# Scientific Measurement Rubric

Rubric for measurement domain

| Category | Score (10) | Score (7) | Score (4) | Score (1) |
|---|---|---|---|---|
| Measuring | Consistently applies appropriate measuring techniques for various scientific phenomena. | Applies appropriate measuring techniques for most scientific phenomena. | Applies appropriate measuring techniques inconsistently. | Uses inappropriate measuring techniques or lacks understanding of measuring techniques. |
| Estimation | Makes accurate and well-reasoned estimations before and after measurements. | Makes reasonable estimations before or after measurements, but not consistently. | Makes estimations, but they lack reasoning or accuracy. | Does not attempt estimations. |
| Choosing Correct Units of Measure | Always selects the correct units of measure for the task and explains the rationale. | Usually selects the correct units of measure but may lack explanation. | Selects units inconsistently or incorrectly without explanation. | Uses incorrect units of measure throughout the task. |
| Appropriate Instrument Use | Demonstrates proficiency in using various scientific instruments, ensuring accurate data collection. | Uses most scientific instruments appropriately; minor errors may occur. | Shows difficulty using specific instruments, leading to potential inaccuracies. | Misuses instruments or lacks understanding of proper instrument use. |
| Units/Unit Conversions | Performs unit conversions flawlessly and explains the process effectively. | Performs most unit conversions accurately but may struggle with complex conversions or explanations. | Makes some errors in unit conversions and struggles to explain the process. | Makes significant errors in unit conversions or fails to understand the concept. |
| Dimensional Analysis | Effectively utilizes dimensional analysis to solve problems, analyze data, and interpret results. | Uses dimensional analysis to solve most problems but may struggle with complex scenarios. | Attempts dimensional analysis but makes significant errors or lacks understanding of the process. | Does not attempt dimensional analysis. |
| Accuracy and Precision | Consistently reports data with appropriate levels of accuracy and precision, understanding the importance of both. | Reports data with good accuracy, but precision may be inconsistent. | Reports data with some inconsistencies in accuracy or precision. | Reports data with significant inaccuracies or lacks understanding of accuracy and precision. |
| Using Technology in Science | Selects and utilizes appropriate technology (e.g., calculators, graphing software) to enhance data analysis, visualization, and problem solving. | Uses technology to support some aspects of data analysis or visualization. | Uses technology inconsistently or ineffectively. | Does not utilize technology or uses it inappropriately. |
| Incorporating Upper Level Math Concepts | Applies relevant upper-level math concepts (e.g., trigonometry, calculus) to analyze scientific data and solve complex problems. | Applies relevant upper-level math concepts to analyze scientific data and solve problems, with minor errors or explanations that may need more detail. | Shows limited understanding of applying upper-level math concepts or avoids them altogether. | Does not demonstrate knowledge or application of upper-level math concepts. |