Assessment and Mathematics

How to read Developmental Rubrics

DONCASTER

VICTORIA | Education

Introduction

We are the Junior and Middle School Numeracy team.

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DSC MATHEMATICS VISION

At Doncaster Secondary College, we achieve to high standards in Mathematics.

Our learning community promotes outstanding Mathematics teaching, using evidence-based contemporary approaches. We actively collaborate to plan, deliver and assess a viable and engaging Mathematics curriculum that supports growth for all students.

Our learners develop a culture of Mathematics mastery and a belief that everyone is capable of achieving excellence in Mathematics. This facilitates students' learning and application of Mathematics in a range of contexts. This means the skills developed in Mathematics will be purposefully used to engage in learning and understanding within and beyond the classroom.

What is a Developmental Rubric

Victorian Curriculum: Is a set of progressions for each learning area or capability, from Prep/Foundation to Year 10.

Each learning area and capability includes content descriptions explaining what is to be taught, and achievement standards describing what students are able to understand and do at different levels of learning.

Developmental Rubric: An array of 'I can' statements according to actions from the Victorian Maths 2.0 Curriculum that classify the development of competence in a set of skills and/or knowledge.

Criteria	Level 5	Level 6	Level 7	Level 8	Level 9
Integers - Properties	I can multiply numbers with one or two digits using an appropriate strategy.	I can locate and represent positive and negative integers on a number line.	[Add Content Descriptors]	I can estimate the value of computations using the 4 operations with integers and rational numbers.	I can locate the position of rational and irrational numbers on the number line.

Victorian Curriculum **Element**

Victorian Curriculum **Level**

Why use Developmental Rubrics?

A Developmental Rubric assists students and teachers to have a consistent understanding of the **next phase in learning.** This encourages student growth, and for students to develop a **growth mindset.** It supports students to identify their learning goals, and provides an aspirational extension, which can remove unintentional barriers to their learning.

Developmental Rubrics allow students to:

- Clarify the teacher's expectations around assessment
- Provide information about the expected skills required to be demonstrated for a particular element
- Help students to monitor, and to critique, their own work based on the rubric levels

For teachers, they provide opportunity to:

- Determine the student's point of need, and next concepts for learning.
- Ensure that judgements around a students' particular level is **evidence-based**

Year 7 Rubric Example

Year 7 students who are 'at level', will be working towards a Level 7 by the end of Year 7/end of a topic.

Year 7- Integers Test v2

Criteria	Not Demonstrated	Level 6	Level 7	Level 8
Integers -/0	Did not demonstrate.	I can solve problems that involve all four operations with whole numbers and describe the use of integers in everyday contexts.	[Add Content Descriptors]	I can carry out the four operations with positive and negative numbers.
Integers -/0	Did not demonstrate.	I can recognise and compare the magnittude of positive and negative integers on a number line.	I can compare, order and solve problems involving addition and subtraction of integers.	[Add Content Descriptors]
Integers -/0	Did not demonstrate.	I can locate positive and negative integers on a number line.	I can represent positive and negative integers on a number line.	[Add Content Descriptors]

Year 8 Rubric Example

Year 8 students who are 'at level', will be working towards a Level 8 by the end of Year 8/end of the topic.

Year 8 – Integers and Exponentials Test V2

Criteria	Level 5	Level 6	Level 7	Level 8	Level 9
Integers – Properties -/0	I can multiply numbers with one or two digits using an appropriate strategy.	I can locate and represent positive and negative integers on a number line.	[Add Content Descriptors]	I can estimate the value of computations using the 4 operations with integers and rational numbers.	I can locate the position of rational and irrational numbers on the number line.
Integers – Properties -/0	I can solve problems involving multiplying and dividing whole numbers.	I can recognise that the sign (positive or negative) in front of an integer indicates its direction on a number line.	[Add Content Descriptors]	[Add Content Descriptors]	[Add Content Descriptors]
Integers – Properties -/0	I can divide numbers using an appropriate strategy.	I can recognise and compare the magnittude of positive and negative integers on a number line.	[Add Content Descriptors]	[Add Content Descriptors]	[Add Content Descriptors]
Integers – Operations -/0	[Add Content Descriptors]	[Add Content Descriptors]	I can solve problems involving addition and subraction using positive and negative integers using a number line.	I can use the 4 operations with integers and rational numbers.	I can use positive and negative rational numbers to solve problems.

Respect, Responsibility, Resilience, Teamwork

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Year 9 Rubric example

Year 9 students who are 'at level', will be working towards a Level 9 by the end of Year 9

YEAR 9 DEVELOPMENTAL RUBRIC - MEASUREMENT					
ELEMENTS	**LEVEL 7**	**LEVEL 8**	**LEVEL 9**	**LEVEL 10**	**LEVEL 10+**
Length	I can model and solve practical problems involving ratios of length. I can describe the relationship between pi and the circumference, radius and diameter of a circle.	I can solve problems involving the perimeter of irregular and composite shapes. I can use Pythagoras' theorem to solve problems involving the side lengths of right-angled triangles.	I can solve spatial problems by applying Pythagoras' theorem.	I can solve practical problems by applying Pythagoras' theorem after breaking down 3D objects into 2D problems.	
Area	I can use the formulas for the area of rectangles, triangles and parallelograms to solve problems.	I can solve problems involving areas of irregular and composite shapes.	I can solve problems involving the surface area of right prisms, cylinders and composite objects.	I can solve problems involving the surface area of composite objects formed from a range of right prisms and cylinders.	I can solve problems involving the surface area of right pyramids, right cones, spheres and related composite solids.
Volume	I can solve problems involving the volume of right prisms including rectangular and triangular prisms using established formulas.	I can solve problems involving the volume and capacity of right prisms.	I can solve problems involving the volume of right prisms, cylinders and composite objects.	I can solve problems involving the volume of composite shapes formed from a range of right prisms and cylinders.	I can solve problems involving the volume of right pyramids, right cones, spheres and related composite solids.
Units	I can use appropriate units when calculating volume.	I can use appropriate units when calculating capacity. I can apply rates to solve problems involving the conversion between different units of measure.	I can calculate and interpret absolute, relative and percentage errors in measurements.	I can evaluate the impact of measurement errors on the accuracy of results.	

Year 9 Growth Learning Tasks

Learning Task
General **'Number' Growth**

pre-test   vs   post-test

Learning progress (growth) key

- **Excellent**: More than 30% growth
- **Very Good**: Between 20%-30% growth
- **Acceptable**: Between 10%-20% growth
- **Needs attention**: Less than 10% growth

		'Number' Growth
Name	Class	LEARNING PROGRESS
███████████	09 ████	Good
███████████	09 ████	Needs Attention
███████████	09 ████	Acceptable
███████████	09 ████	Needs Attention
███████████	09 ████	Excellent
███████████	09 ████	Needs Attention
███████████	09 ████	Excellent

Conclusion

Our goal is to always come back to the Doncaster Mathematics Vision.

We look forward to continuing development the family-school partnership and welcome any questions or feedback that families may have.