 Designing a chocolate bar

Task 1 - If you were to create a new chocolate bar, what would it cost?

Understanding the problem

1. Make a list of the sorts of things you would need to consider when designing a new chocolate bar.
2. What sorts of things would have an impact on its price?

Investigating the opposition

Collecting data

Either in person, online or using catalogues, investigate other chocolate bars. Collect data on the items you identified in the previous section.

Analysing data

1. Use statistics to analyse the data you have collected. You may like to calculate the mean, median, mode, range, interquartile range and/or standard deviation of relevant items.
2. Is there a relationship between any of your data?
* Start by plotting ‘pric e vs weight’. What do you notice?
* Plot similar graphs for other items which you think may have an effect on price.
1. Which chocolate bar is the best value for money? How do you know?
2. Which chocolate bar is the worst value for money? How do you know?

Making decisions

Draw a diagram showing the dimensions, shape and cost of your new chocolate bar. Justify your decision using any of your calculations above.

Task 2 – Designing a logo

* Design a logo for your chocolate bar using the shapes explored in the Stage 5.1 – 5.3 topics, ‘Area and surface area’.
* Your logo should include 5 – 8 different shapes from the topic. A repeated shape is not a different shape.
* The outline of your logo must form a composite shape and it should have an area that is no less than 320cm2 in total but no more than 480cm2. You will need to calculate the area of this composite shape, showing all working out to verify that you have worked within the parameters.
* You must find the total area of the logo. Be sure to show all working out in your calculations.

Related outcomes

Working mathematically

* MA5.1-1WM uses appropriate terminology, diagrams and symbols in mathematical contexts
* MA5.1-2WM selects and uses appropriate strategies to solve problems
* MA5.1-3WM provides reasoning to support conclusions that are appropriate to the context
* MA5.2‑3WM constructs arguments to prove and justify results
* MA5.3‑2WM generalises mathematical ideas and techniques to analyse and solve problems efficiently

Content outcomes

* MA4-14MG uses formulas to calculate the volumes of prisms and cylinders, and converts between units of volume
* MA4-20SP analyses single sets of data using measures of location, and range
* MA5.1-8MG calculates the areas of composite shapes, and the surface areas of rectangular and triangular prisms
* MA5.2-15SP uses quartiles and box plots to compare sets of data, and evaluates sources of data
* MA5.2-16SP investigates relationships between two statistical variables, including their relationship over time
* MA5.3‑19SP investigates the relationship between numerical variables using lines of best fit, and explores how data is used to inform decision-making processes

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