ways in which we use mathematics and numeracy “within other subjects in the curriculum”.

Sheil et al. (2001) recommend a focused, school-wide approach to addressing the needs of students with very low achievement in numeracy and mathematics. Winograd and Higgins (1995) also recommend consistent cross-curricular approaches to support numeracy development.

Nunes and Bryant (1996) claim that, because numeracy impacts significantly on learning across the curriculum, “every teacher in the secondary school should see himself / herself as involved in the teaching of numeracy”.

## 2. Why a School Numeracy Plan?

To ensure that a school-wide numeracy plan which caters for all of the learners is a success, there needs to be a whole-school commitment to numeracy improvement and development. The process of developing a numeracy plan permits, and indeed requires, each staff member to play an active role in planning for improvement.

To ensure that the planning process is implemented successfully, staff will require time and opportunities to discuss issues and concerns and to develop the following:

1. a cohesive definition and conceptualisation of numeracy
2. a whole-school numeracy policy
3. a whole-school understanding of what should be the school's short- and long-term numeracy objectives

Establishing numeracy as a priority will require:

- gathering base-line data on numeracy standards and practice in the school
- analysing this base-line data
- putting in place the appropriate support structures including providing individualised support for students with the greatest numeracy needs
- sourcing numeracy materials so as to create a numeracy rich environment in the school
- making numeracy part of the wider curriculum
- enabling staff to access relevant continuing professional development
- implementing short-term interventions
- developing and implementing a school-wide numeracy enrichment policy
- regular and systematic monitoring and evaluation of progress



### 3. The Planning Process

Stage 1	
Where are we now?	Establish baseline data <ul style="list-style-type: none"> <li>• An audit of current provision (with the assistance of the JCSP Support Service)</li> <li>• If concerns exist about the standard of numeracy in the school, identify the extent and dimensions of current underachievement in numeracy</li> <li>• The impact that poor numeracy standards are having on:               <ul style="list-style-type: none"> <li>• Learning and teaching</li> <li>• Student absenteeism</li> <li>• Student behaviour</li> <li>• Progression into senior cycle</li> <li>• Results in examinations</li> <li>• Student drop-out</li> </ul> </li> </ul>
Where do we want to get to?	Identify targets and success criteria
What are our needs?	Identify staff training needs Identify resources required
Stage 2	
Organise professional development	Meeting with the JCSP Support Service to tailor the in-service sessions to meet the identified needs of the school: <ul style="list-style-type: none"> <li>• Whole-staff</li> <li>• Core team</li> <li>• Subject department</li> <li>• Sub-section of staff (parallel session on Literacy for rest of staff)</li> </ul>
Initial full staff training	Initial in-service - full day Key strategies discussed by staff Strategies selected for implementation ( <i>or selection may take place later - see Stage 4 below</i> ) Decision made to set up a working group Monitoring and review-dates decided Set up the working group
Stage 3	
Establish a Working Group	Agree the role of the working group, e.g. <ul style="list-style-type: none"> <li>• Acquire JCSP resources</li> <li>• Acquire additional numeracy resources</li> <li>• Investigate and establish additional professional development needs</li> <li>• Identify who will organise the CPD for staff</li> <li>• Support the strategy that has been chosen</li> <li>• Monitor the progress of the strategy</li> <li>• Review and evaluate</li> <li>• Advise and inform staff on outcomes</li> </ul> Agree the working conditions of the working group, e.g. <ul style="list-style-type: none"> <li>• When / How often will the group meet?</li> <li>• With whom will the group consult?</li> <li>• To whom will the group report? When?</li> </ul> Assign Lead Responsibility within the working group

#### Stage 4

Plan and implement the selected strategies

Identify target group of students (agree selection criteria):

- small group
- whole class
- year group
- whole school

Select strategies for implementation (*if not already chosen in Stage 2*)

Discuss and seek the participation of parents in the implementation of the strategies, where appropriate and feasible

Plan the implementation of strategies selected [Action Plan for each]

#### Stage 5

Monitor and Review

Implement each strategy with the target group

The working group:

- monitors progress regularly (at agreed intervals)
- reviews progress with those practitioners who are implementing the strategy
- reports back to staff (at review meetings)

#### Stage 6

Evaluate impact

Evaluate the impact of the strategy relative to the agreed success criteria and any other relevant and emergent data

Plan the next step

Decide whether to continue with strategy

Decide whether to consider an alternative or additional strategy

Plan subsequent steps

Identify further professional development needs, if appropriate

Identify, source and acquire any other resources that are required

Consider other initiatives, interventions, agencies or arrangements which could support the numeracy programme

Build in systematic review and reporting back

Document and disseminate decisions, actions and evaluations



## 4. Numeracy Committee / Numeracy Working Party

The Numeracy Committee / Working Party will be responsible for:

- developing and implementing a plan for an integrated and coordinated approach to numeracy development. This plan will include the provision of professional development for teachers, short-term interventions and a school-wide numeracy-enrichment policy.
- sustaining and driving the numeracy plan
- establishing a schedule and time-frame for the numeracy development plan
- putting in place structures to monitor, review and evaluate the numeracy development plan in action

A numeracy coordinator could also be appointed to implement and activate the plan and to liaise with management, subject departments in the school and the feeder primary schools.

The Working Party should meet regularly and may include the following practitioners:

- Numeracy coordinator
- JCSP coordinator
- School Completion coordinator
- Head of Maths Department
- Learning support / Resource teachers
- Management representative
- Practical teachers (Materials Technology Wood, Materials Technology Metal, Home Economics, Art, Technical Graphics, Science)
- JCSP librarian (if appointed to the school)

The committee should also liaise regularly with the following practitioners:

- Class tutors
- Year Heads
- Home School Community Liaison coordinator

## 5. Review of Numeracy Provision

The following is a menu of review questions, which can be used to identify, illuminate and describe baseline data on current numeracy practice and provision and to inform subsequent planning and development. Each section of this review template has a summary box attached, which can be used to highlight those specific areas where further action and improvements are required.

### 1. What is already in place?

Is there a perceived need for a whole school / integrated approach to numeracy improvement and development?

Would many subject teachers regard numeracy development as part of their teaching role?

Is there an integrated and coordinated numeracy plan already in place?

Currently, is there a school policy on any / all of the following?

- providing formative feedback to students
- access to ICT to support numeracy development
- sourcing and acquiring age-appropriate experiential resources in numeracy and mathematics
- use of standardised attainment and diagnostic tests in numeracy
- use of standardised attainment and diagnostic tests in maths
- use and availability of calculators across the curriculum
- opportunities for the student to perform mental calculations in the classroom
- opportunities for the student to engage in maths discussions in the classroom
- participating in JCSP maths and numeracy initiatives
- planning and implementing maths and numeracy projects
- implementing a consistent marking policy in numeracy
- consistent use of numeracy keywords and numeracy symbols across the curriculum

Is there a Numeracy Planning Group / Numeracy Working Party / Numeracy Committee in place?

Does this Numeracy Planning Group meet regularly to plan, recommend strategic interventions, monitor developments and assess progress?

Which subject departments are represented on the Numeracy Planning Group?

- Mathematics
- Humanities
- Materials Technology Metal
- Materials Technology Wood
- Home Economics
- Business Studies
- Art
- Technical Graphics
- Learning Support / Resource / Special Needs
- Guidance
- Science

Does the Numeracy Planning Group include the following practitioners?

- The Home School Community Liaison teacher
- The School Development Planning coordinator
- School Completion Initiative coordinator
- Principal / Deputy-Principal
- Representatives of off-site support agencies



How often does / will the Numeracy Planning Group meet to discuss and evaluate progress?

Is the Numeracy Planning Group dissolved and re-formed on a yearly basis?

Are opportunities provided for subject teachers to “shadow” the Learning Support teacher while he / she is teaching numeracy?

Which of the following peer-supports are available to students?

- buddy system
- peer mentoring / peer tutoring
- paired work e.g. paired maths
- paired work e.g. cross-aged paired maths
- group work
- co-operative learning groups

Are classroom assistants available to support numeracy development?

Are these additional arrangements available to support numeracy development?

- after-school mathematics clubs
- after-school homework clubs
- study centre
- other

Are teachers familiar with the following teaching and learning strategies in numeracy?

- Estimation strategies
- Keyword approach
- Use of Graphic Organisers in numeracy
- Use of DARTs in numeracy
- Use of the “LUVE 2 C U” or “RAVECCC” problem solving strategy

### Current Practice

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

## 2. Establishing Needs / Needs Assessment

Are the numeracy standards of the majority of the students in the school satisfactory?

What indicators, tests and measures are employed to determine current levels of competency and attainment in numeracy?

Are there structures and procedures in place for the regular monitoring and evaluation of numeracy standards in the school?

Are there arrangements and procedures in place for ensuring that all pupils achieve their maximum potential in numeracy?

Are achievable targets and objectives established for measuring students’ performance in numeracy?

Which of these standardised tests are used to assess the student's performance in numeracy?

- "Profile of Mathematical Skills" (France)
- "Graded Arithmetic-Mathematics Test" (Vernon)
- "Mathematics Competency Test" (Vernon)
- "Staffordshire Mathematical Test"
- "Numeracy Progress Test"
- "WRAT" (Psychological Assessment Resources Inc.)
- "Drumcondra Primary Maths Attainment Tests"
- "Drumcondra Criterion Reference Maths Test"
- Other tests

To what extent are scores in these standardised tests used to inform and determine the syllabus-level and mathematics course that the student follows?

What is the lowest Mathematical Age of a student in First Year?

How many First Year students have a Mathematical Age below 8?

What is the range in Mathematical Ages of First Year students?

What is the average Mathematical Age of students in First Year?

What is the lowest Mathematical Age of a student in Second Year?

How many Second Year students have a Mathematical Age below 8?

What is the range in Mathematical Ages of Second Year students?

What is the average Mathematical Age of students in Second Year?

What is the lowest Mathematical Age of a student in Third Year?

How many Third Year students have a Mathematical Age below 8?

What is the range in Mathematical Ages of Third Year students?

What is the average Mathematical Age of students in Third Year?

Is there an agreed expectation of measurable improvement in numeracy levels / Maths Age between First and Third year?

What is the average advancement in numeracy scores / mathematical scores / Mathematical Age between First and Third Year?



Does underachievement in numeracy inform and determine the level of examination that the student presents for in the Junior Certificate examination?

What percentage of students successfully complete the Junior Certificate examination in Mathematics?

- At Foundation level \_\_\_\_\_
- At Ordinary level \_\_\_\_\_
- At Higher level \_\_\_\_\_

Approximately how many students successfully complete the Junior Certificate Examination in Mathematics but are considered not to possess an adequate level of competency, understanding and readiness to succeed in mathematics at senior cycle?

