**Stage 2 Essential Mathematics**

**Assessment Type 2: Folio**

**Correlation Investigation: “What’s in my food?”**

Society has become increasingly aware of what we eat, particularly foods that are processed. People often want to know how they can tell if foods are more nutritious than others.

In this investigation you will begin by investigating relationships related to the different macromolecules (carbohydrates, fats and protein) and their effect on the energy (kilojoules) in different foods. You could also investigate branding such as “low in fat”, “low in sugar”, “high in protein” to find correlation between these labels and other components found on food labels. For example, if a company brands a product as “low in fat”, does this effect the levels of sugar or salt in that product? Is there a correlation between these components?

Depending on the strength of any correlation found you can make predictions, with the support of digital technology, about other types of foods based on the information available.

**Part 1: Investigating Yoghurt**

Yoghurt tubs clearly state the nutritional content of the yoghurt. As a class, collect and display different tubs of yoghurt from various brands available. Record all of the nutritional data in a digital spreadsheet for use by the class in the task below.

* Look carefully at the data. Make at least two clear predictions about any relationships you can see between different nutrition groups, or even combinations of groups. E.g. as sugar

levels increase in yoghurt, …

* Use the data to create scatterplots of the correlations between:
* Total Sugars and energy (Kj)
* Total Fats and energy (Kj)
* Total Fats + Total Sugars against energy (Kj)
* Make sure each graph includes the equation of the suggested linear relationship and the $r$ and $r^{2}$ values.
* Choose one of your graphs. Determine whether there is a causal relationship. Explain clearly what the $r$ and $r^{2}$ values suggest about the relationship between the two variables being graphed.



**Using linear models to make predictions**

Since compiling the data set above, we have gone on to find two further pots of yoghurt. However, some of the nutritional data for these pots is missing.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Energy (kJ)** | **Protein (g)** | **Fat (g)** | **Carbs (g)** | **Sugars (g)** |
| **Yoghurt Brand A** |  | 12.2 | 9.1 | 18.3 | 17.5 |
| **Yoghurt Brand B** | 390 | 7.2 |  | 10.1 |  |

* Use the appropriate equations from your graphs to predict as many of the missing values as possible. Show all calculations carefully.
* Consider whether your predictions are interpolations or extrapolations of the data. Carefully explain the reliability of these predictions.

**Part 2: Investigating Another Food Product**

For Part 2, data has been provided below for a wide range of snack bars. Use a systematic sampling method to select your sample. Clearly explain *how you selected your sample* and outline any concerns you might have about your sampling method. Place your sample in the appendix of your report.

If preferred, you can choose to use the data provided on snack bars or if you are interested in a different type of food you can collect your own data based on personal interest.

As in Part 1 above, decide on what nutritional values you want to correlate.

Clearly state what relationship/s are being explored for the data on snack bars (or food selection of your choice). Make a prediction about how strong the relationship/s will be and, therefore, how reliable one nutritional value will be at predicting another. At least one relationship should be investigated in this section but preferably two or three can be included.

Create scatterplots and graph any linear correlations in the sample.

Determine whether there is a causal relationship. Clearly and fully interpret any $r and/or r^{2} $values found.

Carefully use the linear equations of the strongest correlation found to predict the nutritional values of other examples from your chosen group of products not selected in the sample.

Compare your predictions to the actual values.

Discuss the reliability and accuracy of these predictions. You are advised to consider both interpolations and extrapolations where possible.

You may also consider developing your models further by removing any outliers. Justify your reason for removing the outlier and discuss the effect of removing these outliers on the results.

The evidence for each investigation, excluding bibliography and appendices, must be a maximum of 10 A4 pages. The headings below can provide a guideline for the structure of writing a mathematical investigation.

* Introduction

 -Explain the problem that is to be solved.

 -Briefly describe the mathematics that will be used to solve the problem (strategies, formulas, technology etc.).

* Application

 -Summarise any relevant data or information that has been collected or provided and will be used to solve the problem/s.

 -Include all mathematical calculations/working and results. Use appropriate representations (e.g. symbols/notation, tables, graphs, diagrams, images).

 -Throughout this section, interpret the results and highlight any trends or findings. Always interpret and discuss the results in the context of the original problem.

 Discussion

 -Evaluate the accuracy of any predications made.

 -Discuss the reasonableness of the results obtained (are the results as expected? do they seem correct/consistent with other information? What other strategies or methods could be used to confirm the results?)

 -Discuss any assumptions made throughout the investigation

 -Discuss any limitations such as exceptions that might not fit with the findings

Conclusion

 Summarise the results and relate them back to the original problem. Outline the conclusions that have been made and what has been discovered by completing this investigation.

* Bibliography

 -Using the Harvard system, reference any sources (websites, books etc.) used in writing the investigation.

Appendices

-Include if appropriate e.g. repetitive calculations or spreadsheets/tables too large to fit into Section B of the report.

