



Young Scientist Awards



JUDGING RUBRIC: MANSW Working Mathematically, Years 10-12

Rubric 10-12	1	2	3	4	5
	<i>The student has provided evidence that he/she:</i>	<i>The student has provided evidence that he/she:</i>	<i>The student has provided evidence that he/she incorporated various components of Working Mathematically in their investigation or innovation:</i>	<i>The student has provided evidence that he/she incorporated various components of Working Mathematically in their investigation or innovation:</i>	<i>The student has provided clear and convincing evidence that he/she incorporated the interrelated components of Working Mathematically in their investigation or innovation:</i>
Communicating	- used everyday language and diagrams to describe their investigation or innovation.	- used some mathematical language, symbols and diagrams, along with some everyday language to explain their investigation or innovation.	- used a variety of mathematical language, symbols, diagrams, tables and graphs to communicate their mathematical strategies and accurately describe and discuss their results.	- used more sophisticated mathematical language, symbols, diagrams, tables and graphs to effectively explain results obtained and accurately communicate their mathematical strategies used.	- demonstrated sophisticated mathematical strategies using clear, concise and meaningful terminology, visuals and sequencing to effectively communicate these strategies.
Problem Solving	- attempted to use mathematical strategies to solve problems within their investigation or innovation.	- used some mathematical strategies to solve problems within their investigation or innovation.	- selected and applied mathematical strategies to formulate and explore problems within their project. -identified a problem or matter of interest, choosing suitable questions to seek data.	- demonstrated evidence of more sophisticated strategies used to plan and develop their project. - identified a problem or matter of interest, posing suitable questions for data collection.	- used sophisticated, efficient and even innovative strategies to formulate, solve and verify problems within their project. - investigated a problem or matter of interest, posing insightful questions to underpin collection of relevant data.
Reasoning	- provided some reasoning for the procedure selected but offered limited explanation for the mathematical concepts used or the data collected.	- attempted to explain the mathematical thinking and the strategies used. - offered some explanation for their choice of data collection and any conclusions reached.	- explained their mathematical thinking, justified their choices and the conclusions they reached. - discussed and explained most trends, patterns and relationships in the data collected.	- effectively explained their mathematical thinking and justified strategies used and conclusions reached within their project. -discussed and explained trends and relationships in data collected, including statistical analysis.	- used logical thought and critical thinking to explain and justify mathematical strategies used to compare and contrast related ideas and conclusions reached. - made valid conclusions based on a thorough statistical analysis of data.
Understanding	- demonstrated minimal understanding of the mathematical concepts used.	- demonstrated basic understanding of the mathematical concepts applied.	- demonstrated an understanding of the mathematical concepts applied.	- connected related ideas, represented concepts in different ways and accurately interpreted mathematical information.	-adapted and transferred mathematical concepts, made connections between related concepts and accurately interpreted mathematical information.
Fluency	- demonstrated minimal use of mathematical calculations.	- attempted to use some mathematical calculations. -detail missing from diagrams and tables.	- demonstrated competence when performing mathematical calculations. - included some of the elements of tables, graphs and diagrams needed to make sense of the information presented.	- clear evidence of effective mathematical calculations and appropriate procedures. - included most elements of tables, graphs and diagrams needed to make sense of the information presented.	- demonstrated effective, accurate, sophisticated and fluent mathematical calculations and procedures. - included all necessary elements (conventions) in tables, graphs and diagrams to make sense of the information being presented.