At senior cycle, is underachievement in numeracy and mathematics a cause for concern?

How are the results of numeracy and mathematics assessments communicated to the teaching staff? If not, should they be?

### Establishing Needs / Needs Assessment

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

### 3. Use of JCSP Profiling

Are the students profiled in JCSP Mathematics statements?

Which JCSP Maths statements are selected to support the development of numerical understanding and to plan and support teaching and learning in numeracy and mathematics?

Which JCSP Cross-curricular statements are selected to support the development of numerical understanding and to plan and support teaching and learning in numeracy and mathematics?

Is the Basic Skills Mathematics statement selected to support the development of numerical understanding?

When using Maths statements, is the student made aware of the learning intention?

Is formative feedback regularly provided to the student in the maths classroom?

Is student effort and achievement in numeracy and mathematics acknowledged and celebrated on a regular basis?

Do the JCSP Student Folders contain the following?

- the JCSP Maths statements that are currently being studied
- details of the other JCSP Maths statements that have been successfully completed to date
- examples of the student's best work in numeracy and mathematics
- copies of postcards that were posted to the student's home
- copies of JCSP Maths and Paired Maths Achievement Certificates that have been awarded to date

**Use of JCSP Profiling System**Satisfactory Needs Attention / Action Required 

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

**4. Use of Resources**

Has a maths / numeracy rich environment been created in the school?

Are the following JCSP numeracy resources used to support teaching and learning?

- "LUVE 2CU" problem solving poster
- "LUVE 2C U" problem solving bookmarks
- JCSP Numeracy / Maths Achievement Certificates
- Computational Clocks poster
- Computational Clocks folder inserts
- "Sum Life" workbooks
- "Sum Zone" workbooks
- "Flashmaster"
- "Displaying Data" poster
- "Length" poster
- "Weight / Mass" poster
- "Volume / Capacity" poster
- "The Circle" poster
- "Time" poster
- Student-designed Numeracy posters
- Keyword posters
- Keyword bookmarks
- Keyword notebooks
- Student Folder

Are additional numeracy and maths materials, other than JCSP resources, used in the classroom to support numeracy development?

Have educational suppliers been contacted to source and acquire additional numeracy resources?

Are any of the following employed in the school / classroom to support numeracy development?

- Assistive technology
- Interactive whiteboard
- Suitable interactive software
- Access to suitable websites on the internet
- Maths Oracy Project
- Maths and Numeracy Day
- Maths and Numeracy Week
- The Number Line
- SRA Computational Skills laboratory / kit
- Numeracy rich environment
- Class sets of calculators
- Numeracy and Maths projects



### Use of Resources

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

### 5. Participation in JCSP Numeracy Initiatives

Which of the following JCSP numeracy initiatives have been planned and implemented in the school?

- Paired Maths Initiative
- Cross Aged Paired Maths Initiative
- General Numeracy Initiative
- Maths Games Initiative
- Make Your Own Opoly Initiative
- Number Millionaire
- Flashmaster Initiative
- School-based Numeracy Initiative

### Participation in JCSP Numeracy Initiatives

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

### 6. Parental Involvement

Do parents participate in supporting the numeracy development of the student at home?

Do parents participate in supporting the numeracy development of the student in school?

Are maths / numeracy projects planned and developed to include parental involvement?

Is there parental involvement in JCSP Numeracy Initiatives?

### Parental Involvement

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

### 7. Numeracy Projects

Is a "Numeracy Day" organised in the school?

What activities are planned and organised during the "Numeracy Day"?

Does every class participate in the activities of the "Numeracy Day"?

Which teachers are involved?

What types of numeracy projects are planned and undertaken?

- cross-curricular
- thematic
- maths specific

#### Numeracy Projects

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

### 8. Dialogic Teaching: Supporting Discussion in Maths and Numeracy

Do students regularly get opportunities to discuss their learning difficulties or their progress and achievements in numeracy with their teachers?

Is discussion emphasised in the mathematics classroom?

Do students get opportunities to make oral presentations in the classroom on the findings of their maths / numeracy projects?

Is the "Think-Aloud" strategy used in the maths classroom?

Is the "Brainstorming" strategy used in the maths classroom?

Is the "Reciprocal Teaching" strategy used in the maths classroom?

Is Paired Maths used in the maths classroom?

#### Oracy in Maths and Numeracy

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_



## 9. Celebration of Student Achievement

How is student achievement in numeracy acknowledged and celebrated in the school?

How frequently is student achievement in numeracy acknowledged and celebrated in the school?

Who attends these JCSP Numeracy Celebration events?

### Celebration of Student Achievement in Numeracy

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

## 10. Awareness of Barriers to Learning in Numeracy: Error Analysis

Is there awareness among staff of the specific and general difficulties that some students encounter in learning and engaging with numeracy?

Are students' errors in numeracy regularly analysed to discover trends and patterns of error, to identify learning gaps and to indicate the corrective actions and interventions that are required?

In what specific areas of numeracy do some First Year students encounter difficulties and problems?

In what specific areas of numeracy do some Second Year students encounter difficulties and problems?

In what specific areas of numeracy do some Third Year students encounter difficulties and problems?

What are the most common computational and arithmetical errors made by these students?

Have the students difficulties in understanding mathematical keywords?

Have the students difficulties in understanding mathematical and numerical symbols?

Are opportunities provided to the student to discuss the difficulties he / she encounters in maths and numeracy?

### Error Analysis

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

**11. Consistent Approaches Across the Curriculum**

Are there consistent and coordinated approaches across the curriculum to promote and support numeracy development?

- e.g. weight and temperature in Home Economics
- e.g. area and volume in Science
- e.g. length and area in Materials Technology Wood
- e.g, area in Geography
- e.g. handling and displaying historical data in History etc.

Is there consistency in the use of numerical and mathematical keywords across the curriculum?

- e.g. “multiply” / “product” / “by” / “times”
- e.g. “add” / “total” / “sum”

Is each staff member aware of the important role that he / she can play in enhancing numeracy standards in the school?

Is ICT used across the curriculum to support the development of enhanced numerical understanding?

Are there subjects where numeracy does not have relevance and direct applicability?

**Consistent Approaches Across the Curriculum**

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

**12. Homework**

Is there a school policy on homework?

Is homework specifically targeted and allocated to support numeracy development?

**Homework**

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_



### 13. Professional Development in Numeracy

What professional development in numeracy has the Maths Department received to date?

What professional development in numeracy have other subject teachers received to date?

- as part of a Literacy / Numeracy staff in-service
- by attending an off-site / national JCSP Numeracy in-service
- by participating in a JCSP Numeracy Research Initiative
- by undertaking advanced studies in maths and numeracy as part of a Graduate Diploma or Masters in Education Degree course
- by engaging in an action research project in numeracy
- other \_\_\_\_\_

Do subject teachers need assistance in identifying the numeracy demands in their subject areas?

Do the subject teachers feel that they need support in developing approaches and strategies to support numeracy development?

If so, what supports are required?

Do members of staff participate in JCSP Numeracy Research Initiatives?

Has any staff member been involved in producing Teacher Guidelines or resources for JCSP Numeracy initiatives?

Has any staff member been involved in reviewing and developing JCSP Mathematics statements?

Has any staff member made a presentation at a JCSP national in-service on Numeracy and Mathematics?

#### CPD in Numeracy

Satisfactory

Needs Attention / Action Required

To Be Undertaken By \_\_\_\_\_

Review Date \_\_\_\_\_

**14. Subject Teacher: Numeracy Strategies Checklist**

Do teachers in the school have enough information on appropriate use of the following numeracy strategies?

Computational clocks	<input type="checkbox"/> Yes	<input type="checkbox"/> No
"Luve 2C U" strategy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
"Show me " cards	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Estimation strategies	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Trial and error strategies	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Use of calculator	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Deconstruction and partitioning strategies	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Thematic approach	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Problem-solving approach	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Proportionate reasoning / constant ratio approach	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Paired work / Group work	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Personal numeracy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Keywords strategy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Graphic organisers / flow charts	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Co-operative groups	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Use of various DARTs in numeracy	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Would professional development for the staff, on the teaching and learning of numeracy, be useful at this stage of planning?



## 6. JCSP Numeracy Initiatives

The JCSP Numeracy Initiatives have been developed to promote the use of short-term and focused interventions to support and enhance the teaching and learning of numeracy. Schools apply for a subvention to fund the acquisition of resources and the implementation and celebration of the initiative. The suite of numeracy initiatives, applied for by schools, can vary from school to school, but each school's selection is underpinned by the conviction that certain students at second level still require, and will greatly benefit from, the experiential learning experiences that a numeracy initiative provides.

At the conclusion of each initiative, the participating school evaluates and documents the successes and outcomes of their initiative. Many schools opt to engage in a more in-depth analysis of the impact of their initiative by using pre-and post-testing, employing standardised tests and questionnaires to inform this work.

Through the dissemination of published initiative research findings, the wider network of JCSP schools have benefited greatly from the experience and insights of fellow professionals.

The following resources have been developed to support the planning, organisation and implementation of numeracy initiatives in schools:

- Teacher guidelines
- Students' workbooks
- Achievement certificates
- Bookmarks
- Wall posters

### Paired Maths Initiative

Following on the successes achieved in JCSP paired reading initiatives, the "JCSP Paired Maths Initiative" provides a framework and opportunity for participating schools to plan, develop and implement a paired maths programme to support the development of enhanced mathematical and numerical understanding and competencies in JCSP students. The programme involves the "pairing" of Transition Year / LCA / Fifth Year students, as tutors, with JCSP students. In some schools, parents have participated as tutors.

### Cross Aged Paired Maths Initiative

Schools participating in this initiative plan, monitor and investigate the learning opportunities provided to JCSP students through the establishment and implementation of a cross-aged paired maths programme, which involves the "pairing" of second-year JCSP students with second-class primary school students. The second year JCSP students perform the role of peer tutors to the younger students.

### Flashmaster Initiative

To succeed and advance in numeracy and mathematics the student must develop the capacity to automatically and fluently recall key number and computational facts. Flashmaster is a hand-held micro-computer which has been designed to provide important practice, recapitulation and drill in addition, subtraction, multiplication and division tables. Flashmaster contains multiple time settings and nine different levels of arithmetical challenge. The student is presented with his / her score at the end of each programmed activity.