**Performance Standards for Stage 2 Essential Mathematics**

| - | **Concepts and Techniques** | **Reasoning and Communication** |
| --- | --- | --- |
| **A** | Comprehensive knowledge and understanding of concepts and relationships.Highly effective selection and application of mathematical techniques and algorithms to find efficient and accurate solutions to routine and complex problems in a variety of contexts.Successful development and application of mathematical models to find concise and accurate solutions.Appropriate and effective use of electronic technology to find accurate solutions to routine and complex problems. | Comprehensive interpretation of mathematical results in the context of the problem.Drawing logical conclusions from mathematical results, with a comprehensive understanding of their reasonableness and limitations.Proficient and accurate use of appropriate mathematical notation, representations, and terminology.Highly effective communication of mathematical ideas and reasoning to develop logical and concise arguments.Formation and testing of appropriate predictions, using sound mathematical evidence. |
| **B** | Some depth of knowledge and understanding of concepts and relationships.Mostly effective selection and application of mathematical techniques and algorithms to find mostly accurate solutions to routine and some complex problems in a variety of contexts.Attempted development and successful application of mathematical models to find mostly accurate solutions.Mostly appropriate and effective use of electronic technology to find mostly accurate solutions to routine and some complex problems. | Mostly appropriate interpretation of mathematical results in the context of the problem.Drawing mostly logical conclusions from mathematical results, with some depth of understanding of their reasonableness and limitations.Mostly accurate use of appropriate mathematical notation, representations, and terminology.Mostly effective communication of mathematical ideas and reasoning to develop mostly logical arguments.Formation and testing of mostly appropriate predictions, using some mathematical evidence. |
| **C** | Generally competent knowledge and understanding of concepts and relationships.Generally effective selection and application of mathematical techniques and algorithms to find mostly accurate solutions to routine problems in different contexts.Successful application of mathematical models to find generally accurate solutions.Generally appropriate and effective use of electronic technology to find mostly accurate solutions to routine problems. | Generally appropriate interpretation of mathematical results in the context of the problem.Drawing some logical conclusions from mathematical results, with some understanding of their reasonableness and limitations.Generally appropriate use of mathematical notation, representations, and terminology, with reasonable accuracy.Generally effective communication of mathematical ideas and reasoning to develop some logical arguments.Formation of an appropriate prediction and some attempt to test it using mathematical evidence. |
| **D** | Basic knowledge and some understanding of concepts and relationships.Some selection and application of mathematical techniques and algorithms to find some accurate solutions to routine problems in some contexts.Some application of mathematical models to find some accurate or partially accurate solutions.Some appropriate use of electronic technology to find some accurate solutions to routine problems. | Some interpretation of mathematical results.Drawing some conclusions from mathematical results, with some awareness of their reasonableness.Some appropriate use of mathematical notation, representations, and terminology, with some accuracy.Some communication of mathematical ideas, with attempted reasoning and/or arguments.Attempted formation of a prediction with limited attempt to test it using mathematical evidence. |
| **E** | Limited knowledge or understanding of concepts and relationships.Attempted selection and limited application of mathematical techniques or algorithms, with limited accuracy in solving routine problems.Attempted application of mathematical models, with limited accuracy.Attempted use of electronic technology, with limited accuracy in solving routine problems. | Limited interpretation of mathematical results.Limited understanding of the meaning of mathematical results, their reasonableness or limitations.Limited use of appropriate mathematical notation, representations, or terminology, with limited accuracy.Attempted communication of mathematical ideas, with limited reasoning.Limited attempt to form or test a prediction. |

