



Condobolin High School



Notification of an Assessment Task

Name and Type of Task: Investigation (building and visualising shapes) / Consolidation Task

Subject: Year 7 Mathematics

Task Number: 2

Date Issued: Tuesday 13th August 2024
Term 3 Week 4

Date Due:
Section 1: Tuesday 27th August 2024
Term 3, Week 6
Section 2: Tuesday 27th August 2024
Term 3, Week 6

Total Marks: 60

Weighting: 35%

Class Teacher/s: Mrs Waller, Ms Verinder

Head Teacher: Mrs Davis

Submission Instructions –

Section 1: Students are to hand in the task to their class teacher at the start of their Maths lesson on Tuesday 27th August 2024.

Section 2: Students are to complete their consolidation task in their Maths lesson on Tuesday 27th August 2024.

Task Context:

In this topic, you have learnt about perimeter, area and three-dimensional solids. In this task you will use these skills to draw shapes with given perimeter and area, calculate perimeter and area of shapes and draw three-dimensional solids.

Course Outcomes:

MA4-LEN-C-01

applies knowledge of the perimeter of plane shapes and the circumference of circles to solve problems

MA4-ARE-C-01

applies knowledge of area and composite area involving triangles, quadrilaterals and circles to solve problems

MA4-VOL-C-01

applies knowledge of volume and capacity to solve problems involving right prisms and cylinders

MA0-WM-01

Develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly

Task Description:

This task will be broken into 2 sections.

Section 1: In class task (45 marks)

Note: You will be given three lessons in class to work through Section 1 of this task. Extra time outside of class time will be required to complete this task fully.

Task 1: Design your initials (5 marks)

In this task, you will draw your initials using grid paper and calculate the area and perimeter of the design.

Task 2: Design a shape (10 marks)

In this task, students will be asked to draw a shape, give the perimeter and/or area of a shape.

Task 3: Building and Visualizing 3D Solids (20 marks)

In this task, you will use building materials to construct 3D solids and create drawings from various views and types.

Task 4: Extension – Create your 3D challenge (10 marks)

In this task, you will use building materials to construct 3D solids and create drawings from various views and types.

Section 2: Consolidation Test (15 marks)

In this section, you will complete a small test in class. Questions will be similar to this task.

Criteria for Assessing Learning:

Students will be assessed on their ability to:

- Design a shape on grid paper and calculate the perimeter and area
- Draw shapes when area and perimeter has been provided.
- Accurately draw the front, back, side and top view of a shape.
- Outline the features of the shape.
- Construct a 3D-shape using isometric paper.
- Use instructions to build a 3D shape.
- Discuss their reflection on their instructions to construct/draw a 3D shape.

Key Verbs:

Calculate: determine from given facts, figures or information

Construct: to draw or make

Design: do or plan (something) with a specific purpose

Discuss: identify issues and provide points for and/or against

Draw: to compose or create (a picture) in lines

Outline: indicate the main features of

Marking Guidelines: Section 1

	Description	Marks
A	<ul style="list-style-type: none"> • Student draws all 2D shapes and calculates the area and perimeter of the shape correctly. At least one shape is not a rectangle or square. • Student accurately draws all shapes when provided the area and/or perimeter. • The designed 3D compound solid includes front, side and top views and isometric drawings well-constructed with precise labelling. • Diagrams are accurately drawn with a ruler. Faces, edges and vertices are labelled. • The student provides a clear and concise description of their 3D solid and accurately reflects on their errors using appropriate terminology and grammar. 	41-45
B	<ul style="list-style-type: none"> • Student draws most 2D shapes and calculates the area and perimeter of the shape correctly. • Student accurately draws most shapes when provided the area and/or perimeter. • The designed 3D compound solid includes front, side and top views and isometric drawings that are well constructed with mostly accurate labelling. • Diagrams are drawn with a ruler. Faces, edges and vertices are labelled with minor errors. • The student provides a detailed description of their 3D solid and reflects on their errors using appropriate terminology. 	32-40
C	<ul style="list-style-type: none"> • Student draws some 2D shapes and calculates the area and perimeter of the shape with some errors. • Student accurately draws some shapes when provided the area and/or perimeter. • The designed 3D compound solid includes front, side and top views and/or isometric drawings that have minor errors. • Diagrams are mostly drawn with a ruler. Some faces, edges and vertices are labelled correctly. • The student provides a description of their 3D solid and attempts to reflect. 	18-31
D	<ul style="list-style-type: none"> • Student draws some 2D shapes and attempts to calculate the area and/or perimeter of the shape. • Student attempts to draw a shape when provided the area and/or perimeter. • The designed 3D basic solid (such as a cube, rectangular prism or triangular prism) includes most front, side or top views with errors. • Diagrams are drawn incorrectly without a ruler. Some faces, edges or vertices are labelled with errors. 	9-17
E	<ul style="list-style-type: none"> • Student draws a 2D shape and attempts to calculate the area or perimeter of the shape. • Student attempts to draw a shape when provided the area and/or perimeter with errors. • The designed 3D basic solid (such as a cube, rectangular prism or triangular prism) is incomplete, or unrecognisable. • Diagrams are drawn without a ruler, no features are included, or significant errors are present. 	0-8

