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Numeracy & Mathematics Policy

*‘All teachers have responsibility for promoting the development of numeracy.’*

**Building the Curriculum 1**

**Numeracy & Mathematics Definitions**

* **Numeracy -** Numeracy promotes the development of **number skills** and is a skill which supports all areas of learning and enables children to access the world of work where they will regularly be required to estimate, work with fractions and percentages and manage money.
* **Mathematics -** Mathematics is the study of the properties, relationships and patterns in number and shape. It equips children with the skills they need to interpret and analyse information and simplify and solve problems.

It is important that **both of these areas** are taught alongside each other, as they are inextricably linked. When teaching a specific area of mathematics, such as 2D shape for example, numeracy should still be taught as an integral part of the mathematics learning.

**Aims**

**At Gartconner we aim to:**

* ensure enjoyment in maths, resulting in successful learners with positive attitudes.
* provide each pupil with appropriate challenge and support to ensure understanding at all levels.
* provide a planned progressive programme of learning which has continuity and takes into account children’s strengths and areas for development.
* make connections through our teaching to other curricular areas.
* provide experiences and activities that are relevant to everyday life.
* provide differentiation to meet the needs of all learners.

**Effective Teaching & Learning**

The teaching of numeracy and mathematics is planned in line with Curriculum for Excellence experiences and outcomes. Teachers must be clear about the **Learning Intentions and Success Criteria** for each planned lesson.

Learning Intentions and Success Criteria must be **shared, displayed and referred** to throughout the lesson. Children should be encouraged to **create their own** Success Criteria or co-construct Success Criteria with the teacher and their peers.

**Specific Learning Outcomes**

Programmes in mathematics are based on **CfE 3 main organisers**:

1. Number, money and measure
2. Shape, position and movement
3. Information Handling

**Big Picture Lesson Structure**

* Teachers are encouraged to use the **‘Good Lesson Cycle’** to structure their lessons, ensuring these are varied and make most appropriate use of the resources available.
* Groupings should be **differentiated** appropriately and will include a mixture of whole class lessons, group, pairing or individual work.
* **Mixed ability grouping** can also be incorporated - This will allow pupils opportunity to learn from each other, develop growth mind set and provide opportunity for mastery.
* Children should be taught a mathematics lesson **daily**, which should include most of the following features:
* Primary 1

X4 lessons each week should have a number focus and x1 session each week an application of number focus. All lessons should include an oral and mental sessions.

* Primary 2 – Primary 7

X3 lessons each week should have a number focus and x2 lessons each week an application of number focus. All lessons should include an oral and mental sessions.

**Detailed lesson structure**

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|  | **Mental maths**  Part 1  Oral | Oral number sessions start every lesson whole class for every stage (counting, FWD, BWD, table revision etc) This promotes agility with numbers.  Resources   * Number fans * 100 square/Renwick Board * clocks | The pace should be brisk. This section should around 5/10 minutes |
|  | **Mental maths**  **Part 2**  Sharing the Thinking | Number talks, SEAL (doubles, rounding, etc) Teaching new tables, etc. Depending on task could be whole class or differentiated groupings.  Step 1- Teacher presents problem  Step 2 – Pupils figure out problem  Step 3 - Pupil share answers  Step 4 - Pupils share thinking  Step 5 - Class/group agree on most suitable strategy  Example strategies  Counting on/counting all/doubles/near double/making a ten/friendly numbers/compensation/using place value/jump strategies/number square/empty number lines algorithms/adding up/shopkeeper method/ split strategies  Resources   * Renwick board/100 square * Number fans * Double sided counters/beads * 5/10 frames * Screens * Dice/dominoes * Empty number lines | This section should around 10/20 minutes  This session could also be completed as the beginning of the main teaching sessions in differentiated groups |
|  | **Written**  Revision  &  Consolidation | Within each maths lesson there should be opportunity for children to revise and consolidate their learning. This is an independent/collaborative differentiated task and should be prepared on the board or on big sheets of paper or in game based learning form  Activities   * Metacognition * x clock * Daily ten – sharing and discussion of answers * 1-word problem but 4 answers (Select the strategy and justify) * Enquiry based learning * Game based learning | This helps time management |
|  | **Main Teaching**  New learning focus | **LI and SC must support this part of the lesson.**  Each group will be directly taught at their level.  Planned experiences should have the following 8 skills embedded   1. **Interpreting questions** – selecting the relevant information /interpreting data/highlighting key words or phrases/making notes /drawing diagrams/choosing appropriate operations 2. **Selecting processes & communicating solutions** – (explaining choice of process /sharing thinking/ verbalising or demonstrating thought processes) 3. **Linking mathematical concepts** – fractions are divisions/multiplying is addition/transferring learning in one area to another/using connections to solve problems 4. **Reasoning algebraically** finds the unknown quantity/understands and uses the commutative, associative and distributive laws. 5. **Justify choice of strategy (**showing and talking though their thinking/ explaining their strategy/justifying choice of strategy compared to other 6. **Vocabulary used and notation** (maths symbols and words) 7. **Mental agility** (skills that allow children to do maths in their head/ knowledge of number facts/manipulates numbers. 8. **Determine reasonableness of solution** (routinely uses estimation and rounding skills/ selects the most appropriate solution)   Differentiated group task boards should be used, indicating when groups will be working with the teacher using a **T** symbol. | The direct teaching input for **each** **group** should last around 15 minutes |
|  | **Plenary** (Next steps outlined) | Each maths lesson should finish with a plenary which should review what has been learned. Effective plenaries can take place both **throughout and at the end of a lesson.** They should allow children to demonstrate their understanding of the learning and share different strategies.  Children should assess themselves and their peers using the Success Criteria and to discuss what their **next steps** in learning will be. Teacher feedback must be formative and support children to achieve their next steps. A variety of strategies can be used, including the use of exit cards, self and peer assessment and teacher assessment. | This section should last around 5 minutes |
| Total time  **1 hour 15** minutes based on 3 differentiated working groups | | | |

