Appendix F

Problem Solving rubric taken from the 2003 Nelson Mathematics programme.

Criteria	Level 1 – Very Limited	Level 2 – Developing	Level 3 – [illegible]	Level 4 – [illegible]
Think: Understand the Problem	• Shows insufficient understanding of the problem (i.e., is unable to identify sufficient information or to restate problem)	• Shows partial understanding of the problem (i.e., is able to identify some of the relevant information but has difficulty restating problem)	• Shows complete understanding of the problem (i.e., is able to identify relevant information and to restate problem)	• Shows in-depth understanding of the problem (i.e., is able to differentiate between relevant and irrelevant information and is able to rephrase problem)
Plan: Make a Plan	• Decides upon one problem-solving strategy and does not develop a plan	• Decides upon one problem-solving strategy and develops a partial plan	○ Considers more than one problem-solving strategy and develops an appropriate plan	• Evaluates several problem-solving strategies and develops a succinct and appropriate plan
Do: Carry Out the Plan	• Uses one strategy and attempts to solve problem but does not arrive at an answer • Use of procedures includes major errors and/or omissions	• Carries out the plan to some extent, using one strategy, and develops a partial and/or incorrect solution • Use of procedures includes several errors and/or omissions	• Carries out the plan effectively by using an appropriate strategy and solving the problem ○ Use of procedures is mostly correct, but there may be a few minor errors and/or omissions	• Shows flexibility and insight when carrying out the plan by trying and adapting several strategies to solve the problem ○ Use of procedures includes almost no errors or omissions
Look Back: Review Solution	○ Is unable to identify either errors or omissions in the plan or in the attempted solution	○ Has some difficulty checking plan and attempted solution for errors and/or omissions	• Checks the plan and solution for procedural errors and omissions	○ Thoroughly reviews the plan and solution for effectiveness of strategies chosen and for procedural errors and omissions • Verifies the answer and judges whether it is reasonable
Communicate	• Provides an incomplete explanation of the strategy/solution that lacks clarity (i.e., uses very little mathematical language; makes very little use of mathematical representations—models, diagrams, graphs, tables)	• Provides a partial explanation of the strategy/solution that shows some clarity (i.e., uses some mathematical language correctly; makes some use of mathematical representations—models, diagrams, graphs, tables—as required/as necessary)	• Provides a complete and clear explanation of the strategy/solution (i.e., uses mathematical language correctly; makes appropriate use of mathematical representations—models, diagrams, graphs, tables—as required/as necessary)	○ Provides a thorough, clear, and insightful explanation of the strategy/solution (i.e., uses precise mathematical language; makes most appropriate use of mathematical representations—models, diagrams, graphs, tables—as required/as necessary)