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| --- | --- | --- | --- | --- |
|  | A (8 marks) | B (5 marks) | C (4 marks) | D (2 marks) |
| Identifies and organises relevant information | Identifies the underlying assumptions related to the relevant mathematics of an investigation.   * Clearly identifies the explanatory and response variables * Explains how the explanatory and response variable are related to one another * Clearly defines the parameters of the range of data and explains the mathematical reasoning for the choice. * Discusses the context of the investigation in detail. | Identifies suitable variables and constant parameters related to various aspects of an investigation.   * Clearly identifies the explanatory and response variables * Briefly explains how the explanatory and response variable are related to one another * Clearly defines the parameters of the range of data * Briefly discusses the context of the investigation. | Identifies some mathematical content related to various aspects of an investigation in a given context.   * Identifies the explanatory and response variables * States that the explanatory and response variable are related * States the parameters of the range of data * Lists the context of the investigation. | Identifies limited mathematical content of an investigation.   * Identifies the explanatory and response variables * States the range of data |
|  | A (10 marks) | B (7 marks) | C (5 marks) | D (2 marks) |
| Chooses effective models and methods | Produces results, carries out analysis and generalises in situations requiring investigative techniques.  Chooses relevant analytical techniques   * Tables of data * Scatterplot produced via technology * Regression line present with equation * Evidence of linear and non-linear models applied to the data set * Produces r and r2 values * Calculation of residual values * Residual plots produced | Attempts to analyse and calculate specific cases of generalisation in situations requiring investigative techniques.  Chooses relevant analytical techniques   * Tables of data * Scatterplot produced via technology * Regression line present with equation * Produces r and r2 values * Calculation of residual values * Residual plots produced | Select appropriate methods to carry through a single thread of reasoning in situations requiring investigative techniques. Chooses relevant analytical techniques   * Tables of data * Scatterplot produced via technology * Regression line present with equation * Produces r and r2 values | Makes some attempt to select appropriate methods in situations requiring investigative techniques.  Chooses relevant analytical techniques   * Tables of data * Scatterplot produced via technology * Regression line present with equation |
|  | A (10 marks) | B (8 marks) | C (6 marks) | D (2 marks) |
| Follows mathematical conventions and accuracy | Selects, extends and applies mathematical and/or statistical procedures to investigate a problem. Explains the choices of analytical technique used.  Makes reasoned conclusions from calculated values.  Mathematical working is clearly set out and is easy to follow.  Critically analyses values calculated  Tables have clear headings and relevant units of measurement.  Graphs have:   * Title * Appropriate scale * Labelled axes * Data points plotted correctly * Scatterplots need:   + Regression line   + Regression line equation   + r or r2 values present | Selects and applies mathematical and/or statistical procedures previously learnt to investigate a problem.  Explains the choices of analytical technique used.  Makes conclusions from calculated values with some reasoning.  Mathematical working is present.  Tables have some headings and relevant units of measurement.  Graphs have:   * Title * Appropriate scale * Labelled axes * Most data points are present * Scatterplots need:   + Regression line   + Regression line equation   + r or r2 values missing | Selects and applies, with direction, mathematical and/or statistical procedures previously learnt to investigate a problem.  Makes conclusions from calculated values  Mathematical working is present.  Tables have some headings and relevant units of measurement.  Graphs have:   * Title * Appropriate scale * Labelled axes * Most data points are present * Scatterplots need:   + Regression line   + Regression line equation   + r or r2 values missing | Attempts to apply statistical procedures to a problem.  Mathematical working is not present.  Tables are present but it is not clear why they have been included.  Graphs have:   * Title * Inappropriate scale * Unlabelled axes * Majority of data points excluded with no explanation * No regression line |
|  | A (8 marks) | B (6 marks) | C (4 marks) | D (2 mark) |
| Links mathematical results to data and contexts to reach reasonable conclusions | Considers the strengths and limitations of an investigation and refines the results to make sensible conclusions. Compares and contrasts findings with reputable sources and makes comment on reliability  Discusses calculated results and links back to the underlying assumptions made.  Considers the impact of results in the context of the question  Includes other information sources to consider confounding factor/external variables where relevant  Suggests how to conduct a better analysis of the given variables and reasons why | Uses examples in mathematical analysis of an investigation and draws valid conclusions related to a given context.  Compares findings with other sources, (not necessarily reputable) and makes comment on reliability  Discusses calculated results with some links back to the underlying assumptions made  Considers the impact of results with some links to the context of the question  Includes other information sources to list confounding factor/external variables where relevant  Suggests how to conduct a better analysis of the given variables with some explanation | Make inferences from analysis and uses these to draw conclusions related to an investigation.  Makes comment on reliability based only on calculated results  Discusses calculated results with 1-2 links to the underlying assumptions made  Considers the impact of results with some links to the context of the question  Lists confounding factor/external variables where relevant with no supporting evidence | Draws some conclusions from the results of an investigation. Makes comment on reliability based only on calculated results  Discusses calculated results with no links to the underlying assumptions made  Does not consider confounding factors or external variables. |
|  | A (6 marks) | B (4 marks) | C (2 marks) | D (1 mark) |
| Communicates mathematical reasoning, results and conclusions | Communicates investigation findings with a comprehensive interpretation of mathematical results in the context of the investigation.  Report includes:  Introduction defining the parameters of the investigation and states the aim of the investigation  Body including mathematical working and discussion of results is embedded within the context of the investigation  Evidence of comparing and contrasting results with reputable information sources concentrating on the same or similar context  Conclusion is supported with evidence including:   * Calculated findings * Data from reputable sources | Communicates investigation findings in a systematic and concise way using mathematical language and relating the solution to the original problem or statement.  Introduction defines some parameters of the investigation and states the aim of the investigation  Body including mathematical working and discussion of results is partially embedded within the context of the investigation  Evidence of comparing and contrasting results with other information sources, (not necessarily reputable), concentrating on the same or similar context  Conclusion is supported with evidence from calculated findings | Communicates investigation findings in a systematic way using some mathematical expression and everyday language.  Introduction defines some parameters of the investigation and states the aim of the investigation  Body including mathematical working and discussion of results is partially embedded within the context of the investigation  Conclusion is supported with selection of evidence from calculated findings | Offers simple conclusions that are not supported by data or calculations  Introduction states some parameters of the investigation.  The aim of the investigation is poorly defined  Body including little or noe mathematical working and  discussion of results is not embedded within the context of the investigation  Conclusion is not supported by evidence from calculated findings |