Marking Guidelines: Section 2

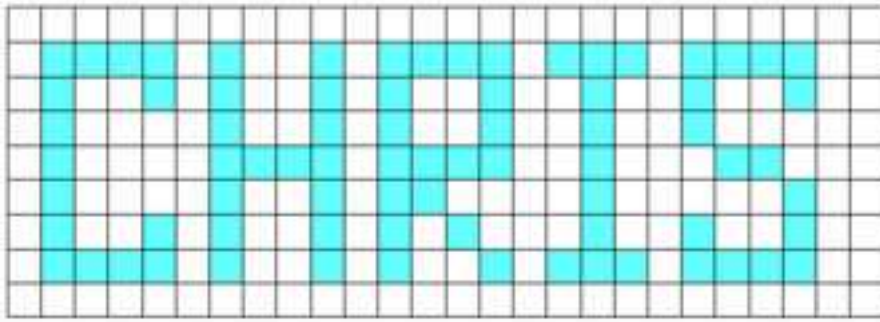
Marks for the consolidation test will be allocated on the test.	/15
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Task 1: Design your initials

(5 marks)

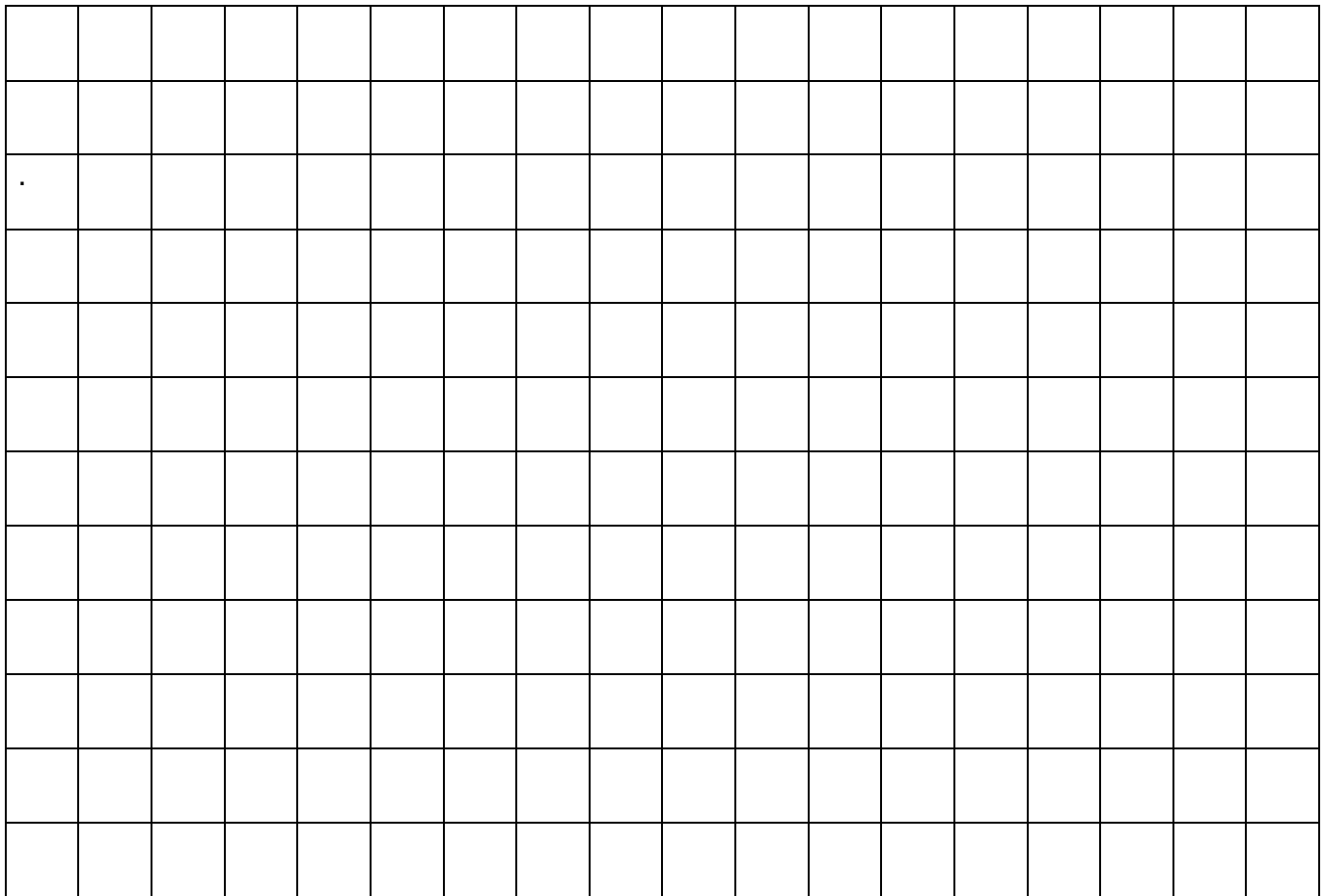
In the example below, Chris designs his name using squares from grid paper.

Example



Your task is to use squares on the grid below to design your **initials only**.

(3 marks)



Using your design, calculate the:

a. Perimeter = _____ (1 mark)

b. Area = _____ (1 mark)

