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| --- | --- | --- | --- | --- |
|  | A (6 marks) | B (4 marks) | C (3 marks) | D (2 marks) |
| Identifies and organises relevant information | **Identifies the underlying assumptions related to the relevant mathematics of an investigation.**  Restates the problem in own words and includes reasonable assumptions made and explains why.  Lists the following and explains the context and detailed explanation of why a food diary is required and an exercise diary is required | **Identifies suitable variables and constant parameters related to various aspects of an investigation.**  Restates the problem in own words and includes assumptions made but does not explain reasoning.  States that a food diary and exercise diary is required with a brief statement explaining why. | **Identifies some mathematical content related to various aspects of an investigation in a given context.**  Restates the problem that is being solved in own words. States that a food diary and exercise diary is required with an attempt at explaining the context with 1 – 2 assumptions. | **Identifies limited mathematical content of an investigation.**  Does not state the problem being solved in own words  States requirements as a list or in an unclear manner.  No assumptions made to allow for estimation or support the mathematical thinking process |
|  | A (12 marks) | B (8 marks) | C (6 marks) | D (4 marks) |
| Chooses effective models and methods | **Produces results, carries out analysis and generalises in situations requiring investigative techniques.**   * + 1. **Ascertain the reasonableness of answers, in terms of context, to arithmetic calculations** - Amounts of energy calculated are based on researched values **-** The values calculated are reasonable for the assumptions made in the introduction.     2. **Round up or round down answers to the accuracy required, including to the required number of decimal places -** Values involving rounding are without errors and a consistent approach has been used in rounding.     3. **Use units of energy used for foods, including kilojoules and calories**   - Values for foods are clearly referenced and can be easily verified   * + 1. **Use units of energy to describe the amount of energy expended during activity** - Values for exercise and physical activity are clearly referenced and can be easily verified | **Attempts to analyse and calculate specific cases of generalisation in situations requiring investigative techniques.**   * + 1. **Ascertain the reasonableness of answers, in terms of context, to arithmetic calculations** - Amounts of energy calculated are mostly based on researched values **-** The values calculated are reasonable and account for most of the assumptions made in the introduction.     2. **Round up or round down answers to the accuracy required, including to the required number of decimal places -** Values involving rounding have 1 - 2 errors and a consistent approach has been used in rounding.     3. **Use units of energy used for foods, including kilojoules and calories**   - Values for foods are not all clearly referenced but can be easily verified   * + 1. **Use units of energy to describe the amount of energy expended during activity** - Values for exercise and physical activity are not all clearly referenced and but can be easily verified | **Select appropriate methods to carry through a single thread of reasoning in situations requiring investigative techniques.**   * + 1. **Ascertain the reasonableness of answers, in terms of context, to arithmetic calculations** - Some values of energy calculated are based on researched values.  **-** The values calculated are reasonable but do not match the assumptions made in the introduction.     2. **Round up or round down answers to the accuracy required, including to the required number of decimal places -** Values involving rounding have 1 -2 errors and an inconsistent approach has been used in rounding.     3. **Use units of energy used for foods, including kilojoules and calories**   - Values for foods are not all clearly referenced and is difficult to verify.   * + 1. **Use units of energy to describe the amount of energy expended during activity** - Values for exercise and physical activity are not all clearly referenced and is difficult to verify | **Makes some attempt to select appropriate methods in situations requiring investigative techniques.**   * + 1. **Ascertain the reasonableness of answers, in terms of context, to arithmetic calculations** - Values of energy calculated are not based on researched values  **-** The values calculated are not reasonable or are not based on assumptions     2. **Round up or round down answers to the accuracy required, including to the required number of decimal places -** Values involving rounding have frequent errors and an inconsistent approach has been used in rounding.     3. **Use units of energy used for foods, including kilojoules and calories**   - Values for foods are not all clearly referenced and cannot be verified   * + 1. **Use units of energy to describe the amount of energy expended during activity** - Values for exercise and physical activity are not clearly referenced and cannot be verified |
|  | A (10 marks) | B (7 marks) | C (5 marks) | D (3 marks) |
| Follows mathematical conventions and accuracy | **Selects, extends, and applies mathematical and/or statistical procedures to investigate a problem.**   * Uses MS Excel or other ICT software to create a food diary and exercise diary with a clear organisation of data * Accurately calculate the difference between recorded data and theoretical data or reference values using percentages using formulas in MS Excel * Selects relevant methods to display information in tables and graphs and discusses the information shown.   + 1. **Convert from one unit of energy to another, such as calories/kilojoules** - Formula is entered into MS Excel correctly to convert energy between calories and kilojoules | **Selects and applies mathematical and/or statistical procedures previously learnt to investigate a problem**.   * A food diary and exercise diary both demonstrate clear organisation of data * Accurately calculate the difference between recorded data and theoretical data or reference values using percentages * Selects relevant methods to display information in tables and graphs and provides brief statements on information shown   + 1. **Convert from one unit of energy to another, such as calories/kilojoules** - Working out is mostly presented clearly and is straightforward to follow and interpret | **Selects and applies, with direction, mathematical and/or statistical procedures previously learnt to investigate a problem.**   * A food diary and exercise diary have an organisation of data but is not able to be followed with ease * The difference between recorded data and theoretical data or reference values is calculated using only subtraction as a comparison between data * Selects relevant methods to display information in tables and graphs and includes a caption   + 1. **Convert from one unit of energy to another, such as calories/kilojoules** - Working out is presented clearly and can be followed but not all information is present. | **Attempts to apply mathematical and/or statistical procedures to a problem.**   * Food and exercise has not been organised into a diary format and is difficult to follow * The difference between recorded data and theoretical data or reference values is calculated using only subtraction as a comparison between data * Selects methods to display information in tables and graphs that have no relevance or selects inappropriate displays of data   + 1. **Convert from one unit of energy to another, such as calories/kilojoules** - Working out is not presented clearly and is difficult to follow. Information is missing. |
|  | A (6 marks) | B (4 marks) | C (3 marks) | D (2 marks) |
| 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.**   * States whether assumptions and results are reflective of a typical person and explains reasoning in detail * States how to improve validity of results either with increased numbers of people and a longer period of analysis | **Uses examples in mathematical analysis of an investigation and draws valid conclusions related to a given context.**   * States whether assumptions and results are reflective of a typical person with brief explanation of reasoning * States how to improve validity of results either with increased numbers of people or longer period of analysis | **Make inferences from analysis and uses these to draw conclusions related to an investigation.**   * States whether assumptions and results are reflective of a typical person with a singular statement for reasoning * States that there the results can be improved but makes no suggestions how. | **Draws some conclusions from the results of an investigation.**   * States whether assumptions and results are reflective of a typical person with a singular statement and does not provide reasoning. * Does not make suggestions to improve results. |
|  | A (6 marks) | B (4 marks) | C (3 marks) | D (2 marks) |
| **Communicates mathematical reasoning, results, and conclusions** | **Communicates investigation findings with a comprehensive interpretation of mathematical results in the context of the investigation.** | **Communicates investigation findings in a systematic and concise way using mathematical language and relating the solution to the original problem or statement.** | **Communicates investigation findings in a systematic way using some mathematical expression and everyday language.** | **Offers simple conclusions that are not supported by data or calculations** |

Overall Feedback: