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| **87630Student(s) Name(s)/ ARCOTS Code**: | | | |
| **Date :** | | | |
| **Developmental Domain** | **Progression of Numeracy**  **Strand: Number** | | |
| **Developmental Level & Nutshell Statement** | **Level J –**  **Use linear equations and systems of linear equation to represent and solve both maths and real life problems. Generate tables, graphs, rules, expressions and equations to model real-world situation. Construct a function to model a linear relationship between two quantities. Classify function as linear or non-linear.** | | |
| **Evidence for this level?** (What makes you say this? | ARCOTS testing student ZPD was Level J. Analysis of work samples against the progression confirmed this. | | |
| ***What is the student ready to learn?*** | ***What are the expected outcomes and evidence?*** | ***What interventions has the teacher planned?*** | ***What worked? What next?*** |

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| **Learning Intention/s**  (Specific **skill** or concept or part thereof to be learned) | **Evidence** (What the students will be able to do, say, make or write): | **Teaching Strategy** (What the *teacher* says, does, makes or writes) | **Learning Activity**  (Describes what the students are actually going to do) | **Resources** (People, place or things used in the activity to realise the learning strategy) | **Review & Reflection** |
| Students will be able to generate tables, graphs, rules, expressions and equations to model real world situations. | - Students model real-life problems with linear, quadratic or exponential functions, both algebraically and graphically (approximate).  - Students present (in a visual, verbal or physical way) a mathematical relationship (graph, sequences, tables etc) | ***MIDDLE and UPPER YEARS***  ***Expositive***  • Teacher will review key ideas of linear, quadratic and exponential functions  ***Associative/Investigative***  • Teacher will ask students to organise groups to record the use of different goods (water, electricity, etc.) at home and present the information collected, describing graphs to represent their data.  • Teacher to emphasise how mathematics can be used to explain every day activities/occurrences, through student investigations, using questions such as:   * How are linear functions and properties of linear functions used in the real world? * What do the key features of a linear equation or graph mean in the context of a problem? * Why is it important to understand the different types of functions? * How can equations be created to model real-life situations? * How are quadratic functions and properties of quadratic functions used in the real world? * What do the key features of a quadratic equation or graph mean in the context of a problem? * How can technology help us to analyse functions and solve problems? * What makes an exponential function grow or decay? * What do the key features of an exponential graph mean in the context of a problem? * What do the key features of an exponential equation mean in the context of a problem? * What are the differences between linear, quadratic and exponential equations? * What are the differences between linear, quadratic and exponential graphs? | ***MIDDLE and UPPER YEARS***  • Students to record different real life situations, such as:  - The water consumption at home each 12 hours for 5 days. Measurements tabulated (time and reading with correct units).  - Kilometre reading of family car each day (at same time) for 7 days. Measurements tabulated (time and distance travelled with correct units).  - The maximum temperature of each day over 1-2 weeks (Day v Temp).  • Students to graph the above tables of results using suitable scales. Then draw a smooth or curved ‘line of best fit’, to show a graphical representation of their data.  • Then if practicable, using the features of graphs (intercepts, gradients etc) develop the equation for each of the above**.** | • Water meter, odometer, graph paper.  • Teachers can access to Ultranet eBookbox ‘Functions and Modelling’ where different interactive activities are available to work through this learning intention: Writing linear equations'Age' word problemsInclineQuadratic EquationsQuadratic equationsQuadratic word problems: projectile motionSkateboard rampPopulation change in AustraliaExponential growth and decayUnderstanding models of exponential growth and decayUnderstanding models of exponential growth and decayIncline | **Review Date:**  **Reflection:** |
| **Rationale:** | Differentiated context, the activities proposed on this Log can be suitable for middle and upper years’ students.  The PLT Log references an eBook box (‘Functions and Modelling’) which is available on the Ultranet as Design Space 66512121. The activities in the eBook box should be allocated to students according to the teacher’s knowledge. | | | | |

Was the teaching intervention successful?

If yes, what, if anything would the PLT do differently? If no, why not?