The data below includes 224 different snack bars that are readily available to purchase in supermarkets and retail outlets throughout Australia.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bars** | **Bar type** | **Bar size** | **Energy** | **Energy** | **Protein** | **Sat Fat** | **Sugars** | **Fibre** | **Sodium** | **Wholegrains****per serve (g)** | **Health Star****Rating** |
| **(g)** | **per serve (kJ)** | **kJ/100g** | **(g/100g)** | **(g/100g)** | **(g/100g)** | **(g/100g)** | **(mg/100g)** |
| Snack Bar 1 | protein bar | 40 | 600 | **1500** | 26 | 7.6 | 3 | 15.3 | 239 | na | 3.5 |
| Snack Bar 2 | raw bar | 40 | 587 | **1468** | 4.6 | 2.6 | 52.7 | 8 | 6 | na | 2.5 |
| Snack Bar 3 | nut bar | 40 | 657 | **1643** | 8 | 10 | 9.3 | 13.5 | 47 | 0.1 | 3 |
| Snack Bar 4 | protein bar | 40 | 567 | **1418** | 25.6 | 7.3 | 5.1 | 12.4 | 219 | na | 3 |
| Snack Bar 5 | oat slice | 100 | 1770 | **1770** | 7 | 11.4 | 20.12 | 7.7 | 179 | 30 | 2 |
| Snack Bar 6 | oat slice | 100 | 1815 | **1815** | 7.5 | 13.85 | 19.36 | 6.75 | 177 | 30 | 2 |
| Snack Bar 7 | oat slice | 100 | 1798 | **1798** | 7.1 | 12.34 | 16.94 | 7.5 | 193 | 30 | 2 |
| Snack Bar 8 | oat slice | 100 | 1958 | **1958** | 8.7 | 12.31 | 16.62 | 7.9 | 184 | 30 | 2 |
| Snack Bar 9 | oat slice | 100 | 1807 | **1807** | 7.5 | 14.11 | 19.45 | 6.75 | 186 | 30 | 1.5 |
| Snack Bar 10 | oat slice | 100 | 1819 | **1819** | 7.7 | 13.54 | 23.11 | 7.1 | 177 | 30 | 1.5 |
| Snack Bar 11 | cereal bar | 22 | 371 | **1686** | 3.8 | 2.9 | 22 | 5.6 | 99 | 8.1 | 3 |
| Snack Bar 12 | cereal bar | 22 | 380 | **1727** | 3.1 | 3.5 | 22 | 5.1 | 96 | 8.1 | 2.5 |
| Snack Bar 13 | muesli bar | 22 | 360 | **1636** | 6.4 | 1.7 | 32.2 | 7.8 | 19 | 7.7 | 4 |
| Snack Bar 14 | muesli bar | 22 | 359 | **1632** | 6.4 | 1.7 | 31.7 | 7.8 | 19 | 7.7 | 4 |
| Snack Bar 15 | nut bar | 40 | 780 | **1950** | 12.6 | 2.2 | 28 | 6.2 | 55 | na | 3 |
| Snack Bar 16 | nut bar | 40 | 892 | **2230** | 20 | 4.3 | 20.2 | 7.1 | 15 | na | 3 |
| Snack Bar 17 | muesli bar | 32 | 467 | **1459** | 6.6 | 1.4 | 20.7 | 12.4 | 170 | 16.3 | 4 |
| Snack Bar 18 | muesli bar | 32 | 483 | **1509** | 7.9 | 1.7 | 14.3 | 12.6 | 180 | 16.6 | 4 |
| Snack Bar 19 | muesli bar | 32 | 477 | **1491** | 7.5 | 1.6 | 18.3 | 12.6 | 180 | 14.7 | 4 |
| Snack Bar 20 | muesli bar | 45 | 768 | **1707** | 9.1 | 2.5 | 17.3 | 6.8 | 20 | 18 | 3.5 |
| Snack Bar 21 | muesli bar | 35 | 623 | **1780** | 7.1 | 5.4 | 23.6 | 8.5 | 14 | 9.5 | 3 |
| Snack Bar 22 | muesli bar | 35 | 623 | **1780** | 6.7 | 5.3 | 25.6 | 7.7 | 12 | 9.5 | 3 |
| Snack Bar 23 | muesli bar | 35 | 638 | **1823** | 9.9 | 2.5 | 19 | 5.1 | 38 | na | 3.5 |
| Snack Bar 24 | protein bar | 40 | 803 | **2008** | 25.3 | 5.4 | 24.5 | 5 | 203 | na | 2.5 |
| Snack Bar 25 | protein bar | 40 | 715 | **1788** | 25.9 | 4 | 25 | 4 | 182 | na | 2.5 |
| Snack Bar 26 | muesli bar | 35 | 623 | **1780** | 8.6 | 4.9 | 22.6 | 7.5 | 40 | 9.5 | 3 |
| Snack Bar 27 | nut bar | 35 | 714 | **2040** | 14.2 | 3.5 | 22.9 | 8.5 | 9 | na | 3.5 |
| Snack Bar 28 | nut bar | 35 | 737 | **2106** | 16.4 | 3.2 | 14.5 | 8.3 | 9 | na | 4.5 |
| Snack Bar 29 | nut bar | 32 | 641 | **2003** | 17.3 | 6.3 | 17.2 | 9.8 | 9 | na | 3.5 |
| Snack Bar 30 | nut bar | 32 | 662 | **2069** | 12.3 | 9 | 25.4 | 3.1 | 74 | na | 2 |
| Snack Bar 31 | oat slice | 35 | 715 | **2043** | 7 | 17.6 | 27.8 | 7.5 | 184 | 10.5 | 1 |
| Snack Bar 32 | oat slice | 35 | 678 | **1937** | 6.3 | 21.1 | 26 | 5.6 | 175 | 10.2 | 1 |
| Snack Bar 33 | oat slice | 35 | 684 | **1954** | 6 | 19.7 | 26.2 | 5.6 | 175 | 10.5 | 1 |
