**Stage 1 Essential Mathematics**

**Assessment Type 2: Folio**

**Topic 3: Geometry**

**Nifty Novelty Container**

Your task is to design a nifty novelty container, create the 3D net from which the container can be constructed, and construct the actual novelty container you have designed.

**Part 1**

Investigate a range of different containers that are currently being used for packaging food or other goods such as chocolates, biscuits and toys.

Decide what will be packaged in your novelty container. If you choose to package something that is long and cannot bend (like a musk stick lolly) you will need to ensure that your package allows them to be stored appropriately.

Draw at least three rough sketches of possible novelty container that you will consider. Identify the 2D shapes that will be used, and possible dimensions (length, height and depth).

Trapezium base and top

**Your designs must:**

* use at least two types of shapes – consider various polygons and circles

Height

Lid opening

* have at least 6 faces.
1. Identify what will be stored in your novelty container.
2. Decide on which of your designs you will use for the rest of this investigation. Give reasons for your choice of design to continue with.
3. The rough sketches you created need to be placed in the appendix of your report.

**Part 2**

1. Draw a reasonable sketch of what your novelty container will look like and include the ***relevant*** measurements (e.g. width, height, and length of edges).

***Have your design approved by your teacher before you proceed with the investigation.***

1. Sketch several possible nets from which your container could be formed. Consider things like where the lid or opening of the container is and how the net will need to be designed so that the lid can open and edges can be glued together.
2. Decide which of these net designs you will use, and give your reasons for your choice.

**Part 3**

Using a compass and straight edge (or other mathematical equipment such as a geoliner) and the construction techniques you have learned in this topic, create a full scale, accurate net from which your novelty container design from Part 2 can be formed.

You will need to consider where the tabs will be located on the net to ensure that:

* the novelty container can be constructed and will not fall apart
* it does not have openings or gaps in the container which will allow the packaged material to fall out.

You could consider innovations in your design such as the lid having the ability to be closed securely after the novelty container has been opened.

**Note:** Your accurate net will need to be submitted to your teacher with your completed folio task.

**Part 4**

Draw the net that you have designed on thicker paper (e.g. poster paper) and construct your nifty novelty container! You could consider getting the product that you have designed the novelty container for and placing it in the container. Feel free to be creative with the outside of your novelty container (e.g. put on your own brand name and images if you wish).

**Note:** Your constructed novelty container will need to be submitted with your completed folio task.

**Part 5**

Write a short summary about the effectiveness of your nifty novelty container design. Include things like problems that you had in designing the novelty container, and in creating the design for the net. Also discuss any problems that you may have had with your final net design, and how you could improve it.

**What you need to submit:**

A **written section** which is to be no more than 1 A4 page including your responses to:

* Part 1 (a) and (b)
* Part 2 (c)
* Part 5

The **accurate net** for your nifty novelty container design.

The constructed novelty container.

The appendices including the rough sketches from Part 1 and Part 2.

**Performance Standards for Stage 1 Essential Mathematics**

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| --- | --- | --- |
|  | Concepts and Techniques | Reasoning and Communication |
| **A** | Knowledge and understanding of mathematical information and concepts in familiar and unfamiliar contexts.Highly effective application of mathematical skills and techniques to find efficient and accurate solutions to routine and complex problems in a variety of contexts.Gathering, representation, and interpretation of a range of data in familiar and unfamiliar contexts.Appropriate and effective use of electronic technology to find accurate solutions to routine and complex problems. | Accurate interpretation of mathematical results in familiar and unfamiliar contexts. Highly effective use of mathematical reasoning to draw conclusions and consider the appropriateness of solutions to routine and complex problems.Proficient and accurate use of appropriate mathematical notation, representations, and terminology.Clear and effective communication of mathematical ideas and information to develop logical and concise arguments. |
| **B** | Knowledge and understanding of mathematical information and concepts in familiar and some unfamiliar contexts.Effective application of mathematical skills and techniques to find mostly accurate solutions to routine and some complex problems in a variety of contexts.Gathering, representation, and interpretation of data in familiar and some unfamiliar contexts.Mostly appropriate and effective use of electronic technology to find mostly accurate solutions to routine and some complex problems. | Mostly accurate interpretation of mathematical results in familiar and some unfamiliar contexts.Effective use of mathematical reasoning to draw conclusions and consider the appropriateness of solutions to routine and some complex problems.Mostly accurate use of appropriate mathematical notation, representations, and terminology.Clear and appropriate communication of mathematical ideas and information to develop some logical arguments. |
| **C** | Knowledge and understanding of simple mathematical information and concepts in familiar contexts.Application of some mathematical skills and techniques to find solutions to routine problems in familiar contexts.Gathering, representation, and interpretation of data in familiar contexts.Generally appropriate and some effective use of electronic technology to find solutions to routine problems. | Generally accurate interpretation of mathematical results in familiar contexts. Appropriate use of mathematical reasoning to draw conclusions and consider the appropriateness of solutions to routine problems. Generally appropriate use of familiar mathematical notation, representations, and terminology.Appropriate communication of mathematical ideas and information. |
| **D** | Basic knowledge and some understanding of simple mathematical information and concepts in some familiar contexts.Application of basic mathematical skills and techniques find partial solutions to routine problems in some contexts.Some gathering, representation, and basic interpretation of simple data in familiar contexts.Some appropriate use of electronic technology to find solutions to routine problems. | Some interpretation of mathematical results in some familiar contexts.Attempted use of mathematical reasoning to consider the appropriateness of solutions to routine problems.Some use of familiar mathematical notation, representations, and terminology.Attempted communication of simple mathematical ideas and information.  |
| **E** | Limited knowledge or understanding of mathematical information or concepts.Attempted application of basic mathematical skills or techniques, with limited accuracy in solving routine problems.Some gathering and attempted representation of simple data in a familiar context.Attempted use of electronic technology in to find a solution to a routine problem. | Limited interpretation of mathematical results.Limited awareness of the use of mathematical reasoning in solving a problem.Limited use of mathematical notation, representations, or terminology.Attempted communication of an aspect of mathematical information. |