### Number Millionaire Initiative

This initiative involves the running of a numeracy quiz and schools are provided with a suite of numeracy quiz questions. Each “contestant” is presented with a choice of four answers to each quiz question, three of which are incorrect. The correct answer can be identified by performing mental computation, by applying logic and deduction or by using remaining “Lifelines” to make one’s task easier. To acquire the maximum number of points (One Million) in the quiz and be awarded a “Number Millionaire” certificate, the student must correctly answer each of the 13 consecutive quiz questions. This initiative can develop confidence in performing numerical and arithmetical operations, enhance mental computation, strengthen cognitive reasoning, improve pace of response and revise and activate existing mathematical knowledge.

### Make Your Own Opoly Initiative

By using and adapting the “Make Your Own Opoly” starter pack (which is based on the “Monopoly” boardgame), teachers can construct and develop their own contextualised and localised boardgame to generate interest in maths and numeracy among JCSP students. This boardgame can enhance the students’ understanding of the concepts of buying and selling and can provide opportunities to practise and reinforce important computational skills. Participating schools are also provided with the “Make Your Own Opoly” Workbook.

### Maths Games Initiative

This initiative provides opportunities for teachers to source, acquire and investigate age-appropriate maths games and / or maths activity packs and to use these resources to support the development of enhanced mathematical and numerical understanding among JCSP students. Teachers may also opt to use the initiative funding to plan, construct and develop their own maths games and maths activity packs.

### Maths Laboratory Initiative

The Maths Laboratory provides schools with a flexible, graded and systematic programme, which can significantly improve students’ computational skills and study habits. The differentiated format of the Maths Laboratory creates an inclusive learning environment by enabling individual students to take different pathways through the menu of learning tasks and programme activities. Schools report that best results are attained by using the programme within a fairly-concentrated time frame.

### General Numeracy Initiative

Funding is provided to schools to acquire age-appropriate experiential resources and games in mathematics and numeracy and to use these materials to develop creative approaches to the teaching of mathematics and numeracy to JCSP students. Participating schools are provided with a list of recommended mathematical resources, useful websites and contact-details of major educational suppliers.

### School Based Numeracy Initiative

Piaget (1965) stated that many teenagers still need to be provided with opportunities to engage with experiential resources and supports to consolidate and expand their understanding of mathematical and numerical concepts. The School Based Numeracy Initiative enables schools to acquire age-appropriate experiential resources and games and to use these materials to develop creative approaches to the teaching of mathematics and numeracy to JCSP students.



### Published Initiative Evaluation Reports

- General Numeracy Initiative Evaluation Report (2004)
- General Numeracy Initiative Evaluation Report (2005)
- General Numeracy Initiative Evaluation Report (2006)
- General Numeracy Initiative Evaluation Report (2007)
- Paired Maths Initiative Evaluation Report (2006)
- Paired Maths Initiative Evaluation Report (2007)
- Maths Games Initiative Evaluation Report (2007)
- Flashmaster Initiative Evaluation Report (2007)
- Make Your Own Opoly Initiative Evaluation Report (2007)

## 7. JCSP Numeracy Resources

The following resources have been developed, and are available to schools, to support numeracy development:

### JCSP Profile Statements

- Basic Arithmetic statement
- Maths statements
- Cross Curricular statements (with a numerical component)

### Topic Workbooks

- Trend Graphs
- Algebra
- Bar Charts

### “Sum Life” Workbooks

- Basic Maths
- Travel
- Discounts
- Eating Out
- Measurement
- Saving
- Value for Money

### “Sum Zone” Workbooks

- Sets
- Interest and Compound Interest
- Symmetry and Translations
- Measurement of Regular Shapes
- Measurement of Curved Shapes

### Theme Posters

- The Circle
- Length
- Capacity / Volume
- Displaying Data
- Time
- Weight / Mass

### Strategy Posters

- “LUVE 2 C U” - Problem Solving Strategy
- “Computational Clocks”
- Keywords

### Initiative Resources

- Make Your Own Opolo workbook
- Number Millionaire teacher guidelines

### Student Designed Posters

- Set of posters, which have been developed from the creative designs and sketches of JCSP students who participated in the JCSP Numeracy Poster Competition

### Achievement Certificates

- Mathematical Achievement Certificate
- Paired Maths Achievement Certificate

### Bookmarks

- “LUVE 2 C U” bookmark

### Postcards

- Student-developed maths / numeracy postcards

### Numeracy Websites

- List of recommended numeracy websites

### Other Numeracy Resources

- Resources that have been recommended by teachers who participated in JCSP Numeracy and Maths Initiatives



## 8. Staff Review of Numeracy: Scaling Exercise

### Scaling exercise

Our numeracy provision caters adequately for the needs of all of the students

10

9

8

7

6

5

4

3

2

1

0

Our numeracy provision does not cater adequately for the needs of all of the students

If you scored a "4" give reasons why you selected this rating.  
List the factors that influenced your rating.  
Suggest one change that would bring your rating to a "5".

### Staff Review of Numeracy: Scaling Exercise

The Scaling Exercise can be given to teachers at a numeracy planning meeting. It is based on the Solution Focus template, using a "0 to 10" scale or gradient, where "10" equals the successful achievement of all goals and "0" represents the worst possible scenario, where no goals have been achieved.

The exercise can be useful in assisting staff to identify what is currently working well and to pinpoint the additional steps that are required to bring about improvement.

When used in a numeracy review, a score of "10" infers that:

"Our numeracy provision caters adequately for the needs of all of our students"

When used in a numeracy review, a score of "0" infers that:

"Our numeracy provision does not adequately cater for the needs of all of our students"

As part of the Scaling Exercise, teachers are asked to identify those factors and agencies that determine and justify their scoring. To justify their scoring, in an analysis of current numeracy provision and practice, teachers might refer to:

- a well-organised learning support department
- the availability of a wide selection of numeracy materials
- supportive parents
- good attitude towards numeracy among the pupils
- the successes attained by running JCSP numeracy initiatives
- the successes attained by the JCSP Paired Maths Programme
- the confidence and understanding acquired from attending JCSP courses on numeracy enhancement and development
- the confidence and understanding acquired from participating in team teaching

The participating teachers are next asked to identify and write down one specific change or addition to current practice in the school that would move the effectiveness of numeracy provision and practice up to the next point on the scale.

"What one change in the school would move the effectiveness of current numeracy provision and practice from a score of 4 to a 5?"

"What other specific changes need to occur to move the effectiveness of the school's current numeracy provision and practice from a score of 5 to a 6?"



## 9. Integration of Numeracy Development with Other School Activities

A numeracy development programme can also be planned and designed to include opportunities for social and personal development. This can be achieved in the following ways:

- class or group participation in an outdoor or environmental numeracy programme (e.g. the "Outdoor Resources Brought into Teaching" projects)
- class or group participation in sporting activities which contain a numerical orientation
- participation in paired-work
- participation in group work and collaborative activities
- participation in collaborative project work
- through engagement with the JCSP profiling process

The JCSP Paired Maths Initiative and the JCSP Cross Aged Paired Maths Initiative provide a myriad of opportunities for peer support and paired work to be developed.

The JCSP General Numeracy Initiative and the JCSP School-Based Numeracy Initiative provide opportunities for students to engage in collaborative investigations and collegiate project work.

The JCSP Maths Games Initiative and the JCSP Make Your Own Opolly Initiative provide opportunities for "peer scaffolding" to take place.

A celebration event is planned and organised at the conclusion of each JCSP initiative. At each celebration event, the efforts and achievements of the students are acknowledged, recognised and affirmed. Research indicates that public acknowledgement and recognition can have a significant impact in the affective domain and can significantly boost the student's motivation to learn.

The following classroom activities and practices can be planned, designed and organised as collaborative activities which provide opportunities not only for the enhancement and consolidation of numeracy skills but also for social and personal development:

- employing a "warm-up" / "fast fire" mental arithmetic session at the start of every class
- devoting one class period per week to "thinking numeracy" and mental arithmetic
- planning and arranging one class period per week when students have opportunities to engage with experiential numeracy materials (maths games, maths laboratories etc.)
- employing team teaching in the numeracy classroom
- providing access to calculators / laptops to support collaborative investigations
- using appropriate ICT software to support collaborative investigations
- planning and implementing individualised and collaborative support programmes, where appropriate

- planning and organising the “Numeracy Day” / “Numeracy Week” activities
- providing formative feedback to students (e.g. “Two Stars and a Wish” format)
- using DARTs (directed activities related to text) and graphic organisers to support numeracy development
- providing access to Flashmaster micro computers



## 10. Writing the Numeracy Element of the School Plan

### Some factors to consider

#### Developing a Numeracy-rich Classroom Environment

- availability of a range of numeracy materials
- availability of a range of numeracy textbooks
- availability of ICT resources
- displays of student projects in the classroom
- use of the wall space as a learning environment

#### Developing a Numeracy-rich School Environment

- setting up a numeracy noticeboard
- using numeracy posters to create a numeracy environment
- exhibiting projects which contain a numeracy orientation
- displaying the statistical findings of student projects

#### The Numeracy Development Plan

The following are important components of a Numeracy Development Plan:

- establishing a shared vision
- shared set of goals among school personnel
- clarity around who is responsible for teaching numeracy
- setting achievable targets and learning outcomes
- selecting indicators of success
- sourcing and acquisition of resources
- setting timescale for implementation
- selecting key personnel to initiate action
- providing formative feedback to students
- monitoring progress
- regular reviewing and record keeping
- implementing consistent approaches to keywords / maths terminology usage
- implementing a consistent marking policy
- catering for the development of basic skills in numeracy
- introducing a numeracy day / week in the school
- involvement in JCSP Numeracy Initiatives
- involvement in JCSP Numeracy Research Initiatives
- developing and implementing numeracy projects
- accessing relevant continuing professional development in numeracy
- providing feedback to staff by teachers who have attended off-site professional development in-service in numeracy
- seeking involvement of parents
- involvement of support agencies
- investigation of other developmental strands:
  - e.g. teacher participation in action research inquiry into practice
- monitoring the end-of-term maths exam results
- monitoring State maths exam results
- celebration of achievements
- reviewing and evaluating progress

### Areas for Development

- additional or extended provision for pupils with numeracy difficulties
- numeracy projects
- numeracy day / week in the school
- oral maths project
- JCSP Numeracy Initiatives
- JCSP Numeracy Research Initiatives
- school / family / community linkages
- support agencies
- action research

### Professional Development in Numeracy for Staff

- attendance at JCSP national in-service on numeracy
- strategic, tailored and collaboratively-planned school-based in-service:
  - e.g. planning and structuring a numeracy in-service as part of parallel numeracy / literacy sessions
  - e.g. planning and arranging school-based numeracy in-service for one specific subject department (e.g. Maths Department, Learning Support / Resource Department, Materials Technology Wood Department, Home Economics Department etc.)
  - e.g. modelling, demonstration and discussion of a range of numeracy strategies which can be used by all subject teachers
  - follow-up / post-in-service meetings and contact with school
  - on-going regular contact with school