| Snack Bar 34 | oat slice | 35 | 663 | **1894** | 7.4 | 17 | 26.4 | 5.7 | 170 | 9.8 | 2 |
| Snack Bar 35 | muesli bar | 45 | 799 | **1776** | 9.9 | 2.3 | 13.6 | 7.3 | 11 | 21.2 | 4 |
| Snack Bar 36 | muesli bar | 45 | 796 | **1769** | 13.3 | 3.7 | 14.7 | 8.1 | 26 | 18.5 | 4 |
| Snack Bar 37 | cereal bar | 31 | 490 | **1581** | 6.8 | 3.5 | 23.2 | 4.8 | 130 | na | 2.5 |
| Snack Bar 38 | muesli bar | 45 | 797 | **1771** | 9.7 | 2.3 | 17.9 | 6.6 | 18 | 18.5 | 4 |
| Snack Bar 39 | muesli bar | 45 | 765 | **1700** | 9.5 | 1.9 | 31.3 | 6.8 | 14 | 17.6 | 3 |
| Snack Bar 40 | nut bar | 35 | 816 | **2331** | 11.5 | 16.6 | 30.4 | 4.4 | 85 | na | 1 |
| Snack Bar 41 | nut bar | 35 | 749 | **2140** | 14.4 | 7.2 | 27.8 | 5.1 | 50 | na | 2 |
| Snack Bar 42 | nut bar | 35 | 746 | **2131** | 15.9 | 5.6 | 23.6 | 6.2 | 32 | na | 2.5 |
| Snack Bar 43 | cereal bar | 31 | 561 | **1810** | 6.1 | 5.6 | 26.2 | 4.8 | 66 | na | 2.5 |
| Snack Bar 44 | cereal bar | 31 | 498 | **1606** | 6.3 | 5.8 | 25.2 | 4.3 | 70 | na | 2.5 |
| Snack Bar 45 | cereal bar | 31 | 555 | **1790** | 5.8 | 7.3 | 25.2 | 4.8 | 90 | na | 2 |
| Snack Bar 46 | seed bar | 35 | 550 | **1571** | 10.3 | 1.1 | 21.4 | 16.3 | 43 | na | 5 |
| Snack Bar 47 | seed bar | 35 | 574 | **1640** | 9.9 | 0.6 | 21.3 | 15.7 | 7 | na | 5 |
| Snack Bar 48 | raw bar | 40 | 667 | **1668** | 9.8 | 1.5 | 41.5 | 9.9 | 28 | na | 4.5 |
| Snack Bar 49 | raw bar | 35 | 593 | **1694** | 6.4 | 9.7 | 44.6 | 10.1 | 27.9 | na | 3 |
| Snack Bar 50 | raw bar | 30 | 497 | **1657** | 8.1 | 3.3 | 43.6 | 9 | 27.9 | na | 3 |
| Snack Bar 51 | raw bar | 40 | 692 | **1730** | 9 | 3.8 | 39.6 | 8.2 | 28 | na | 4 |
| Snack Bar 52 | raw bar | 40 | 663 | **1658** | 8.5 | 1.2 | 44.2 | 9.3 | 8 | na | 4.5 |
| Snack Bar 53 | raw bar | 40 | 664 | **1660** | 8.8 | 3.2 | 36.8 | 11.7 | 10 | na | 4.5 |
| Snack Bar 54 | oat slice | 120 | 2412 | **2010** | 7.2 | 18.8 | 28.7 | 6.2 | 156 | na | 1 |
| Snack Bar 55 | muesli bar | 25 | 403 | **1612** | 7 | 2.9 | 24 | 8.6 | 24 | na | 4 |
| Snack Bar 56 | muesli bar | 25 | 370 | **1480** | 7.5 | 1.8 | 20.4 | 2.4 | 14 | na | 4 |
| Snack Bar 57 | muesli bar | 25 | 431 | **1724** | 10.4 | 2.2 | 8.1 | 9.4 | 35 | na | 4.5 |
| Snack Bar 58 | muesli bar | 25 | 400 | **1600** | 6.9 | 2.8 | 24 | 8.6 | 28 | na | 4 |
| Snack Bar 59 | muesli bar | 30 | 516 | **1720** | 8.2 | 4 | 11.6 | 11.1 | 29 | na | 4.5 |
| Snack Bar 60 | muesli bar | 35 | 507 | **1449** | 6.5 | 1.6 | 15.6 | 4.3 | 12.5 | na | 4 |
| Snack Bar 61 | muesli bar | 25 | 460 | **1840** | 10.4 | 4.5 | 13.2 | 7.9 | 32 | na | 4.5 |
| Snack Bar 62 | muesli bar | 29 | 471 | **1624** | 5 | 2.4 | 21.6 | 8.9 | 40 | na | 4 |
| Snack Bar 63 | muesli bar | 35 | 530 | **1514** | 5.7 | 1.9 | 15.7 | 9.4 | 30 | 15.8 | 4 |
| Snack Bar 64 | muesli bar | 35 | 530 | **1514** | 6 | 2.1 | 14.3 | 9.7 | 30 | 15.8 | 4 |
| Snack Bar 65 | muesli bar | 35 | 580 | **1657** | 6.8 | 4.4 | 12.4 | 9.3 | 30 | 17.2 | 4 |
| Snack Bar 66 | muesli bar | 24 | 396 | **1650** | 4.7 | 3.8 | 20.1 | 9.1 | 80 | na | 3.5 |
| Snack Bar 67 | muesli bar | 28 | 466 | **1664** | 6.5 | 2.8 | 21.3 | 8.3 | 51 | na | 4 |
| Snack Bar 68 | muesli bar | 25 | 411 | **1644** | 9.7 | 1.5 | 15.7 | 10 | 164 | na | 4.5 |
| Snack Bar 69 | muesli bar | 33 | 552 | **1673** | 6.3 | 3.2 | 20.5 | 8.6 | 41 | na | 3.5 |
| Snack Bar 70 | cereal bar | 24 | 396 | **1650** | 4.3 | 3.6 | 20.5 | 8.6 | 80 | na | 3.5 |
| Snack Bar 71 | nut bar | 40 | 840 | **2100** | 16.8 | 4.8 | 10 | 7.4 | 87 | na | 4.5 |
