



Making Assessment Count in Primary Mathematics

“..the most important assessment happens minute-by-minute and day-by-day in every classroom..” (Wiliam, 2017)

Assessment is a collaborative process, involving learners and teachers, as they gather, record, interpret, use and report information about learning, progress and achievement in developing knowledge, concepts, skills and dispositions towards mathematics. This helps to build a rich picture of the learner, to inform teaching and enable every learner to reach their full potential. This document complements the Assessment Guidelines (NCCA, 2007).

Assessment tools and strategies should be used across all strands in a meaningful way to prepare for, support and extend learning.

PREPARING FOR LEARNING

Assessment helps to build a picture of each learner, to prepare for intended learning and plan for appropriate learning experiences.

Key considerations

1. What is my understanding of the learner/s's prior knowledge, skills and misconceptions?
2. What sources, tools or strategies could I use to elicit more information about the learner?
3. How will I use these insights to create a suitable learning environment and provide for rich and accessible learning experiences?

SUPPORTING LEARNING

Assessment enables teachers to adapt their teaching and to support learners in response to insights gathered during learning experiences.

Key considerations

1. What tools/ strategies/ techniques will best enable learners to demonstrate their learning?
2. What does this information tell me about the learner, their learning needs and progression?
3. How will I use this information to adapt my teaching and respond to the learner/s?

EXTENDING LEARNING

Assessment underpins teachers' preparation and planning of further learning experiences, to extend and consolidate all aspects of learning.

Key considerations

1. What assessment information and feedback will enable and support each learner to develop a better understanding of themselves as learners?
2. What learning experiences can I provide to enable the learner to apply their learning in a new context?
3. How can I ensure that future learning experiences continue to be accessible and appropriately challenging for each learner?

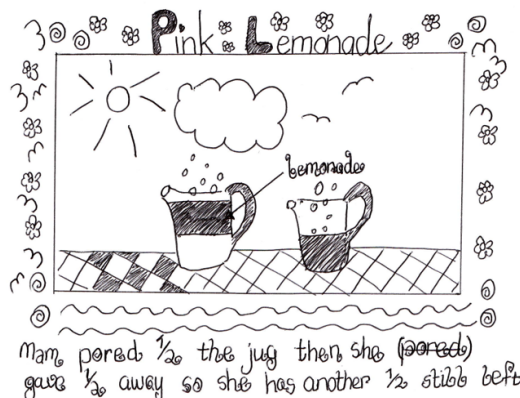


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Maths Journals

What is a maths journal?

Maths journals allow learners to demonstrate their growth and development in mathematics over time, by reflecting on their own learning, developing their ability to reason about mathematics and using mathematical language in context. They provide teachers with information about learners' progress, achievements, misconceptions and areas in which further teaching and support may be needed. This evidence will provide the teacher with an insight as to how the learners see themselves as learners of mathematics.



What can it include?

- Reflections on learning activities - 'Today I learned...' 'I know ... about ...'
- Explanations of maths terms in their own words - 'I think a fraction is...'
- Different models to represent new learning and information.
- Responses to images of their work or learning experiences.
- Explanations of strategies used to solve problems.
- Self-assessment strategies
- Sample prompts - <https://pdst.ie/primary/stem/mathematics/assessment>

What format can it take?

Maths Journals can take many forms, including a copybook or special notebook, digital tools or as part of a portfolio (digital or physical). Journal entries can include writing, drawing, photographs, audio and video accounts. The entries can be recorded by the learner or on behalf of the learner by the teacher or peers.



Take Note

- Maths journals are for all learners, of all ages.
- Maths journals can be represented and recorded in multiple ways.
- Maths journals give the learner an authentic voice in their mathematical learning.

Who can read it and why?

It is important that learners are aware the teacher reads their journals regularly. Consideration could also be given to learners sharing some journal entries with peers and parents, depending on the writing prompt and context. This process will help consolidate teacher and learners understanding of their progress and develop learners' reasoning and mathematical language in context.





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Concept Maps

What are concept maps?

Concept maps are graphic organisers or picture summaries, which demonstrate the learner's understanding of ideas and the relationship between these ideas. Learners connect the concepts using arrows or lines. They then label the connector with a word or short phrase which describes the relationship between the concepts. Learners should revisit and revise their concept maps, as their understanding and knowledge increases.



Take Note

- Concept maps identify the relationships between concepts.
- Learners should revisit and revise their concept maps during the learning process.
- Concept maps encourage maths talk, when learners share, discuss and defend their maps.

Why should we use them?