## 11. Sample Action Plan Templates

(refer to Section 4 of SDPI guidelines, sample action plan)

Strategy	Activities	Which Students?	Objectives	When?	By Whom?	Resources Required	How We Measure	Review Date

### Sample Action Plan Template (2)

Strategy	Activities	Which Students?	Objectives	When?	By Whom?	Resources Required	How We Measure	Review Date
Using the "LUVE 2C U" strategy	<p>Teacher models the strategy.</p> <p>Student learns, repeats and applies the strategy.</p> <p>Student carries out individual problem solving.</p> <p>Paired and group tasks.</p>	Select target group.	Use "LUVE 2C U" to improve problem solving in maths and numeracy.			Acquire "LUVE 2C U" poster & bookmark	<p>Teacher monitors students' work.</p> <p>Teacher provides oral &amp; written feedback to the student.</p>	

## Sample Action Plan Template (3)

Strategy	Activities	Which Students?	Objectives	When?	By Whom?	Resources Required	How We Measure	Review Date
JCSP Paired Maths Initiative	<p>Submit proposal.</p> <p>Inform principal, staff, parents, students (tutees) and tutors.</p> <p>Decide on structure for paired work (eg cross-aged links with primary students or involving senior students or parents as tutors)</p> <p>Train tutors.</p> <p>Select location.</p> <p>Decide dates and duration of initiative.</p> <p>Celebrate successes.</p>	<p>Select target group (tutees).</p> <p>Select tutors.</p>	Use paired work to support numeracy development			Acquire Paired Maths Initiative resources, guidelines, funding and test materials.	France Test (Profile of Math Skills Level 2) or other recommended / alternative attainment tests.	



## Appendix 1: Numeracy Strategies Log

List of some possible strategies:

- Using patterns / making connections
- Using JCSP computational clocks
- Using the "LUVE 2C U" strategy
- Using "show me" cards
- Employing estimation strategies
- Using trial and error strategies
- Using the calculator
- Using deconstruction and partitioning strategies
- Employing thematic approaches
- Using the problem-solving approach
- Using proportionate reasoning / constant ratio
- Employing paired work / group work
- Using the "fingers numeracy" strategy
- Using personal numeracy
- Using the keywords strategy
- Using graphic organisers / flow charts
- Employing co-operative groups
- Using DARTs in numeracy
- Implementing JCSP numeracy initiatives

### Strategies Log

School: \_\_\_\_\_

Class / Year Group: \_\_\_\_\_

Date Begun: \_\_\_\_\_

Date Finished: \_\_\_\_\_

Outline of Strategy / Strategies being used:

---



---

Successes Achieved:

---



---

Challenges Encountered:

---



---

Evidence of Attitudinal Change:

---



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## Appendix 2: Subject Teacher: Numeracy Strategies Checklist

**Do teachers in the school have enough information on appropriate use of the following numeracy strategies?**

Computational clocks	<input type="checkbox"/> Yes	<input type="checkbox"/> No
"Luve 2C U" strategy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
"Show me" cards	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Estimation strategies	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Trial and error strategies	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Use of calculator	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Deconstruction and partitioning strategies	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Thematic approach	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Problem-solving approach	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Proportionate reasoning / constant ratio approach	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Paired work / group work	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Personal numeracy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Keywords strategy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Graphic organisers / flow charts	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Co-operative groups	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Use of various DARTs in numeracy	<input type="checkbox"/> Yes	<input type="checkbox"/> No

**Would professional development for the staff, on the teaching and learning of numeracy, be useful at this stage of planning?**

Yes     No



## Appendix 3: Scaling Exercise Template

### Scaling exercise

Our numeracy provision caters adequately for the needs of all of the students

10

9

8

7

6

5

4

3

2

1

0

Our numeracy provision does not cater adequately for the needs of all of the students

If you scored a "4" give reasons why you selected this rating.  
List the factors that influenced your rating.  
Suggest one change that would bring your rating to a "5".

## Appendix 4: Evaluating Learning Outcomes, Strategies and Interventions

### Numeracy Assessment Modes (non standardised)

- Answering multi-choice questions
- Oral assessment
- In-class written assessments
- Term exams
- Portfolio assessment
- Self-assessment (using a Skills Checklist)
  - ("Confident" / "Not so Confident" / "Don't Know")
- Peer assessment
- Homework assessment
- Teacher observation
- Project completion
- Completion of JCSP Maths statements
- Student exhibitions
- Student presentation
- Explaining to Someone Else
- Performance in a Simulated Situation
  - (e.g. rehearsing an event in real-life)
  - (e.g. ordering food in a restaurant)
- Skills Transfer
  - (skills learned from one situation can be tried out in another)
- Performance in Real Life Situations
- Scores in pre and post tests of JCSP Numeracy and Maths Initiatives
- Student Questionnaires
- Analysis of Results in Junior Certificate Examination
- Adaptation of Bloom's Taxonomy template
- Tracking progress using the Bank of Learning Targets and Competencies in Numeracy (1) and Bank of Learning Targets and Competencies in Numeracy (2)

### Using Standardised Attainment Tests

Pre and post testing using standardised tests

Some suitable tests:

- "Profile of Mathematical Skills" (France)
- "Graded Arithmetic-Mathematics Test" (Vernon)
- "Mathematics Competency Test" (Vernon)
- "Staffordshire Mathematical Test"
- "Numeracy Progress Test"
- "WRAT" (Psychological Assessment Resources Inc.)
- "Drumcondra Primary Maths Attainment Tests (Revised)"
- "Drumcondra Criterion Reference Maths Test"

Other tests used

---

**Personal Evaluation: Skills Checklist**

Student: \_\_\_\_\_

Date: \_\_\_\_\_

Topic	Confident	Not so confident	Don't know
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix 5: JCSP Maths Statements, Basic Skills Statement and Cross-Curricular Statements (which contain a numerical orientation)

### Maths Statements

# Area of Experience: Mathematical Education

## Maths

At Junior Certificate level the student can:

1	Use of Number Apply the knowledge and skills necessary to perform mathematical calculations	○○○
2	Sets, Relations and Charts Interpret and draw basic statistical charts and sets	○○○
3	Perimeter, Area and Volume Calculate perimeter, area and volume of given shapes	○○○
4	Money Apply the knowledge and skills needed to manage money in daily life	○○○
5	Use of Calculator Apply the knowledge and skills necessary to perform basic operations using a calculator	○○○
6	Use of Number with Calculator Apply the knowledge and skills necessary to perform mathematical calculations	○○○
7	Graphs, Constructions and Transformations Apply the knowledge and skills required to sketch graphs and transformations and to perform basics constructions in geometry	○○○
8	Time, Speed and Scale Demonstrate and apply an understanding of time, speed and scale	○○○
9	Knowledge and Application of Geometry Apply the knowledge and skills necessary to perform specified geometrical operations	○○○
10	Knowledge and Application of Algebra Apply the knowledge and skills necessary to perform specified operations in algebra	○○○
11	Circle, Cylinder and Sphere Calculate the perimeter, area and volume of curved shapes	○○○
12	Trigonometry Use trigonometry to solve problems	○○○
13	Sets and Statistics Draw and interpret sets and statistics	○○○
14	Knowledge and Application of Geometry 2 Perform additional operations in Geometry	○○○
15	Knowledge and Application of Geometry 3 Perform further operations in Geometry	○○○

NOTE: Use of a scientific non-programmable calculator is permitted

Work begun ○○○
Work in progress ○○○
Work completed ○○○



# Use of Number

## Maths

Statement Code no: 1

Student:

Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform mathematical calculations

Date Commenced:      Date Awarded:      

### Learning Targets – This has been demonstrated by your ability to:

- |    |   |  |
|----|---|--|
| 1  | Recognise simple fractions, for example $\frac{1}{4}$ , $\frac{1}{2}$ , $\frac{3}{4}$ shown in picture or numerical form                    | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2  | Simplify fractions: e.g. $\frac{2}{4} = \frac{1}{2}$  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3  | Work out a fraction of a given number   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4  | Add and subtract fractions  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5  | Add and subtract decimals   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6  | Multiply and divide decimals  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7  | Recognise equivalencies among simple fractions and decimals, for example $\frac{1}{4} = 0.25$ , $\frac{1}{2} = 0.50$ , $\frac{3}{4} = 0.75$ | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8  | Work out a percentage of a given number   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9  | Calculate percentage profit and loss  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 | Round off decimals to one or more decimal places or the nearest whole number  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed

# Sets, Relations and Charts

## Maths

Statement Code no: 2

Student:

Class:

At Junior Certificate level the student can:

### Interpret and draw basic statistical charts and sets

Date Commenced: / /

Date Awarded: / /

#### Learning Targets – This has been demonstrated by your ability to:

- |    |   |  |
|----|---|--|
| 1  | Read information from a Venn diagram  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2  | Draw a Venn diagram illustrating two sets   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3  | List the elements of a set, the union and intersection of two sets using set notation | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4  | Draw an arrow diagram   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5  | List the couples in a relation  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6  | Read information from a bar chart, pie chart and trend graph                          | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7  | Draw a bar chart and trend graph  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8  | Complete a frequency table  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9  | Work out mode   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 | Work out mean   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed



# Perimeter, Area and Volume

## Maths

Statement Code no: 3

Student:

Class:

At Junior Certificate level the student can:

### Calculate perimeter, area and volume of given shapes

Date Commenced: ○○/○○/○○

Date Awarded: ○○/○○/○○

#### Learning Targets

 – This has been demonstrated by your ability to:

- |    |  |       |
|----|--|-------|
| 1  | Work out the perimeter of a variety of regular shapes    | ○ ○ ○ |
| 2  | Work out the area of squares and rectangles              | ○ ○ ○ |
| 3  | Work out the area of triangles                           | ○ ○ ○ |
| 4  | Work out the area of other shapes such as T and L shapes | ○ ○ ○ |
| 5  | Use small cubes to create bigger shapes                  | ○ ○ ○ |
| 6  | Estimate how many small cubes will fill a larger box     | ○ ○ ○ |
| 7  | Measure the dimensions of a rectangular solid            | ○ ○ ○ |
| 8  | Work out the volume of a rectangular solid               | ○ ○ ○ |
| 9  | Work out the area of a circle                            | ○ ○ ○ |
| 10 | Work out the volume of a cylinder                        | ○ ○ ○ |