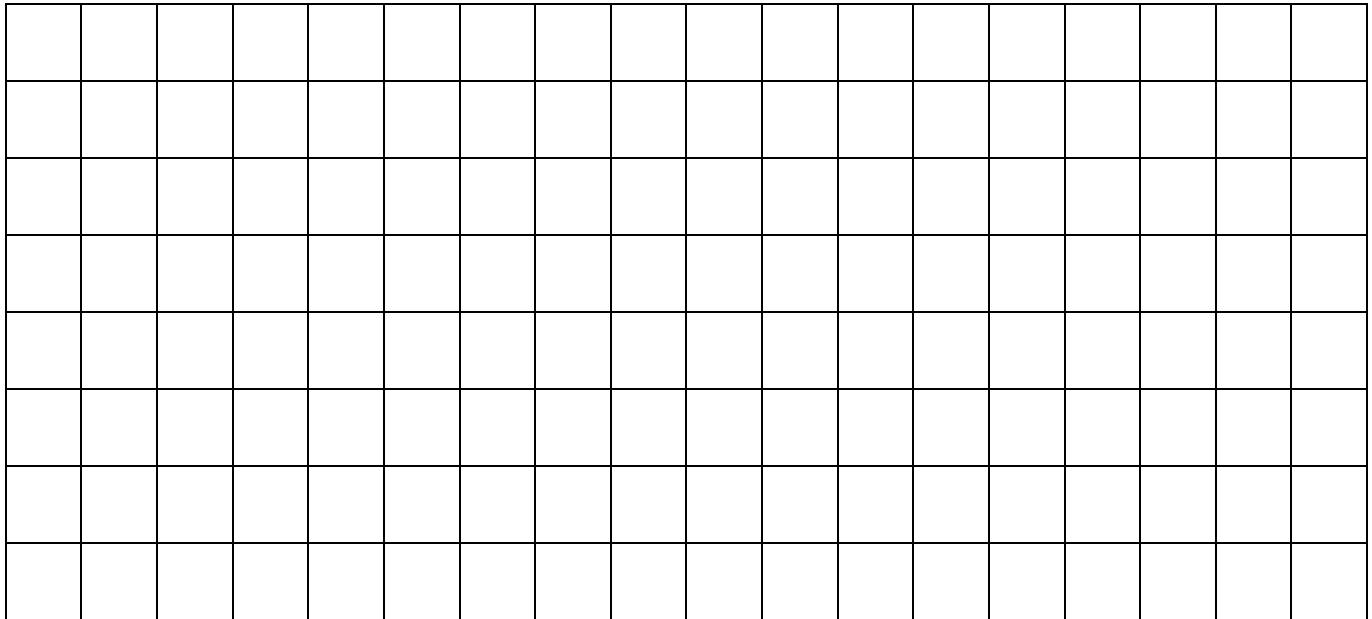
Task 2: Design a shape

(10 marks)

Objective: Your task is to design shapes to match the given perimeter and area.

a. In the space below, draw a shape with a perimeter of 20 units.