| Snack Bar 72 | nut bar | 40 | 769 | **1923** | 12.1 | 3.2 | 24 | 10.8 | 19 | na | 4.5 |
| Snack Bar 73 | nut bar | 35 | 680 | **1943** | 11.3 | 5.4 | 26.8 | 9.9 | 19 | na | 3.5 |
| Snack Bar 74 | protein bar | 50 | 949 | **1898** | 27 | 4 | 21.9 | 3.5 | 13 | na | 4 |
| Snack Bar 75 | protein bar | 50 | 983 | **1966** | 26.4 | 4.7 | 17.9 | 3.8 | 13 | na | 4 |
| Snack Bar 76 | nut bar | 50 | 1101 | **2202** | 4.5 | 12.4 | 38.1 | 6.7 | 66 | na | 1.5 |
| Snack Bar 77 | nut bar | 50 | 1114 | **2228** | 4.9 | 13.1 | 39.1 | 5.7 | 59 | na | 1.5 |
| Snack Bar 78 | nut bar | 40 | 758 | **1895** | 7.5 | 15 | 32.7 | 9.7 | 31 | na | 2 |
| Snack Bar 79 | nut bar | 45 | 945 | **2100** | 16.8 | 4.8 | 10 | 7.4 | 87 | na | 4.5 |
| Snack Bar 80 | nut bar | 45 | 955 | **2122** | 14.2 | 3.9 | 17.9 | 8.4 | 20 | na | 4.5 |
| Snack Bar 81 | nut bar | 35 | 575 | **1643** | 6.4 | 3 | 27.3 | 5.4 | 57 | na | 3 |
| Snack Bar 82 | nut bar | 40 | 868 | **2170** | 15.3 | 4.3 | 13.5 | 7.8 | 22 | na | 4.5 |
| Snack Bar 83 | nut bar | 45 | 885 | **1967** | 10.2 | 3.9 | 22.3 | 8.4 | 19 | na | 4 |
| Snack Bar 84 | nut bar | 50 | 979 | **1958** | 10 | 9.1 | 41.3 | 6.1 | 23 | na | 1.5 |
| Snack Bar 85 | nut bar | 40 | 770 | **1925** | 6.9 | 16.7 | 35.9 | 5.9 | 61 | na | 1.5 |
| Snack Bar 86 | cereal bar | 30 | 405 | **1350** | 3.7 | 0.2 | 40 | 4.3 | 79 | na | 3 |
| Snack Bar 87 | raw bar | 40 | 574 | **1435** | 6.6 | 0.1 | 49.9 | 11 | 2 | na | 4 |
| Snack Bar 88 | raw bar | 40 | 588 | **1470** | 4.3 | 9.9 | 50.6 | 11.9 | 4 | na | 3 |
| Snack Bar 89 | raw bar | 40 | 638 | **1595** | 6.4 | 2.3 | 45.3 | 10.8 | 2 | na | 4 |
| Snack Bar 90 | raw bar | 40 | 612 | **1530** | 5.7 | 3 | 47.8 | 11 | 2 | na | 4 |
| Snack Bar 91 | raw bar | 30 | 480 | **1600** | 8.6 | 2.3 | 50.2 | 11.7 | 12 | na | 4 |
| Snack Bar 92 | raw bar | 40 | 668 | **1670** | 7.5 | 4.3 | 45.9 | 12 | 15 | na | 4 |
| Snack Bar 93 | raw bar | 40 | 712 | **1780** | 5.3 | 10 | 48 | 9.9 | 11 | na | 3 |
| Snack Bar 94 | seed bar | 30 | 576 | **1920** | 12.3 | 4.9 | 12.3 | 8.2 | 16 | na | 4 |
| Snack Bar 95 | seed bar | 30 | 567 | **1890** | 11.5 | 3.3 | 14.7 | 7.9 | 13 | na | 4 |
| Snack Bar 96 | seed bar | 30 | 594 | **1980** | 15 | 3.5 | 11.2 | 7.6 | 17 | na | 4.5 |
| Snack Bar 97 | seed bar | 40 | 289 | **723** | 11.4 | 8.2 | 35.3 | 5.8 | 63 | na | 2 |
| Snack Bar 98 | seed bar | 40 | 213 | **533** | 13.9 | 4.4 | 31.1 | 6.7 | 85 | na | 2.5 |
| Snack Bar 99 | seed bar | 40 | 290 | **725** | 11.4 | 10.5 | 35.3 | 3.1 | 61 | na | 1.5 |
| Snack Bar 100 | cereal bar | 35 | 524 | **1497** | 7.9 | 2.9 | 18.9 | 20.5 | 32 | 16.1 | 4.5 |
| Snack Bar 101 | cereal bar | 20 | 308 | **1540** | 2.4 | 5 | 27.1 | 11.3 | 160 | na | 3 |
| Snack Bar 102 | cereal bar | 20 | 302 | **1510** | 1.7 | 4.8 | 22.6 | 12.3 | 170 | na | 3 |
| Snack Bar 103 | cereal bar | 20 | 322 | **1610** | 2.4 | 8.3 | 29.1 | 10.6 | 180 | na | 2.5 |
| Snack Bar 104 | muesli bar | 31 | 524 | **1690** | 5.8 | 7.6 | 22.8 | ns | 72 | 9.9 | 1.5 |
| Snack Bar 105 | muesli bar | 31 | 558 | **1800** | 5.8 | 11.4 | 33.8 | ns | 89 | 6.8 | 1 |
| Snack Bar 106 | muesli bar | 31 | 564 | **1819** | 5.6 | 10.2 | 31.3 | ns | 129 | 5.9 | 1 |
| Snack Bar 107 | muesli bar | 31 | 570 | **1839** | 6 | 11.7 | 28.1 | ns | 74 | 9.3 | 1 |
| Snack Bar 108 | muesli bar | 31 | 577 | **1861** | 6.2 | 11.7 | 28.3 | ns | 80 | 9.6 | 1 |
| Snack Bar 109 | muesli bar | 42 | 777 | **1850** | 10 | 2 | 31 | 5 | 282 | 20.2 | 2.5 |
| Snack Bar 110 | muesli bar | 42 | 802 | **1910** | 11 | 2 | 26 | 5 | 300 | 18.1 | 2.5 |