Work begun    | Work in progress    | Work completed

# Money

## Maths

Statement Code no: 4

Student:

Class:

At Junior Certificate level the student can:

Apply the knowledge and skills needed to manage money in daily life

Date Commenced: / / Date Awarded: / / 

### Learning Targets – This has been demonstrated by your ability to:

- |    |   |  |
|----|---|--|
| 1  | Recognise Euro notes and coins and state their value  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2  | Count a collection of Euro notes and coins and record the total   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3  | Add up the cost of a small basket of goods  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4  | Calculate the cost of a meal from a menu  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5  | Work out change due by subtracting total cost from amount given   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6  | Divide a sum of money between a number of people  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7  | Use the least number of Euro notes and coins to make a certain sum of money   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8  | Read information from an electricity bill and a telephone bill  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9  | Work out how much it would cost to borrow a sum (e.g. €1000, €2000) over a period of one year from banks, building societies etc. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 | Work out how much you would earn on money saved over two years in banks, credit unions, post offices etc.                         | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun



Work in progress



Work completed





## Use of Calculator

# Maths

Statement Code no: 5

Student:

Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform basic operations using a calculator

Date Commenced:      Date Awarded:      

### Learning Targets – This has been demonstrated by your ability to:

- |  |  |
|--|--|
| 1 Find digits 0 – 9, the decimal point and necessary operations (+, −, ×, ÷)                                     | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Decide which operations are needed to solve simple problems and work out the answers using a calculator        | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Use a calculator to convert a fraction to a decimal  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Use a calculator to convert simple decimals to percentages   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Show understanding of multiplication of whole numbers by 10, 100 and by 1000                                   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 When multiplying numbers with decimals, show understanding of place value of decimal point                     | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 When dividing, show understanding of the use of a decimal number instead of a remainder e.g. $36 \div 8 = 4.5$ | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Show understanding that multiplying a number by itself gives the same result as using $x^2$                    | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Use the $\sqrt{\quad}$ button (square root) on square numbers to find the reverse of $x^2$                     | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Use a calculator to correct work which has been completed without the use of a calculator e.g. homework       | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed

## Use of number with Calculator

## Maths

Statement Code no: 6

Student:

Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform mathematical calculations

Date Commenced: / / Date Awarded: / / 

### Learning Targets

– This has been demonstrated by your ability to:

- |    |   |  |
|----|---|--|
| 1  | Recognise simple fractions, for example $\frac{1}{4}$ , $\frac{1}{2}$ , $\frac{3}{4}$ shown in picture or numerical form                    | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2  | Simplify fractions: e.g. $\frac{2}{4} = \frac{1}{2}$  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3  | Work out a fraction of a given number   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4  | Add and subtract fractions  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5  | Add and subtract decimals   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6  | Multiply and divide decimals  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7  | Recognise equivalencies among simple fractions and decimals, for example $\frac{1}{4} = 0.25$ , $\frac{1}{2} = 0.50$ , $\frac{3}{4} = 0.75$ | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8  | Work out a percentage of a given number   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9  | Calculate percentage profit and loss  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 | Round off decimals to one or more decimal places or the nearest whole number  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed



# Graphs, Constructions and Transformations

## Maths

Statement Code no: 7

Student:

Class:

At Junior Certificate level the student can:

Apply the knowledge and skills required to sketch graphs and transformations and to perform basic constructions in geometry

Date Commenced: / /

Date Awarded: / /

### Learning Targets – This has been demonstrated by your ability to:

- |  |  |
|--|--|
| 1 Draw the X and Y axes  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Calibrate / graduate the X and Y axes                                  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Locate the origin on the axes  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Plot and join given points to form a graph                             | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Use the graph to discover new information                              | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Draw the image of given shapes under central symmetry                  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Draw the image of given shapes under axial symmetry                    | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Draw a triangle when provided with relevant information                | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Use mathematical instruments to draw a rectangle of given measurements | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Bisect an angle without using a protractor                            | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed

# Time, Speed and Scale

## Maths

Statement Code no: 8

Student:

Class:

At Junior Certificate level the student can:

**Demonstrate and apply an understanding of time, speed and scale**

Date Commenced: / / Date Awarded: / / 

**Learning Targets** – This has been demonstrated by your ability to:

- |    |  |  |
|----|--|--|
| 1  | Make conversions from the 12-hour clock to the 24-hour clock and vice versa  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2  | Convert hours to minutes and vice versa  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3  | Add time values  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4  | Subtract time values   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5  | Identify the start time and finish time of television programmes from television guides and calculate the duration of specified programmes | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6  | Discover the departure time, arrival time and duration of a journey from bus, train and plane timetables                                   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7  | Find the time a film ends, given the start time and the duration of the film   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8  | Use the speed formula to calculate time, distance or speed   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9  | Use scale on a map to identify distances between places  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 | Make use of scale to interpret representative sketches of large objects  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed



# Knowledge and Application of Geometry

## Maths

Statement Code no: 9

Student:

Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform specified geometrical operations

Date Commenced:    /    /

Date Awarded:    /    /

**Learning Targets** – This has been demonstrated by your ability to:

- |  |  |
|--|--|
| 1 Measure angles using a protractor  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Recognise and identify all the common geometrical instruments  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Identify and recognise the various types of angles   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Construct angles of different sizes  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Understand knowledge that the angle in a straight line is 180 degrees  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Understand and apply the knowledge that opposite angles are equal  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Use set squares to construct rectangles  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Use geometrical instruments to construct triangles   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Understand and apply the knowledge that three angles of a triangle add up to 180 degrees                         | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Understand and apply the knowledge that the area of a triangle is equal to half the base x perpendicular height | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed

# Knowledge and Application of Algebra

## Maths

Statement Code no: 10

Student:

Class:

At Junior Certificate level the student can:

Apply the knowledge and skills necessary to perform specified operations in algebra

Date Commenced: / / Date Awarded: / / 

### Learning Targets – This has been demonstrated by your ability to:

- |   |  |
|---|--|
| 1 Understand and write simple equations   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Understand and apply the concepts of $x^2$ and $x^3$  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Find the value of expressions requiring one substitution<br>eg. $3x + 2$ when $x = 4$<br>eg. $5x - 4$ when $x = 3$                            | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Find the value of expressions requiring two substitutions<br>eg. $5x - 3y$ when $x = 3$ and $y = 2$<br>eg. $3x + 2y$ when $x = 2$ and $y = 4$ | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Simplify expressions eg. $4x + 6 + 4y + 7 + 2x - 3y$  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Simplify expressions containing a bracket eg. $3(x + 4) + 7$  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Simplify expressions containing two brackets eg. $3(x + 5) + 3(x - 4)$  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Solve basic equations eg. $x - 4 = 6$ eg $x + 3 = 7$ eg $3x = 15$   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Solve more challenging equations eg. $6x + 2 = 32$  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Solve equations containing a bracket eg. $6(x + 5) = 42$   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun



Work in progress



Work completed





# Circle, Cylinder and Sphere

## Maths

Statement Code no: 11

Student:

Class:

At Junior Certificate level the student can:

**Calculate the perimeter, area and volume of curved shapes**

Date Commenced:    /    /

Date Awarded:    /    /

**Learning Targets** – This has been demonstrated by your ability to:

- |   |  |
|---|--|
| 1 Identify the following parts of a circle: centre, radius, diameter, arc, sector, chord, circumference and segment | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Calculate the length of the circumference of a circle   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Work out the length of the perimeter of a sector  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Calculate the area of a disc  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Calculate the volume of a cylinder  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Calculate the curved surface area of a cylinder   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Calculate the total surface area of a cylinder  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Calculate the volume of a sphere  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Calculate the surface area of a sphere  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Work out the curved surface area of a hemisphere   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed

# Trigonometry

## Maths

Statement Code no: 12

Student:

Class:

At Junior Certificate level the student can:

### Use trigonometry to solve problems

Date Commenced: / / Date Awarded: / / 

#### Learning Targets – This has been demonstrated by your ability to:

- |   |  |
|---|--|
| 1 Identify the hypotenuse, adjacent side and opposite side for a given angle in a right angled triangle                                       | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Use the Theorem of Pythagoras to work out the third side in a right angled triangle when the other two sides are known                      | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Find the value of the sine of an angle in a right angled triangle   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Find the value of the cosine of an angle in a right angled triangle   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Find the value of the tangent of an angle in a right angled triangle  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Use a scientific calculator to find the sine, cosine and tangent of any integer value of an angle up to $90^\circ$                          | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Use a scientific calculator to find the value of an angle, and round it to the nearest degree, when given its sine, cosine or tangent value | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Calculate sides and angles in a right angled triangle   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Solve problems involving angles of elevation  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Solve problems involving angles of depression  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed



# Sets and Statistics

## Maths

Statement Code no: 13

Student:

Class:

At Junior Certificate level the student can:

### Draw and interpret sets and statistics

Date Commenced: ○○/○○/○○

Date Awarded: ○○/○○/○○

#### Learning Targets – This has been demonstrated by your ability to:

- |  |       |
|--|-------|
| 1 Draw Venn diagrams illustrating three sets                           | ○ ○ ○ |
| 2 Interpret information from three-set Venn diagrams                   | ○ ○ ○ |
| 3 Solve problems by using two-set and three-set Venn diagrams          | ○ ○ ○ |
| 4 Write the Cardinal Number of a set                                   | ○ ○ ○ |
| 5 List the subsets of a set  | ○ ○ ○ |
| 6 Identify the Complement of a set                                     | ○ ○ ○ |
| 7 Work out Set Difference  | ○ ○ ○ |
| 8 Construct frequency tables from raw data                             | ○ ○ ○ |
| 9 Draw pie charts  | ○ ○ ○ |
| 10 Draw bar charts   | ○ ○ ○ |
| 11 Draw trend graphs   | ○ ○ ○ |
| 12 Interpret information from pie charts, bar charts, and trend graphs | ○ ○ ○ |
| 13 Calculate the mode  | ○ ○ ○ |
| 14 Calculate the mean  | ○ ○ ○ |

Work begun    | Work in progress    | Work completed

# Knowledge and Application of Geometry 2

## Maths

Statement Code no: 14

Student:

Class:

At Junior Certificate level the student can:

### Perform additional operations in Geometry

Date Commenced: / / Date Awarded: / / 

#### Learning Targets – This has been demonstrated by your ability to:

- |    |  |  |
|----|--|--|
| 1  | Measure and label line segments  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2  | Identify the angles in a triangle from their labels (e.g. <abc)  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3  | Draw a line parallel to a given line   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4  | Construct a line perpendicular to a given line   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5  | Identify and calculate corresponding and alternate angles formed when a line intersects parallel lines   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6  | Construct the perpendicular bisector of a line segment   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7  | Identify and name different types of triangles   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8  | Calculate the exterior angle in a triangle when the interior opposite angles are known                   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9  | Calculate all the angles in a triangle when the exterior angle and one interior opposite angle are known | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 | Identify congruent triangles   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed