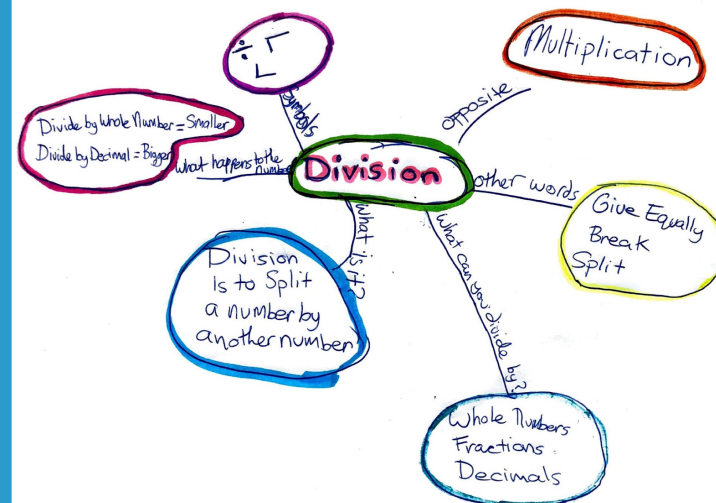
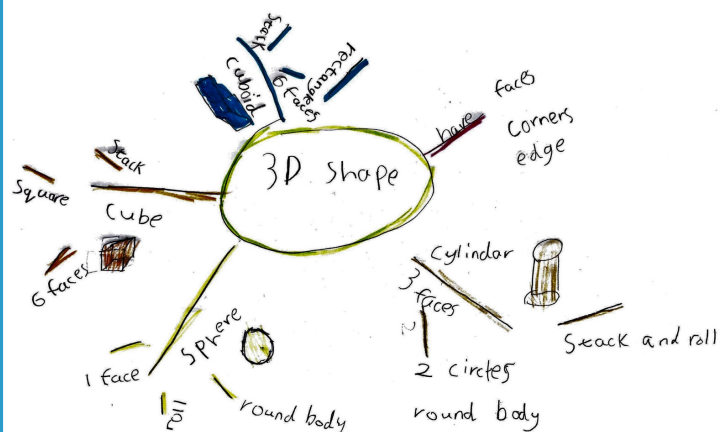
Concept maps allow learners to:

- Think about the relationships between the concepts.
- Organise and visualise their thoughts and understanding of the relationships and concepts through inquiry.
- Reflect on this understanding.

Concepts maps can provide a stimulus for maths talk, where learners can share, challenge and refine their understanding through discussion with their peers.

What might it look like?

A 3D concept map could be constructed using existing or 3D printed concrete materials, while pencil and paper or technology could be used to construct a 2D map. Templates are not necessary, as teachers can use learner created maps to learn more about the learners' understanding of the relationships between the concepts and their misconceptions.





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Rubrics

What is a rubric?

A rubric describes varying levels of quality in a piece of work. It has two main features:

- (1) a list of criteria, giving the important elements of the work
- (2) a set of statements, which describe different levels of quality in the work.

The combination of these two elements helps to build up a picture for the teacher and the learner of what learning success will 'look like' in the activity or piece of work. Rubrics have potential to support the learner and teacher to talk about the learning in the context of their agreed criteria.

What can it include?

Mathematical rubrics could use three dimensions:

- **Mathematical Conceptual and Procedural Knowledge:** Can the learner understand the key mathematical concepts and principles?
- **Strategic Knowledge:** Can the learner make use of relevant outside information, identify parts of the problem and their connections, and use a systematic solution process?
- **Mathematical Communication:** How complete is the learner's response and their explanations, drawings, presentation and communicating skills and the logic of their argument?

Problem Solving Rubric

Colour or tick the box, which describes how you feel you did in today's lesson.

	1	2	3	4	5
Can you solve the problem?	I don't understand the problem.	I don't understand the problem, but I tried to solve it.	I understand the problem and I tried to solve it.	I can solve the problem, but I found it challenging.	I can solve the problem
	I need help to get started	I need a lot of help.	I need some help.	I need a little help.	I can do this with no help.
How do you solve the problem?	I don't know any problem solving strategies.	I can use concrete materials to get started.	I can use concrete materials to solve the problem.	I can choose a strategy to solve the problem.	I can use a number of strategies to solve the problem.
	I can't draw a picture to show how I solved the problem.	I can try to draw a picture, but I find it hard.	I can start to draw a picture to show how I solved the problem.	I can draw a picture, but it is not very clear.	I can draw a clear picture to show how I solved the problem.
Can you explain your work?	I can't talk about what I did.	I can say one or two words about how I tried to solve the problem.	I can talk about what I did.	I can talk about what I did and a little about why I did it.	I can talk about what I did and why I did it.
	I can't write anything to explain how I solved the problem.	I can write something but it does not make sense yet.	I can write a little about what I did or why I did it, but not both.	I can write about what I did and a little about why I did it.	I can write what I did and why I did it.



Take Note

- Rubrics offer an opportunity for reflection, self-assessment and feedback.
- Rubrics provide learners with the focus and language needed to describe their learning progress.
- Rubrics offer a framework to empower learners and give them a voice in their learning process.