| Snack Bar 111 | baked bar | 37.5 | 510 | **1360** | - | 0.4 | 33.6 | - | 190 | na | 3 |
| Snack Bar 112 | baked bar | 37.5 | 506 | **1349** | 4.9 | 0.4 | 30.6 | 8.4 | 190 | na | 3.5 |
| Snack Bar 113 | baked bar | 37.5 | 521 | **1389** | 5.3 | 0.7 | 33 | 8.1 | 200 | na | 3 |
| Snack Bar 114 | oat slice | 40 | 720 | **1800** | 6.5 | 11.4 | 33.7 | 6.1 | 210 | 6.4 | 1.5 |
| Snack Bar 115 | oat slice | 40 | 752 | **1880** | 6.6 | 12.9 | 35.5 | 7 | 230 | 7.6 | 1.5 |
| Snack Bar 116 | oat slice | 40 | 732 | **1830** | 7.1 | 12.4 | 34.3 | 5 | 210 | 8.8 | 1.5 |
| Snack Bar 117 | muesli bar | 45 | 846 | **1880** | 9.2 | 4.8 | 18.4 | 9.7 | 26 | 18.9 | 3 |
| Snack Bar 118 | muesli bar | 45 | 842 | **1871** | 10.2 | 3.9 | 14.2 | 7.6 | 27 | 18.9 | 4 |
| Snack Bar 119 | muesli bar | 45 | 774 | **1720** | 7.9 | 3.4 | 21.3 | 7.2 | 28 | 18.5 | 3.5 |
| Snack Bar 120 | cereal bar | 30 | 621 | **2070** | 13 | 8.1 | 24.1 | 5.1 | 265 | na | 1.5 |
| Snack Bar 121 | muesli bar | 45 | 756 | **1680** | 23.5 | 3.4 | 16.9 | 5.8 | 170 | 9.9 | 4 |
| Snack Bar 122 | baked bar | 37 | 540 | **1459** | 3.9 | 1.1 | 36.9 | 5.7 | 140 | na | 2.5 |
| Snack Bar 123 | baked bar | 37 | 544 | **1470** | 4.2 | 1.2 | 35.9 | 6 | 150 | na | 2.5 |
| Snack Bar 124 | baked bar | 37 | 544 | **1470** | 4.1 | 1.2 | 35.1 | 6 | 175 | na | 2.5 |
| Snack Bar 125 | cereal bar | 23 | 391 | **1700** | 3.7 | 5.9 | 29.2 | 1.6 | 275 | na | 1.5 |
| Snack Bar 126 | cereal bar | 22 | 376 | **1709** | 4.6 | 4.3 | 34.5 | 1.3 | 230 | na | 1.5 |
| Snack Bar 127 | cereal bar | 23 | 407 | **1770** | 3.9 | 9.4 | 32.6 | 1.1 | 200 | na | 1.5 |
| Snack Bar 128 | cereal bar | 23 | 419 | **1822** | 3.7 | 12 | 34.2 | 0.4 | 225 | na | 1 |
| Snack Bar 129 | cereal bar | 24 | 422 | **1758** | 9.9 | 7.6 | 36.6 | 1.8 | 255 | na | 1 |
| Snack Bar 130 | cereal bar | 21.5 | 372 | **1730** | 9.8 | 6 | 30.8 | 2.5 | 200 | na | 1.5 |
| Snack Bar 131 | cereal bar | 30 | 468 | **1560** | 8 | 1.9 | 21.2 | 9.4 | 190 | 9 | 4 |
| Snack Bar 132 | cereal bar | 30 | 504 | **1680** | 9.2 | 6.9 | 13.7 | 8.4 | 170 | 9.3 | 2.5 |
| Snack Bar 133 | raw bar | 25 | 400 | **1600** | 7.8 | 1.3 | 52.8 | 8.3 | 14 | na | 4 |
| Snack Bar 134 | raw bar | 25 | 392 | **1568** | 8.2 | 2.3 | 49.8 | 12.5 | 11 | na | 4 |
| Snack Bar 135 | raw bar | 25 | 395 | **1580** | 7.4 | 5.9 | 48.2 | 12.6 | 6 | na | 4 |
| Snack Bar 136 | raw bar | 25 | 395 | **1580** | 6.7 | 2.7 | 52 | 8.2 | 10 | na | 4 |
| Snack Bar 137 | muesli bar | 35 | 593 | **1694** | 6.2 | 1 | 18 | 8 | 7 | 9.8 | 4 |
| Snack Bar 138 | muesli bar | 35 | 587 | **1677** | 6.5 | 1.8 | 18.1 | 7.4 | 7 | 9.8 | 4 |
| Snack Bar 139 | muesli bar | 35 | 593 | **1694** | 6.2 | 1.3 | 18 | 7.7 | 7 | 10.2 | 4 |
| Snack Bar 140 | oat slice | 40 | 772 | **1930** | 10.5 | 9.6 | 19.4 | 7.4 | 151 | 12.8 | 2.5 |
| Snack Bar 141 | oat slice | 40 | 692 | **1730** | 6.5 | 9.2 | 28.8 | 6.3 | 222 | 12.4 | 1.5 |
| Snack Bar 142 | oat slice | 40 | 736 | **1840** | 7.1 | 11 | 30.9 | 6.6 | 176 | 10.8 | 2 |
| Snack Bar 143 | oat slice | 40 | 728 | **1820** | 8.1 | 9.2 | 27 | 6.1 | 223 | 10.8 | 2 |
| Snack Bar 144 | oat slice | 40 | 740 | **1850** | 7.2 | 12.1 | 28.4 | 7.3 | 177 | 12.4 | 1.5 |
| Snack Bar 145 | oat slice | 40 | 772 | **1930** | 7.6 | 15.5 | 22.4 | 7.5 | 169 | 18.8 | 2 |
| Snack Bar 146 | oat slice | 40 | 732 | **1830** | 7.6 | 12.3 | 26.9 | 6.7 | 140 | 11.6 | 2 |
| Snack Bar 147 | raw bar | 35 | 564 | **1611** | 5.8 | 0.9 | 25.3 | 8.5 | 15 | 6 | 4.5 |
| Snack Bar 148 | raw bar | 35 | 623 | **1780** | 8.3 | 2.2 | 36.2 | 6.4 | 10 | 5.6 | 4 |