# Knowledge and Application of Geometry 3

## Maths

Statement Code no: 15

Student:

Class:

At Junior Certificate level the student can:

### Perform further operations in Geometry

Date Commenced: / / Date Awarded: / / 

#### Learning Targets – This has been demonstrated by your ability to:

- |   |  |
|---|--|
| 1 Understand and apply the fact that the base angles in an isosceles triangle are equal in measure                  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Recognise that the largest angle in a triangle is always opposite the longest side                                | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Recognise that the smallest angle in a triangle is always opposite the shortest side                              | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Understand and apply the fact that the opposite sides and opposite angles in a parallelogram are equal in measure | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Recognise and apply the fact that the diagonal of a parallelogram bisects the area                                | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Understand and apply the fact that the diagonals in a parallelogram bisect each other                             | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Recognise and apply the fact that the area of a parallelogram is equal to base x perpendicular height             | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Understand and apply the fact that the angle standing in a semicircle is 90°                                      | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Recognise and apply the fact that there are 360° in a circle  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Calculate an angle in a cyclic quadrilateral when the opposite angle is given                                    | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Work begun    | Work in progress    | Work completed

## Basic Skills Statement

## Basic Arithmetic

## Basic Skills

Statement Code no: 3

Student:

Class:

At Junior Certificate level the student can:

Apply the knowledge and skills needed to carry out basic mathematical calculations

Date Commenced: 00/00/00

Date Awarded: 00/00/00

### Learning Targets

– This has been demonstrated by your ability to:

- |    |   |   |
|----|---|---|
| 1  | Recognise and write a number up to 100 in digits  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |
| 2  | State the value of a digit from its position (place value) in a four-digit number                           | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3  | Recognise simple mathematical symbols for the purpose of addition, subtraction, multiplication and division | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |
| 4  | Add three natural numbers of up to three digits each  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |
| 5  | Subtract a two-digit number from a three-digit number   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |
| 6  | Multiply a two-digit number by a two-digit number   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |
| 7  | Multiply two-digit numbers by one-digit numbers   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |
| 8  | Divide a three-digit number by a one-digit number   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |
| 9  | Add three one-digit numbers in your head  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |
| 10 | Check over and correct work   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>                          |

Refer also to: English, Geography, Home Economics, Materials Technology: Wood, Materials Technology: Metal, Technical Graphics

Work begun    | Work in progress    | Work completed



## Cross-Curricular Statements

## Basic Research and Statistics

CC

Statement Code no: 12

Student:

Class:

At Junior Certificate level the student can:

Carry out a simple research project with assistance and display the results appropriately

Date Commenced:      Date Awarded:      

**Learning Targets** – This has been demonstrated by your ability to:

- |   |  |
|---|--|
| 1 Identify a personally relevant research project   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Identify sources of information; people, books etc.                                     | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Locate relevant information in texts, diagrams, charts and graphs                       | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Collect data through questions, interviews, calculations and texts as appropriate       | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Construct line graphs, bar charts, pie charts or tally sheets                           | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Restate information as appropriate using tables, diagrams, maps or tally sheets         | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Present information in tables   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Restate the information shown from tables in words                                      | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Sort and classify data with assistance  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Interpret findings and present appropriately through oral, written and/or visual media | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: English, Geography, Environmental and Social Studies, Civic Social and Political Education, Science, Business Studies, Materials Technology: Wood, Information Technology/Computer Studies, Technical Graphics, Religious Education

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Work begun    | Work in progress    | Work completed

# Measurement of Time

CC

Statement Code no: 19

Student:

Class:

At Junior Certificate level the student can:

Apply the skills, knowledge and understanding needed for the measurement of time in everyday situations

Date Commenced: / / Date Awarded: / / 

## Learning Targets – This has been demonstrated by your ability to:

- |  |  |
|--|--|
| 1 Be familiar with the names of days, months and seasons   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Recall number facts: seconds in a minute, minutes in an hour, hours in a day etc                       | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Find a given day or date on a calendar or timetable  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Tell the time on a clock: the nearest hour, half hour, minute, second                                  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Change the hour from a twelve-hour clock to the twenty-four-hour clock                                 | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Change the hour from a twenty-four-hour clock to the twelve-hour clock                                 | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Change the time between twelve-hour and digital clocks   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Estimate the passing of time to the nearest hour, half hour, quarter hour, five minutes and one minute | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Work out the difference between two given times: on a clock, timetable, calendar and TV guide          | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Draw a time line marking in the important events in your personal life                                | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 11 Work out the time needed to leave one place in order to be on time for an appointment                 | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: English, Art, Business Studies, Civic Social and Political Education, Environmental and Social Studies, History, Home Economics, Maths, Science, Physical Education, Music

4

Work begun    | Work in progress    | Work completed



# Measurement of Temperature

CC

Statement Code no: 20

Student:

Class:

At Junior Certificate level the student can:

Apply the skills, knowledge and understanding needed for the measurement of temperature in everyday situations

Date Commenced:    /

Date Awarded:    /

**Learning Targets** – This has been demonstrated by your ability to:

- |   |  |
|---|--|
| 1 Name the units and terminology of temperature: thermometer, degrees, centigrade, Fahrenheit, freezing point, boiling point. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Identify freezing point and boiling point on a °C/ °F thermometer   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Calculate degrees above and below freezing point and boiling point  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Identify normal body temperature on a medical thermometer   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Understand normal cooking temperatures, for example, gas mark 4, 200 degrees Celsius  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Relate temperatures to everyday situations  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Estimate the indoor and outdoor temperature on a given day  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Estimate the outdoor temperature on a given month   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Suggest a temperature range for the different seasons   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: English, Art, Environmental and Social Studies, Geography, Home Economics, Maths, Science

Work begun    | Working in progress    | Work completed

5

# Measurement of Weight/Capacity

CC

Statement Code no: 21

Student:

Class:

At Junior Certificate level the student can:

Apply the skills, knowledge and understanding needed for the measurement of weight/capacity in everyday situations

Date Commenced: / / Date Awarded: / / 

## Learning Targets – This has been demonstrated by your ability to:

- |   |   |  |
|---|---|--|
| 1 | Name the units and terminology of weight/capacity: litres, half litres, quarter litres, millilitres, kilograms, grams, milligrams | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 | Find the marks for litre, half litre, quarter litre and millilitre on a measuring jug   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 | Find the marks for kilograms, grams and milligrams on a weighing scale  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 | Give examples of weight and capacity from daily life, for example a litre of milk and a kilo of sugar                             | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 | Use a graduated vessel to work out the capacity of liquids  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 | Use a weighing scales to work out the weight of powders and solids  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 | Use a balance scales to weigh items   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 | Estimate amounts using non-standard units, for example a cup, teaspoon and tablespoon   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: English, Home Economics, Maths, Science

6

Work begun    | Work in progress    | Work completed



# Measurement of Length and Distance

CC

Statement Code no: 22

Student:

Class:

At Junior Certificate level the student can:

Apply the skills, knowledge and understanding needed for the measurement of length and distance in everyday situations

Date Commenced:    /

Date Awarded:    /

**Learning Targets** – This has been demonstrated by your ability to:

- |   |  |
|---|--|
| 1 Name the words used in length and distance: kilometres, metres, centimetres, millimetres etc.       | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Pick out the units of length and distance on a ruler, metre stick and measuring tape                | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Use a measuring tape  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Measure straight lines using a ruler and measuring tape   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Work out the distance between two places on a map using the scale on the map                        | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Draw lines of different lengths   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Measure a room, for example, bedroom, kitchen using a measuring tape                                | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Pace out the measurement of different places, for example classrooms, football pitches and bedrooms | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Estimate the length of common objects   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Estimate the distance between two objects  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: English, Art, Environmental and Social Studies, Geography, Home Economics, Materials Technology: Metal, Materials Technology: Wood, Physical Education, Science, Technical Graphics

Work begun    | Work in progress    | Work completed

7

# Money Management

CC

Statement Code no: 23

Student:

Class:

At Junior Certificate level the student can:

## Manage personal and household finances

Date Commenced: 00/00/00

Date Awarded: 00/00/00

### Learning Targets – This has been demonstrated by your ability to:

- |    |  |  |
|----|--|--|
| 1  | List the main items of household expenditure   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2  | Find the cost of the main items of household expenditure   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3  | List the most important items in personal and household spending   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4  | Plan a household budget for one week, recording income and expenditure   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5  | Locate a local Credit Union and explain why it is useful   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6  | List other ways of saving including banks, building societies, and An Post   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7  | Explain what is meant by a lodgement and a withdrawal  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8  | Read and fill in the most important documents needed for managing money: cheques, application forms, lodgements, withdrawals and payment slips | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9  | Carry out correctly calculations needed for managing money   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 | Using a calculator work out household expenditure of a given household for one week  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: English, Business Studies, Civic Social and Political Education, Maths, Home Economics

22

Work begun    | Work in progress    | Work completed



# The Business of Living

CC

Statement Code no: 24

Student:

Class:

At Junior Certificate level the student can:

## Manage personal finances in the areas of income, expenditure and budgeting

Date Commenced: 00/00/00

Date Awarded: 00/00/00

### Learning Targets – This has been demonstrated by your ability to:

- |   |   |  |
|---|---|--|
| 1 | Estimate the income from a part-time job, for example babysitting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 | Work out the income from a part-time job, for example babysitting | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 | Read a wage slip picking out income before and after tax          | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 | List the main household bills                                     | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 | Read bills and dockets  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 | Match income and expenditure and identify priorities              | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 | Prepare a personal budget   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 | Prepare a household budget  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 | Compare your week's expenses with your week's budget plan         | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: Civic Social and Political Education, Business Studies, Home Economics, Maths

Work begun    | Work in progress    | Work completed

23

# Shape and Space

CC

Statement Code no: 27

Student:

Class:

At Junior Certificate level the student can:

