You just got the great news that you have received a summer job working for Starbucks in their marketing and design office! For your first project, they want you to come up with a prototype for a new must have travel mug. You have creative freedom but in order to keep the costs down (so they can make a profit) there are some stipulations with the design. Some important information you’ll need to know before you begin:

**Grabba Java**

Block: \_\_\_\_\_\_\_\_\_\_\_

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Area of a rectangle = length x width Area of a circle = π r 2 Circumference = 2 π r OR d π

**Your Task:**

1. Fill out your plan/design for the mug on the graph paper provided. It must be realistic.

2. Include a net and a diagram from the front, top and bottom for your prototype

3. Determine how much it will cost you to make your design.

**You have been given a total budget of $12 for your one prototype! Be sure your design does not go over cost.**

|  |  |
| --- | --- |
| **Item** | **Description** |
| Travel Mug walls | 🡪metal to make the container costs $0.02/cm2 |
| Lid | 🡪plastic to make the lid costs $0.10/cm2 |
| Bottom | 🡪the rubber slip proof bottom costs $0.05/cm2 |

 **Prototype Diagrams:**

Bottom

Front

Top

This is the net of your travel mug. One is your rough copy, the other is the good copy.

 Each square is equivalent to 1 cm 2. Make your drawing accurate.

 If you design does not fit, please attach it on an additional piece of graph paper

Rough copy

Good copy

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**Calculations:**

**Total Cost Written Response:**

|  |  |
| --- | --- |
| **Item** | **Cost** |
| Travel mug walls |  |
| Lid |  |
| Bottom |  |
| **Total Cost** |  |

 1. Is your design realistic? Explain.

 2. Do your calculations make sense? Explain.

**Extension:** What is the volume of your mug? Is this a realistic amount for this price? Explain.

Which assessment ***task*** is it? Grabba Java

Objective? To design a travel mug that maximizes space and stays under budget

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| --- |
| **Criterion D: Applying Mathematics in Real-Life Contexts** |
| **(0)** | **Beginning (1-2)** | **Developing (3-4)** | **Accomplished (5-6)** | **Exemplary (7-8)** |
| *I have not achieved a standard described by any of the descriptors to the right*. | *I am able to:***identify** some of the elements of the authentic real-life situation * **Incorporating cost**

**apply** mathematical strategies to find a solution to the authentic real-life situation, with limited success. * **formulas**
* **calculations**
 | *I am able to:***identify** the relevant elements of the authentic real-life situation * **Incorporating cost**

**select**, with some success, adequate mathematical strategies to model the authentic real-life situation * **net**
* **3D model**

**apply** mathematical strategies to reach a solution to the authentic real-life situation * **formulas**
* **calculations**

**describe** whether the solution makes sense in the context of the authentic real-life situation. * **Written #2**
 | *I am able to:***identify** the relevant elements of the authentic real-life situation * **Incorporating cost**

**select** adequate mathematical strategies to model the authentic real-life situation * **net**
* **3D model**

**apply** the selected mathematical strategies to reach a valid solution to the authentic real-life situation* **formulas**
* **calculations**

**describe** the degree of accuracy of the solution * **Written #1**

**discuss** whether the solution makes sense in the context of the authentic real-life situation.* **Written #2 & 3**
 | *I am able to:***identify** the relevant elements of the authentic real-life situation * **Incorporating cost**

**select** appropriate mathematical strategies to model the authentic real-life situation * **net**
* **3D model**

**apply** the selected mathematical strategies to reach a correct solution * **formulas**
* **calculations**

**explain** the degree of accuracy of the solution * **Written #1**

**explain** whether the solution makes sense in the context of the authentic real-life situation.* **Written #2 & 3**
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