Assessment Guidelines – 91581 – Investigate Bivariate Measurement Data

	Achieved (all compulsory)	Merit	Excellence
Problem	Identify a purpose and pose a relationship question which is informed by contextual knowledge.	The question is justified in context and linked to research.	The choice of variables is reflected on and linked to the context and research.
Plan	Data source is identified. The explanatory and response variables are clear.		
Data	Scatter plot(s) is produced with tile and labelled axis, units should be evident		
Analysis	Students need to use a visual inspection to describe features in the data, **before** fitting a model. Features need to include the strength and direction of the relationship, and could include whether a linear model is appropriate, clusters and unusual values. All comments should be in context.	Students need to take care to justify the existence of any unusual value/outlier with reference to the data set and the context. Evidence from the display is used to justify the features discussed	Contextual evidence and research is integrated to support discussion about the features of the data.
Model Fitting	An appropriate model is fitted and its equation is expressed in context.	Students could interpret the gradient in context and/or comment on the strength of the fit using the r value. Students discuss how well the model fits the data across the x value range in context. An analysis of the residuals may be used.	The fit of the model could be discussed by use of a residual plot with insight. The adequacy and strength of the model is reflected upon.
Predictions	A prediction is made for the response variable, using the model equation, in context, for at least one value of the explanatory variable. Prediction should be rounded appropriately.	The precision of the prediction could be discussed by reviewing the strength of the relationship and the scatter on the graph close to the relevant explanatory data value. Causation may be discussed in context.	The precision of the prediction could be discussed by use of error lines and/or a residual plot with insight. The relevance of predictions could be reflected upon with insight. Causation discussion linked to research with insight. Reflect on the model and consider other regression models based on evidence from the display or residual plot and justify and evaluate such models with insight including reflecting on prediction values. Improvements to the model could be considered by considering other variables e.g. separating the variable into relevant subsets or looking at another related variable with insight
Conclusion	Students need to answer their investigative question and state the nature of the relationship. The conclusion links to the purpose of the investigation.	The conclusion is linked to the question with contextual and evidential support.	Reflect on the investigation. Discuss limitations of and improvements to the investigation with insight.

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria in the Achievement Standard. Evidence for the award of a grade may be found anywhere in the report.