## Apply knowledge and understanding of the proportions of common 2D/3D shapes to their work

Date Commenced: / / Date Awarded: / / 

### Learning Targets – This has been demonstrated by your ability to:

- |  |  |
|--|--|
| 1 Name and identify common 2D shapes: rectangle, square, circle, triangle, oval, ellipse, polygon                | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Name and identify common 3D shapes: cone, cylinder, cube, rectangular prism, pyramid, ovoid, sphere, ellipsoid | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Name and identify right angles, acute angles, obtuse angles, reflex angles, straight angles                    | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Name and identify equilateral, isosceles and right-angled triangles  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Name and identify the centre, circumference, chord, radius and diameter of a circle                            | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Explain directional words: clockwise, anti-clockwise, horizontal, vertical, parallel, diagonal                 | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Measure angles accurately using a protractor   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 Draw angles accurately using a protractor  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 Construct a rectangle using a ruler, set square and compass  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10 Construct a triangle using a ruler, compass and protractor  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 11 Construct a circle with a given radius using a compass  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 12 Enlarge a shape using a grid  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: English, Art, Environmental and Social Studies, Geography, Home Economics, Materials Technology: Wood, Maths, Materials Technology: Metal, Technical Graphics, Science

10

Work begun    | Work in progress    | Work completed



# Spatial Awareness

CC

Statement Code no: 28

Student:

Class:

At Junior Certificate level the student can:

## Apply knowledge of direction and space to their work

Date Commenced: / /

Date Awarded: / /

### Learning Targets – This has been demonstrated by your ability to:

- |  |  |
|--|--|
| 1 Read a simple directional compass  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2 Using a grid reference, read a location on a grid map                            | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3 Using a simple map or plan, find a given location                                | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4 Draw a simple map or plan to give directions or locate a place                   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5 Use a directional compass to estimate direction                                  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6 Make simple scale drawings   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7 Work out the distance between two places using the key on a map                  | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8 On instruction, walk or move the body or parts of the body in a stated direction | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9 On instruction, move objects in a stated direction                               | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Refer also to: English, Environmental and Social Studies, Art, Geography, Home Economics, Materials Technology: Wood, Maths, Materials Technology: Metal, Science, Technical Graphics

Work begun    | Work in progress    | Work completed

11

## Appendix 6: Bank of Learning Targets and Competencies in Numeracy (1)

**Student:**

**Date of First Assessment:**

**Date of Second Assessment:**

Number Conventions, Number Theory and Number Structure	Mastery not Developed	Mastery Developed
Read, write and sequence / order whole numbers (natural nos.)	<input type="checkbox"/>	<input type="checkbox"/>
Read, write and sequence / order whole numbers (integers)	<input type="checkbox"/>	<input type="checkbox"/>
Read, write and sequence / order fractions (rational nos.)	<input type="checkbox"/>	<input type="checkbox"/>
Read, write and sequence / order decimal numbers (real nos.)	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the number concepts of: "squared", "doubled", "halved", "quartered" etc.	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the various verbs / action keywords of addition: "sum", "total" etc.	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and apply the various verbs / action keywords of subtraction: "take", "difference" etc.	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the various verbs / action keywords of multiplication: "product", "times", "by" etc.	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the various verbs / action keywords of division: "divide by" etc.	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of even and odd numbers	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of simple prime and product numbers	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of place value in whole numbers	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of place value in decimal numbers	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of order on the Number Line	<input type="checkbox"/>	<input type="checkbox"/>
Locate various numbers on the Number Line: (e.g.: positive whole nos., negative whole numbers, simple fractions, simple decimal numbers)	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of number patterns and number sequences	<input type="checkbox"/>	<input type="checkbox"/>
Write improper fractions as mixed numbers	<input type="checkbox"/>	<input type="checkbox"/>
Write mixed numbers as improper fractions	<input type="checkbox"/>	<input type="checkbox"/>
Work out equivalent fractions to a given fraction	<input type="checkbox"/>	<input type="checkbox"/>
Indicate equivalent fractions on a Fraction Chart	<input type="checkbox"/>	<input type="checkbox"/>
Correct decimals to the nearest whole number	<input type="checkbox"/>	<input type="checkbox"/>



Number Operations	Mastery not Developed	Mastery Developed
Add whole numbers (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Add whole numbers (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Subtract whole numbers (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Subtract whole numbers (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Multiply whole numbers (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Multiply whole numbers (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Divide whole numbers (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Divide whole numbers (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Add simple fractions having the same denominator	<input type="checkbox"/>	<input type="checkbox"/>
Add simple fractions having different denominators (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Add simple fractions having different denominators (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Add simple fractions and simple mixed numbers	<input type="checkbox"/>	<input type="checkbox"/>
Subtract simple fractions having the same denominator	<input type="checkbox"/>	<input type="checkbox"/>
Subtract simple fractions having different denominators (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Subtract simple fractions having different denominators (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Subtract simple fractions and simple mixed numbers	<input type="checkbox"/>	<input type="checkbox"/>
Multiply a simple fraction by a simple fraction	<input type="checkbox"/>	<input type="checkbox"/>
Add decimal numbers (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Add decimal numbers (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Subtract decimal numbers (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Subtract decimal numbers (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Multiply a decimal number by a decimal number (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Multiply decimal number by a decimal number (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Divide a decimal number by a decimal number (without a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Divide a decimal number by a decimal number (with a calculator)	<input type="checkbox"/>	<input type="checkbox"/>
Express a simple fraction as a decimal number	<input type="checkbox"/>	<input type="checkbox"/>
Express a decimal number as a fraction	<input type="checkbox"/>	<input type="checkbox"/>
Identify and use estimation strategies to support calculations	<input type="checkbox"/>	<input type="checkbox"/>

Number Operations (continued)	Mastery not Developed	Mastery Developed
Demonstrate an understanding of the concept of percentages	<input type="checkbox"/>	<input type="checkbox"/>
Order and compare percentages of numbers and quantities	<input type="checkbox"/>	<input type="checkbox"/>
Express a simple fraction as a percentage	<input type="checkbox"/>	<input type="checkbox"/>
Express a decimal number as a percentage	<input type="checkbox"/>	<input type="checkbox"/>
Express a percentage as a decimal number	<input type="checkbox"/>	<input type="checkbox"/>
Express a percentage as a fraction	<input type="checkbox"/>	<input type="checkbox"/>
Divide a whole number by a fraction	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and apply simple ratios	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and apply simple proportions	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and solve problems relating to profit and loss	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and solve problems relating to discounts	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and solve problems relating to VAT	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and solve problems relating to banking and calculating interest	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and calculate shopping totals and change received	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and solve problems relating to payment of bills	<input type="checkbox"/>	<input type="checkbox"/>
Write composite numbers as a product of simple primes	<input type="checkbox"/>	<input type="checkbox"/>
Write composite numbers as a product of square numbers	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and identify simple square roots	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of factors	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of common factors between given numbers	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of multiples	<input type="checkbox"/>	<input type="checkbox"/>
Identify and demonstrate an understanding of the exponential form of numbers	<input type="checkbox"/>	<input type="checkbox"/>



Space and Shape	Mastery not Developed	Mastery Developed
Name and identify some common geometric shape properties: (e.g.: square, rectangle, triangle, circle, cylinder, disc, sphere, polygon)	<input type="checkbox"/>	<input type="checkbox"/>
Identify the properties of common geometric shapes (eg: centre, diameter, chord, perimeter, circumference, area, curved surface area, volume)	<input type="checkbox"/>	<input type="checkbox"/>
Draw triangles from given sides or given angles	<input type="checkbox"/>	<input type="checkbox"/>
Draw squares from given sides	<input type="checkbox"/>	<input type="checkbox"/>
Draw rectangles from given sides	<input type="checkbox"/>	<input type="checkbox"/>
Draw a circle of given radius or diameter	<input type="checkbox"/>	<input type="checkbox"/>
Identify and calculate the perimeter of a square	<input type="checkbox"/>	<input type="checkbox"/>
Identify and calculate the area of a square	<input type="checkbox"/>	<input type="checkbox"/>
Identify and calculate the perimeter of a rectangle	<input type="checkbox"/>	<input type="checkbox"/>
Calculate the perimeter of irregular 2-D shapes (e.g.: T shapes and H shapes)	<input type="checkbox"/>	<input type="checkbox"/>
Identify and calculate the area of rectangles	<input type="checkbox"/>	<input type="checkbox"/>
Identify and calculate the surface area of cubes and rectangular boxes	<input type="checkbox"/>	<input type="checkbox"/>
Calculate the area of irregular 2-D shapes (e.g.: T shapes and H shapes)	<input type="checkbox"/>	<input type="checkbox"/>
Calculated the area of a room from a scale plan	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the concept of symmetry	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of plotting points and be able to locate given coordinates	<input type="checkbox"/>	<input type="checkbox"/>
Identify and describe the various types of angles (e.g.: right, obtuse, reflex, straight)	<input type="checkbox"/>	<input type="checkbox"/>

Measures and Measurement	Mastery not Developed	Mastery Developed
Measure angles in degrees	<input type="checkbox"/>	<input type="checkbox"/>
Draw angles of various sizes	<input type="checkbox"/>	<input type="checkbox"/>
Identify and be familiar with the various instruments of measurement.	<input type="checkbox"/>	<input type="checkbox"/>
Select an appropriate instrument of measurement for a given measuring task	<input type="checkbox"/>	<input type="checkbox"/>
Identify, be familiar with and use the metric measures of weight, area, length and capacity	<input type="checkbox"/>	<input type="checkbox"/>
Make conversions between the various units of metric measurement	<input type="checkbox"/>	<input type="checkbox"/>
Identify and use scales on maps and plans	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the 12 hour and 24 hour clock	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of and apply the units of time	<input type="checkbox"/>	<input type="checkbox"/>
Make conversions between units of time	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the time-distance-speed formula	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the units of money	<input type="checkbox"/>	<input type="checkbox"/>
Make conversions between units of money	<input type="checkbox"/>	<input type="checkbox"/>
Make currency conversions	<input type="checkbox"/>	<input type="checkbox"/>



Data and Statistics	Mastery not Developed	Mastery Developed
Collect, collate, organise, classify and order data and statistics	<input type="checkbox"/>	<input type="checkbox"/>
Construct and use Frequency Distribution Tables to interpret data and statistics	<input type="checkbox"/>	<input type="checkbox"/>
Draw Bar Charts to represent data	<input type="checkbox"/>	<input type="checkbox"/>
Draw Trend Graphs to represent data	<input type="checkbox"/>	<input type="checkbox"/>
Draw Pie Charts to represent data	<input type="checkbox"/>	<input type="checkbox"/>
Calculate the mode of statistical data	<input type="checkbox"/>	<input type="checkbox"/>
Calculate the average value of statistic data	<input type="checkbox"/>	<input type="checkbox"/>

