**Stage 1 Essential Mathematics**

**Assessment Type 2: Folio**

**Design your own space**

**The Task:**

You are to construct 2 different scaled diagrams using skills and techniques you have learned in the study of Topic 1.3 – Ratio and Scale. On two identical scale plans, each drawn on separate sheets of A3 paper, you will create two different designs for the same space. You will then compare the two designs and decide, giving reasons, which is the better design. You could choose to redesign:

* your bedroom
* your home backyard
* any other room or area of your home
* your classroom or an area in the school yard
* any other space of your choice (consult with your teacher).

You will create a report to submit to your teacher. The requirements of the report are on the back of this sheet.

**Part 1**

Select a space that you wish to redesign. Take measurements of all boundaries (walls in rooms, garden fences or paths etc.). Fixed structures such as doors, windows and wardrobes in building structures or garden walls and paths in garden spaces must be included in your measurements.

**Part 2**

Create two scale diagrams showing the boundaries of the space you are redesigning, each one on a single A3 sheet. Include any fixed structures in the scale diagrams. Label all measurements carefully and include the scale you have used.

**Part 3**

Select items that you wish to place into your redesigned space. You could research brochures and/or the internet for examples of items to use. You may include items that already exist in those spaces.

You will need the measurements of any items you intend to use.

**Part 4**

Cut out scaled diagrams of each item you have chosen and **construct 2 different designs**, using different arrangements of items, for the one space you have chosen. Label all measurements carefully. Your designs must be as accurate as possible. You must include the scale you have used.

NOTE: You do not have to use the same items in each design, for example you may use a single bed in one design and a queen bed in another.

**Part 5**

Complete the report outlined over the page and submit it to your teacher.

**The Report**

The report is to be a **maximum of 6 A4 pages**. The two A3 pages displaying the scale diagrams are the equivalent to four A4 pages.

**Introduction**

Describe which area you have chosen to redesign. You might like to explain why you chose this area.

Explain carefully what features or items you consider important for your design. Include information about where you obtained your measurements, and the scale you have used to construct your diagrams.

**Mathematical Investigations**

The two separate scaled designs must include all real measurements and the scale used.

Details such as doors and windows and how they open should be included.

All items and their dimensions used in the designs should be clearly identified.

**Discussion**

Decide which of the two designs you like the most, and discuss in detail why you think it is the best design.

Include a discussion of any limitations to your designs, problems you had to consider and/or issues you had to work around.

You must consider how reasonable your design is for the area it is designed for, e.g. access, storage etc.

**Appendix**

Evidence of all items shown in each design must be included in the form of photographs or pictures copied from internet sites or brochures. These are to be included in the appendix, and clearly identified and labelled. Ideally these will include real measurements.

**Extension Opportunity**

You may consider the cost of the refurbishment, considering costs such as carpeting and/or painting the space.

If you are redesigning an outdoor space you may consider the cost of lawn, edging, paving and softfill, or other landscaping required.

Evidence of all calculations must be included.

**Assessment Design Criteria**

***Concepts and Techniques***

The specific features are as follows:

CT2 Application of mathematical skills and techniques to find solutions to practical problems in context

CT3 Gathering, representation, and interpretation of data in context

***Reasoning and Communication***

The specific features are as follows:

RC2 Use of mathematical reasoning to draw conclusions and consider the appropriateness of solutions

RC3 Use of appropriate mathematical notation, representations, and terminology

Performance Standards 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. |