**Making connections and teaching in a Real Life contexts**

Making connection will support long term memory & real life contexts improves motivation and enthusiasm

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| **Processes** | **Applications of Processes** | **Real life examples** |
| Estimating and rounding  Number & number processes  Multiples & Factors  Powers & roots  Fractions, decimals & percentages | Money  Time  Measure  Pattern & relationships  Relationships and sequences  Shapes  Angles & symmetry  Data Handling | Shop/home corner/vet/hair dresser/  Travel agency  Running a company and giving quotes  Restaurant/café  Airport/train/bus station  Making cards/wrapping paper/gifts  Design logos  Designing roads/towns/sports facilities |

All classrooms have a number of mathematical, age appropriate resources to aid the teaching of maths such as, cubes, number fans, counters and numicon. Resources which are not used or required regularly are stored **centrally in the resource room** and accessed by teachers at the beginning of a topic.

* Mathematical resources are located in the **resource room.**
* Boxes and shelves are labelled with the resources they contain.
* Teachers are responsible for returning resources that they borrow promptly.
* Teachers should plan to use as wide a range of resources and activities as possible in order to engage and motivate the children.
* Resources within the classroom should be readily available and appropriately labelled to encourage independence.

**Resources include:**

* Scottish Heinemann Maths
* TeeJay textbooks
* Count on Us boards
* SEAL Resources
* Tom Renwick 100 Square
* Money and Time resources
* Weight and Measure resources

**Assessment**

**Assessment should be**

* Assessment should be **ongoing** throughout the teaching and learning process.
* **Groupings** are based on the analysis of assessment information, class work evidence and teacher observations. Assessment results are monitored, entered onto Gartrack and passed onto the next teacher.

Assessment is **both formative and summative** and will be undertaken in a variety of ways and different forms of evidence will be gathered.

* **Verbal feedback:** pupils should receive encouragement and feedback about how they have performed in relation to the success criteria.
* **Written feedback:** written work in jotters should be marked in good time, with a **tick for a correct answer, and a dot for incorrect.**

**Formative assessment strategies include:**

* Self Assessment
* Peer Assessment
* Teacher feedback – verbal and written -class work will be regularly assessed by teachers and interpreted to inform next steps in learning.
* Exit cards
* Thumbs/fist to 5

**Summative assessments include:**

* Phase Assessment Clacks
* Textbook Check ups
* P1 Baseline Assessment
* P1, P4 & P7 Standardised Assessment

**Numeracy Jotters**

Work in numeracy jotters should have:

* A short date, e.g. 18.05.21
* A title, relating to the learning taking place e.g. ‘Addition using a Number Line’ which should be **underlined**.
* The textbook page number underlined.
* A Line of squares left and then children to begin work.
* A line drawn underneath completed work.
* Lines drawn with a ruler.
* One digit per box.
* It is **not necessary** for children to **record learning intentions or success criteria in numeracy jotters.** They should be on display on task boards and/or other areas of the classroom.

**SEAL and Maths Recovery**

* SEAL provides a clear framework which makes it easier to pinpoint a child’s numerical knowledge.
* SEAL planners are used as a teaching guide in Early and First Level classes, alongside the Clackmannanshire planners.
* Maths Recovery, which uses the SEAL framework to assess children who may have gaps in their mathematical learning, is used throughout the school to support individuals and groups of learners.

**Number Talks**

* Number Talks are **short, daily** exercises aimed at building number sense and encouraging children to use different strategies to solve problems.
* They develop children’s ability to play with numbers meaning they can perform calculations quickly and are flexible in their mathematical thinking.

**Count On Us Boards**

* Count On Us Boards are an excellent tool for deepening understanding and helping children take more responsibility for their own learning and can be found in each class.
* They include a 100 square, an empty 100 square, ten 10 Frames, an empty number line, a vertical number line and white space for demonstrating thinking skills. These are essential building blocks for a learner to make progress in numeracy and mathematics.