Algebra	Mastery not Developed	Mastery Developed
Write simple equations (number sentences) in algebra	<input type="checkbox"/>	<input type="checkbox"/>
Solve simple equations in algebra	<input type="checkbox"/>	<input type="checkbox"/>
Translate a word problem into an algebraic equation	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of the rules of brackets and sequence of operations	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate an understanding of simple probability theory	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix 6 (B): Bank of Learning Targets and Competencies in Numeracy (2) (based on Drumcondra Criterion Reference Mathematics Test)

Student: \_\_\_\_\_

Date of First Assessment: \_\_\_\_\_

Date of Second Assessment: \_\_\_\_\_

Operations with Whole Numbers	Mastery not Developed	Mastery Developed
Addition of a column of numbers containing not more than five digits	<input type="checkbox"/>	<input type="checkbox"/>
Subtraction of two numbers containing not more than five digits	<input type="checkbox"/>	<input type="checkbox"/>
Multiplication of two numbers containing not more than five digits	<input type="checkbox"/>	<input type="checkbox"/>
Division of a two to five digit number by a one or two digit number	<input type="checkbox"/>	<input type="checkbox"/>

Whole Number Structure	Mastery not Developed	Mastery Developed
Performance of simple number operations involving zero	<input type="checkbox"/>	<input type="checkbox"/>
Addition of directed numbers on the number line	<input type="checkbox"/>	<input type="checkbox"/>
Extension of whole number sequences	<input type="checkbox"/>	<input type="checkbox"/>
Identification of prime numbers	<input type="checkbox"/>	<input type="checkbox"/>
Factorisation of two and three digit numbers	<input type="checkbox"/>	<input type="checkbox"/>
Identification of a common factor of two numbers	<input type="checkbox"/>	<input type="checkbox"/>
Identification of the highest common factor of two numbers	<input type="checkbox"/>	<input type="checkbox"/>



Fractional Number Structure	Mastery not Developed	Mastery Developed
Identification of a fraction on the number line	<input type="checkbox"/>	<input type="checkbox"/>
Statement of a ratio as a fraction	<input type="checkbox"/>	<input type="checkbox"/>
Statement of a fraction in a number of equivalent forms	<input type="checkbox"/>	<input type="checkbox"/>
Reduction of a fraction to its simplest terms	<input type="checkbox"/>	<input type="checkbox"/>
Completion of a ratio statement	<input type="checkbox"/>	<input type="checkbox"/>
Sequencing of fractions in order of magnitude	<input type="checkbox"/>	<input type="checkbox"/>
Conversion of an improper fraction to a mixed number and vice versa	<input type="checkbox"/>	<input type="checkbox"/>
Identification of number sentences illustrating the commutative property	<input type="checkbox"/>	<input type="checkbox"/>
Identification of number sentences illustrating the distributive property	<input type="checkbox"/>	<input type="checkbox"/>

Operations with Fractions	Mastery not Developed	Mastery Developed
Addition and subtraction of two fractions having the same denominator	<input type="checkbox"/>	<input type="checkbox"/>
Addition and subtraction of two fractions having different denominators	<input type="checkbox"/>	<input type="checkbox"/>
Multiplication of two fractions having the same denominator	<input type="checkbox"/>	<input type="checkbox"/>
Multiplication of two fractions having different denominators	<input type="checkbox"/>	<input type="checkbox"/>
Addition of three fractions having different denominators	<input type="checkbox"/>	<input type="checkbox"/>
Subtraction of three fractions having different denominators	<input type="checkbox"/>	<input type="checkbox"/>
Subtraction of a fraction from a whole number and vice versa	<input type="checkbox"/>	<input type="checkbox"/>
Multiplication of a fraction by a whole number and vice versa	<input type="checkbox"/>	<input type="checkbox"/>

Decimals	Mastery not Developed	Mastery Developed
Conversion of a fraction to a decimal and vice versa	<input type="checkbox"/>	<input type="checkbox"/>
Conversion of a percentage to a fraction and vice versa	<input type="checkbox"/>	<input type="checkbox"/>
Sequencing of decimals in order of magnitude	<input type="checkbox"/>	<input type="checkbox"/>
Calculation of the percentage one whole number is of another	<input type="checkbox"/>	<input type="checkbox"/>
Conversion of metric quantities from one unit level to another	<input type="checkbox"/>	<input type="checkbox"/>
Correct positioning of the decimal point when performing operations with decimals	<input type="checkbox"/>	<input type="checkbox"/>

Algebra	Mastery not Developed	Mastery Developed
The solution of a simple algebraic equation which calls for one operation	<input type="checkbox"/>	<input type="checkbox"/>
Expression of a word problem as an open sentence	<input type="checkbox"/>	<input type="checkbox"/>
Substitution of values for place-holder in a simple algebraic expression	<input type="checkbox"/>	<input type="checkbox"/>
Identification of the correct number sentence from a set of number sentences	<input type="checkbox"/>	<input type="checkbox"/>
Solution of an algebraic equation which calls for two operations	<input type="checkbox"/>	<input type="checkbox"/>

Geometry, Shape and Space	Mastery not Developed	Mastery Developed
Recognition of common geometric terms	<input type="checkbox"/>	<input type="checkbox"/>
Recognition of basic facts about angles	<input type="checkbox"/>	<input type="checkbox"/>
Identification of the parts of a circle	<input type="checkbox"/>	<input type="checkbox"/>
Calculation of the perimeter of simple geometric shapes	<input type="checkbox"/>	<input type="checkbox"/>
Calculation of the area of simple geometric shapes	<input type="checkbox"/>	<input type="checkbox"/>
Calculation of the area of compound geometric shapes	<input type="checkbox"/>	<input type="checkbox"/>



Data and Charts	Mastery not Developed	Mastery Developed
Reading and interpretation of charts and graphs	<input type="checkbox"/>	<input type="checkbox"/>
Analysis of charts and graphs	<input type="checkbox"/>	<input type="checkbox"/>

Problem Solving	Mastery not Developed	Mastery Developed
Solution of problems on ratios	<input type="checkbox"/>	<input type="checkbox"/>
Solution of problems on speed	<input type="checkbox"/>	<input type="checkbox"/>
Solution of problems on averages	<input type="checkbox"/>	<input type="checkbox"/>
Solution of problems on interest rates	<input type="checkbox"/>	<input type="checkbox"/>
Solution of problems on profit and loss	<input type="checkbox"/>	<input type="checkbox"/>
Solution of problems on VAT	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix 7: Useful Links

<http://www.jcspliteracy.ie>

<http://www.basic-skills.co.uk>

<http://www.literacytrust.org.uk>

<http://equals.lhs.berkeley.edu>

[www.mathematicallysane.com](http://www.mathematicallysane.com)

[www.c3.lanl.gov/mega-math](http://www.c3.lanl.gov/mega-math)

<http://archives.math.utl.edu/k12.html>

[www.edwebproject.org](http://www.edwebproject.org)

[www.learner.org](http://www.learner.org)

[www.ascd.org](http://www.ascd.org)

[www.matti.usu.edu/nlvm/nav/vlibrary.html](http://www.matti.usu.edu/nlvm/nav/vlibrary.html)

[www.mathsyear2000.org](http://www.mathsyear2000.org)

<http://www.mymaths.co.uk?login.asp>

<http://www.bbc.co.uk/skillswise/index.shtml>

[http://puzzle.dse.nl/index\\_us.html](http://puzzle.dse.nl/index_us.html)

<http://www.lateralpuzzles.com/>

<http://www.dotsphinx.com/>

<http://www.georgehart.com/virtual-polyhedra/vp.html>

<http://mathworld.wolfram.com/>

<http://www.whyslopes.com>

<http://www.mathacademy.com/pr/index.asp>

<http://www.geocities.com/CapeCanaveral/Lab/4661/>



## Appendix 8: Recommended Numeracy Materials

The following resources were recommended by teachers who participated in JCSP Numeracy Initiatives:

- Dominoes
- Euro Money
- Unifix cubes
- "Base of Ten" sets
- Play fruit and vegetables
- "Fraction Dominoes" (Ideal School Suppliers)
- Tangrams
- "Pattern Block Activity Pack"
- "Smile Maths"
- Bingo (Mc Graw-Hill Children's Publishing)
- "Maths Equivalence Cards"
- "Fractions Playing Cards"
- "Fractions Galore Cards"
- Division cards
- Mini whiteboards
- "Strength in Numbers": NALA
- "Sir Faction Activities" (software)
- Class set of calculators
- "Junior Monopoly" (Waddingtons)
- Pentameters
- "Flexitables"
- Trundle wheel
- Measuring tape
- Protractors
- Calculators
- "Smartchute"
- "Money Smartchute"
- O.H.P. Algebra tiles
- "Geo Volume" set
- "Fraction Tiles"
- "Equivalent Fraction Game"
- Fraction block and magnets
- "Time Lotto"
- Weighing scales
- "Measure Lotto"
- "Faction Lotto"
- "Time Snap" card game
- "Fraction Snap" card-game
- Snakes and Ladders (Galt)
- Ludo (Galt)
- "Matching Percentages, Decimals and Fractions" (Smart Kids Educational Resources)
- Maths Board Games (Smart Kids Educational Resources)
- Mathematical and geometric shapes
- Peg boards and pegs
- "Beginning Fraction Zone Bingo"
- "Beginning Fractions"
- "Double Six Dominoes"
- Geometry sets
- Pentominoes
- "Try it Pentominoes Book"
- "Polyhedra Dice"
- "Monkey Fractions"
- "Fraction Penguins"
- "Meteor Maths Bingo Multiplication"
- "Pie in the Sky Fraction Game"
- "Link'n'Count Set"
- Centimeter Cubes set
- "Meteor Maths Bingo"
- "Big Time Learning Clock"
- "Pizza Fraction Fun"
- "Magnetic Number Times"
- "Meteor Maths Bingo Division"
- JCSP "Sum Life" series
- JCSP "Algebra" workbook
- "Algi-Tiles"
- Spatial Problem-Solving Activities
- B.B.C "Learning Zone" maths video
- "Numero"
- Florence Gavin's textbooks
- Hornby model electric train set
- Measuring tapes
- Stop-watches
- Jig-saw puzzles
- Computer software: "Out and About"
- Cuisenaire rods
- Magnetic Boards
- "Fraction Stax"
- "Anglegs"
- "Connect Four"
- Trundle wheel
- "Monopoly"

## Contacts

### Junior Certificate School Programme

Support Service  
Curriculum Development Unit  
Captain's Road  
Crumlin  
Dublin 12

**Email:** [jcsp@iol.ie](mailto:jcsp@iol.ie)

**Web:** [www.jcsp.ie](http://www.jcsp.ie)  
[www.jcspliteracy.ie](http://www.jcspliteracy.ie)

**Office Phone:** 01 4535487

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