| Snack Bar 149 | raw bar | 35 | 592 | **1691** | 6.9 | 2.4 | 38.4 | 6 | 15 | na | 3.5 |
| Snack Bar 150 | raw bar | 35 | 669 | **1911** | 10.1 | 3.9 | 35 | 6 | 10 | na | 4 |
| Snack Bar 151 | raw bar | 35 | 602 | **1720** | 8 | 2.3 | 42.5 | 7 | 10 | na | 4 |
| Snack Bar 152 | raw bar | 35 | 679 | **1940** | 7.8 | 11.6 | 36.6 | 8.6 | 15 | na | 3 |
| Snack Bar 153 | muesli bar | 42 | 788 | **1876** | 8.1 | 1.7 | 28.9 | 6.1 | 354 | 22.3 | 2.5 |
| Snack Bar 154 | muesli bar | 42 | 818 | **1948** | 8.3 | 3.4 | 21.8 | 7.1 | 280 | 21.4 | 2.5 |
| Snack Bar 155 | muesli bar | 42 | 807 | **1921** | 8.9 | 1.9 | 27.8 | 4.7 | 333 | 23.5 | 2.5 |
| Snack Bar 156 | muesli bar | 42 | 799 | **1902** | 8 | 1.7 | 27.8 | 5 | 350 | 23.5 | 2.5 |
| Snack Bar 157 | muesli bar | 42 | 833 | **1983** | 9.1 | 2 | 24.8 | 4.6 | 406 | 21.8 | 2.5 |
| Snack Bar 158 | muesli bar | 20 | 384 | **1920** | 8.9 | 8.6 | 22.5 | 14 | 334 | na | 2.5 |
| Snack Bar 159 | oat slice | 35 | 694 | **1983** | 8.5 | 5.8 | 26.2 | 6.7 | 420 | 8.1 | 2 |
| Snack Bar 160 | muesli bar | 30 | 618 | **2060** | 12.3 | 7.6 | 28.9 | 3.4 | 320 | 3.6 | 1.5 |
| Snack Bar 161 | cereal bar | 21 | 334 | **1590** | 5.9 | 1.5 | 21.8 | 10 | 110 | 4.6 | 4 |
| Snack Bar 162 | cereal bar | 27 | 456 | **1689** | 6.3 | 4.8 | 24.2 | 9 | 100 | 5.1 | 3 |
| Snack Bar 163 | nut bar | 32 | 640 | **2000** | 13.9 | 5.2 | 25.9 | ns | 19 | na | 2 |
| Snack Bar 164 | nut bar | 32 | 660 | **2063** | 14.7 | 5.4 | 26.8 | ns | 28 | na | 2 |
| Snack Bar 165 | nut bar | 30 | 610 | **2033** | 13 | 6.5 | 27.3 | ns | 18 | na | 1.5 |
| Snack Bar 166 | nut bar | 32 | 640 | **2000** | 14.2 | 5.3 | 26.7 | ns | 60 | na | 2 |
| Snack Bar 167 | nut bar | 32 | 660 | **2063** | 17.3 | 3.8 | 19.9 | ns | 18 | na | 2.5 |
| Snack Bar 168 | nut bar | 32 | 650 | **2031** | 13.3 | 7.4 | 30.3 | ns | 38 | na | 1.5 |
| Snack Bar 169 | nut bar | 32 | 660 | **2063** | 14.6 | 7.5 | 26.2 | ns | 36 | na | 1.5 |
| Snack Bar 170 | muesli bar | 30 | 456 | **1520** | 6.9 | 2.8 | 29.5 | 5 | 57 | na | 3 |
| Snack Bar 171 | muesli bar | 30 | 480 | **1600** | 6.7 | 2.8 | 28.9 | 5.3 | 60 | na | 3 |
| Snack Bar 172 | muesli bar | 30 | 486 | **1620** | 6.3 | 1.3 | 25.4 | 5.1 | 133 | 6.3 | 3 |
| Snack Bar 173 | raw bar | 32 | 510 | **1594** | 14.1 | 4.6 | 25.6 | 11 | 79 | na | 4.5 |
| Snack Bar 174 | raw bar | 32 | 596 | **1863** | 13.6 | 3 | 27 | 11 | 3.4 | na | 5 |
| Snack Bar 175 | nut bar | 40 | 888 | **2220** | 14.7 | 8 | 22.1 | 5.2 | 74 | na | 2.5 |
| Snack Bar 176 | nut bar | 40 | 904 | **2260** | 14.9 | 7.6 | 20.6 | 3.4 | 388 | na | 1.5 |
| Snack Bar 177 | baked bar | 40 | 600 | **1500** | 4.6 | 4.3 | 29.6 | ns | 96 | na | 2 |
| Snack Bar 178 | nut bar | 35 | 774 | **2211** | 14.1 | 10.4 | 21.6 | 5.7 | 25 | na | 2 |
| Snack Bar 179 | nut bar | 35 | 714 | **2040** | 12.5 | 6.8 | 29.7 | 4.6 | 22 | na | 2 |
| Snack Bar 180 | protein bar | 40 | 812 | **2030** | 25.1 | 6.3 | 21 | ns | 222 | na | 1.5 |
| Snack Bar 181 | protein bar | 35 | 746 | **2131** | 14.2 | 6.8 | 25.3 | 5.3 | 24 | na | 2.5 |
| Snack Bar 182 | muesli bar | 45 | 756 | **1680** | 5.5 | 8.6 | 28.2 | 5.2 | 81 | na | 2 |
| Snack Bar 183 | muesli bar | 45 | 914 | **2031** | 13.5 | 4 | 19.7 | 6.4 | 39.9 | na | 3 |
| Snack Bar 184 | muesli bar | 40 | 812 | **2030** | 12.8 | 3.9 | 13.5 | 10.3 | 184 | na | 3.5 |
| Snack Bar 185 | seed bar | 45 | 752 | **1671** | 9.9 | 2 | 19.5 | 7.8 | 57 | na | 4 |
| Snack Bar 186 | muesli bar | 31.3 | 460 | **1470** | 7.2 | 2.1 | 13.5 | 11.2 | 13 | 15.3 | 4 |
