Can It!

You are the owner of a food processing company. You have a new product that you want to market, and a major grocery store has agreed to sell your product. You will need to design a can and a label for your product.

**Part 1**

1. Determine a product that you want to sell and what the most feasible design would look like for a can.  Consider what type of products are currently sold in cans. How will your product be different from what is already available in grocery stores? Explain.
2. Design two possible can dimensions given an interior volume of 300-500cm3 and a wall thickness of 0.2mm. Sketch each can in the space below and label each of the given dimensions. Show the steps and work used to create the sketches with the dimensions given. Present your work in a logical and organized structure.

|  |  |
| --- | --- |
| Sketch 1 | Sketch 2 |
| Height = \_\_\_\_\_\_  Interior Diameter = \_\_\_\_\_\_\_\_  Exterior Diameter = \_\_\_\_\_\_\_\_ | Height = \_\_\_\_\_\_  Interior Diameter = \_\_\_\_\_\_\_\_  Exterior Diameter = \_\_\_\_\_\_\_\_ |

**Part 2**

1. Which can do you think is best for your product? Justify your reasoning.
2. What is the volume of the metal needed to make one can?

**Part 3**

You now need to create a label **that will cover the lateral surface area of the can**. Create your label out of construction paper.

1. Show the steps and work used to determine the dimensions of your label. Present your work in a logical and organized structure.
2. **Construct** the rectangular label for your can. Show the construction to your teacher before cutting it out.
3. On the blank side of the label, create a design for your label. You can ONLY use a straightedge and a compass! Your design must include at least:
   1. One pair of parallel lines
   2. One angle bisector
4. How much paper will you need to order for labels for 5 000 cans?
5. The grocery store has given shelf space that is 50cm wide, 50cm deep, and 40cm high. How many cans of your product can you reasonably put on display?

**Part 4**

1. Prepare a pitch/jingle/commercial to present your item.

Success Criteria

* I have explained my thought process for product choice.
* I have included two sketches of my ideas for can sizes.
* I have included dimensions for each of my sketches.
* I have justified my choice as to which sketch will be used for the final can dimensions.
* I have given the volume of metal needed to make one can.
* I have constructed a label for my can.
* I have determined how much paper is needed for labels for 5 000 cans.
* I have determined how many cans can be displayed on the given shelf space.
* I have prepared a marketing strategy (pitch/jingle/commercial).
* I have shown my work and steps for all calculations.
* I have shown my work and steps in a logical and organized manner.

Assessment

Criterion C – Communicating

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| --- | --- |
| Achievement Level | Level Descriptor |
| 0 | The student does not reach a standard described by any of the descriptors below. |
| 1-2 | The student is able to:  i.      **use** limited mathematical language  ii.    **use** limited forms of mathematical representation to present information  iii.  **communicate** through lines of reasoning that are difficult to interpret |
| 3-4 | The student is able to:  i.      **use** some appropriate mathematical language  ii.    **use** different forms of mathematical representation to present information adequately  iii.  **communicate** through lines of reasoning that are able to be understood, although these are not always clear  iv.   adequately **organize** information using a logical structure |
| 5-6 | The student is able to:  i.      usually **use** appropriate mathematical language  ii.    usually **use** different forms of mathematical representation to present information correctly  iii.  move between different forms of mathematical representation with some success  iv.   **communicate** through lines of reasoning that are clear although not always coherent or complete  v.     present work that is usually **organized** using a logical structure |
| 7-8 | The student is able to:  i.      consistently **use** appropriate mathematical language  ii.    **use** different forms of mathematical representation to consistently present information correctly  iii.  move effectively between different forms of mathematical representation  iv.   **communicate** through lines of reasoning that are complete and coherent  v.     present work that is consistently **organized** using a logical structure |

Criterion D – Applying Mathematics in Real Life Contexts

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| --- | --- |
| Achievement Level | Level Descriptor |
| 0 | The student does not reach a standard described by any of the descriptors below. |
| 1-2 | The student is able to:  i.      **identify** some of the elements of the authentic real-life situation  ii.    **apply** mathematical strategies to find a solution to the authentic real-life situation, with limited success |
| 3-4 | The student is able to:  i.      **identify** the relevant elements of the authentic real-life situation  ii.    **select**, with some success, adequate mathematical strategies to model the authentic real-life situation  iii.  **apply** mathematical strategies to reach a solution to the authentic real- life situation  iv.   **describe** whether the solution makes sense in the context of the authentic real-life situation |
| 5-6 | The student is able to:  i.      **identify** the relevant elements of the authentic real-life situation  ii.    **select** adequate mathematical strategies to model the authentic real-life situation  iii.  **apply** the selected mathematical strategies to reach a valid solution to the authentic real-life situation  iv.   **describe** the degree of accuracy of the solution  v.     **discuss** whether the solution makes sense in the context of the authentic real-life situation |
| 7-8 | The student is able to:  i.      **identify** the relevant elements of the authentic real-life situation  ii.    **select** appropriate mathematical strategies to model the authentic real- life situation  iii.  **apply** the selected mathematical strategies to reach a correct solution  iv.   **explain** the degree of accuracy of the solution  v.     **explain** whether the solution makes sense in the context of the authentic real-life situation |