| Snack Bar 187 | muesli bar | 31.3 | 510 | **1629** | 7.3 | 4.2 | 16.5 | 10.8 | 20 | 15 | 4 |
| Snack Bar 188 | nut bar | 40 | 868 | **2170** | 16.5 | 6 | 20.5 | 8.5 | 86 | na | 3 |
| Snack Bar 189 | muesli bar | 20 | 370 | **1850** | 8.3 | 5.7 | 19.5 | 10.2 | 200 | 9.8 | 3 |
| Snack Bar 190 | muesli bar | 32 | 515 | **1609** | 9.5 | 1.5 | 18 | 9.2 | 23 | 12.5 | 4 |
| Snack Bar 191 | muesli bar | 32 | 450 | **1406** | 9.2 | 1.3 | 20.7 | 10.8 | 21 | 13.4 | 4 |
| Snack Bar 192 | muesli bar | 32 | 570 | **1781** | 11 | 1.9 | 13.3 | 9.2 | 21 | 15 | 4.5 |
| Snack Bar 193 | muesli bar | 31.3 | 490 | **1565** | 6.8 | 2.1 | 17.1 | 11.4 | 11 | 15 | 4 |
| Snack Bar 194 | oat slice | 35 | 595 | **1700** | 6 | 7.7 | 19.4 | 6.6 | 200 | 9.8 | 2.5 |
| Snack Bar 195 | oat slice | 35 | 592 | **1691** | 6.2 | 8.1 | 22.1 | 6.2 | 170 | 9.5 | 3 |
| Snack Bar 196 | nut bar | 40 | 844 | **2110** | 16 | 3.9 | 18 | 7.7 | 77 | na | 4 |
| Snack Bar 197 | muesli bar | 31.3 | 520 | **1661** | 6.7 | 4.4 | 18.8 | 10.6 | 15 | 14.7 | 4 |
| Snack Bar 198 | muesli bar | 31.3 | 520 | **1661** | 6.9 | 4.6 | 17 | 10.8 | 15 | 15 | 4 |
| Snack Bar 199 | nut bar | 40 | 816 | **2040** | 15.4 | 5.6 | 24.3 | 8.5 | 65 | na | 3 |
| Snack Bar 200 | muesli bar | 31.3 | 491 | **1569** | 7.1 | 4.4 | 16.7 | 10.7 | 20 | 14.7 | 4 |
| Snack Bar 201 | muesli bar | 31.3 | 516 | **1649** | 7.3 | 4.7 | 15.5 | 10.9 | 20 | 15.3 | 4 |
| Snack Bar 202 | muesli bar | 31.3 | 513 | **1639** | 7.1 | 4.3 | 18.3 | 10.5 | 19 | 14.7 | 4 |
| Snack Bar 203 | muesli bar | 31.3 | 510 | **1629** | 7.1 | 4.3 | 18.4 | 10.5 | 19 | 14.7 | 4 |
| Snack Bar 204 | muesli bar | 31.3 | 510 | **1629** | 7.2 | 4.3 | 17.9 | 10.5 | 22 | 14.7 | 4 |
| Snack Bar 205 | nut bar | 50 | 867 | **1734** | 11 | 5.2 | 35 | 2.9 | 47.2 | na | 2 |
| Snack Bar 206 | baked bar | 22 | 363 | **1650** | 4.3 | 7.4 | 29.2 | 2.8 | 326 | na | 1.5 |
| Snack Bar 207 | cereal bar | 21 | 361 | **1719** | 4.8 | 9.7 | 36.4 | 7.4 | 219 | na | 1.5 |
| Snack Bar 208 | cereal bar | 21 | 374 | **1781** | 4.3 | 12.5 | 37 | 7.7 | 212 | 2.1 | 1.5 |
| Snack Bar 209 | nut bar | 34 | 636 | **1871** | 7.6 | 5.3 | 28.5 | 4 | 100 | na | 2 |
| Snack Bar 210 | nut bar | 34 | 632 | **1859** | 9.3 | 5.4 | 20.7 | 6.2 | 88 | 6.8 | 2.5 |
| Snack Bar 211 | baked bar | 22 | 354 | **1609** | 4.2 | 6.5 | 33.1 | 4.7 | 157 | na | 2 |
| Snack Bar 212 | cereal bar | 35 | 588 | **1680** | 13 | 3.9 | 3.2 | 2.8 | 7 | na | 4.5 |
| Snack Bar 213 | cereal bar | 35 | 494 | **1411** | 9.1 | 2.7 | 12 | 30.8 | 11 | na | 4.5 |
| Snack Bar 214 | cereal bar | 35 | 588 | **1680** | 11.8 | 3.9 | 3.9 | 28.7 | 8 | na | 4.5 |
| Snack Bar 215 | baked bar | 37.5 | 525 | **1400** | 4.5 | <1.0 | 33.9 | 4.2 | 140 | na | 3 |
| Snack Bar 216 | baked bar | 37.5 | 529 | **1411** | 4.3 | <1.0 | 40.7 | 3 | 140 | na | 2.5 |
| Snack Bar 217 | muesli bar | 25 | 432 | **1728** | 5.2 | 7.2 | 19.1 | 4.6 | 23 | 11.5 | 2 |
| Snack Bar 218 | muesli bar | 30 | 489 | **1630** | 7 | 5 | 23 | 7 | 40 | 12 | 3 |
| Snack Bar 219 | muesli bar | 30 | 504 | **1680** | 7 | 5 | 17 | 5 | 46 | 12 | 3 |
| Snack Bar 220 | muesli bar | 30 | 495 | **1650** | 6 | 5 | 21 | 6 | 40 | 11.7 | 3 |
| Snack Bar 221 | muesli bar | 30 | 501 | **1670** | 6 | 5 | 22 | 5 | 45 | 11.7 | 3 |
| Snack Bar 222 | nut bar | 40 | 848 | **2120** | 12 | 11.7 | 31.3 | 5.1 | 84 | na | 1.5 |
| Snack Bar 223 | nut bar | 40 | 824 | **2060** | 7.4 | 4.1 | 31.4 | 7.8 | 16 | na | 3 |
| Snack Bar 224 | nut bar | 40 | 760 | **1900** | 12.5 | 3.4 | 28.2 | 9.5 | 27 | na | 3.5 |