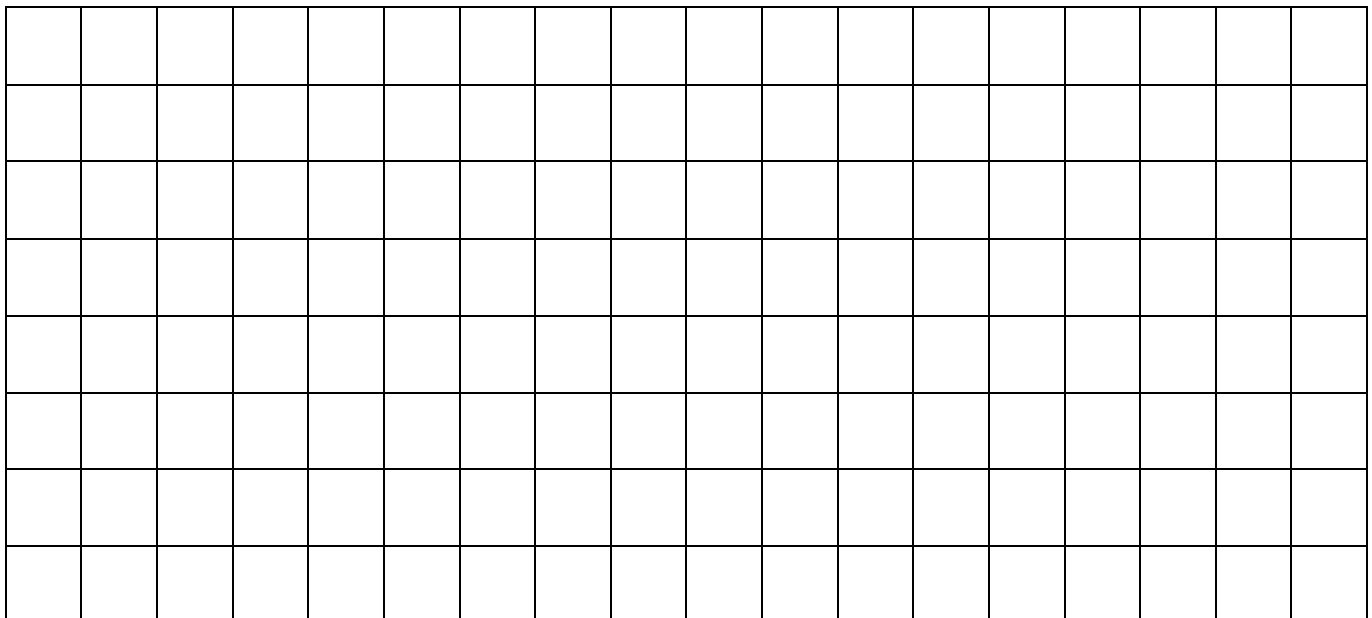
(2 marks)



What is the area (in square units) of the shape? _____ (1 mark)

b. In the space below, draw a shape with an area of 24 square units.

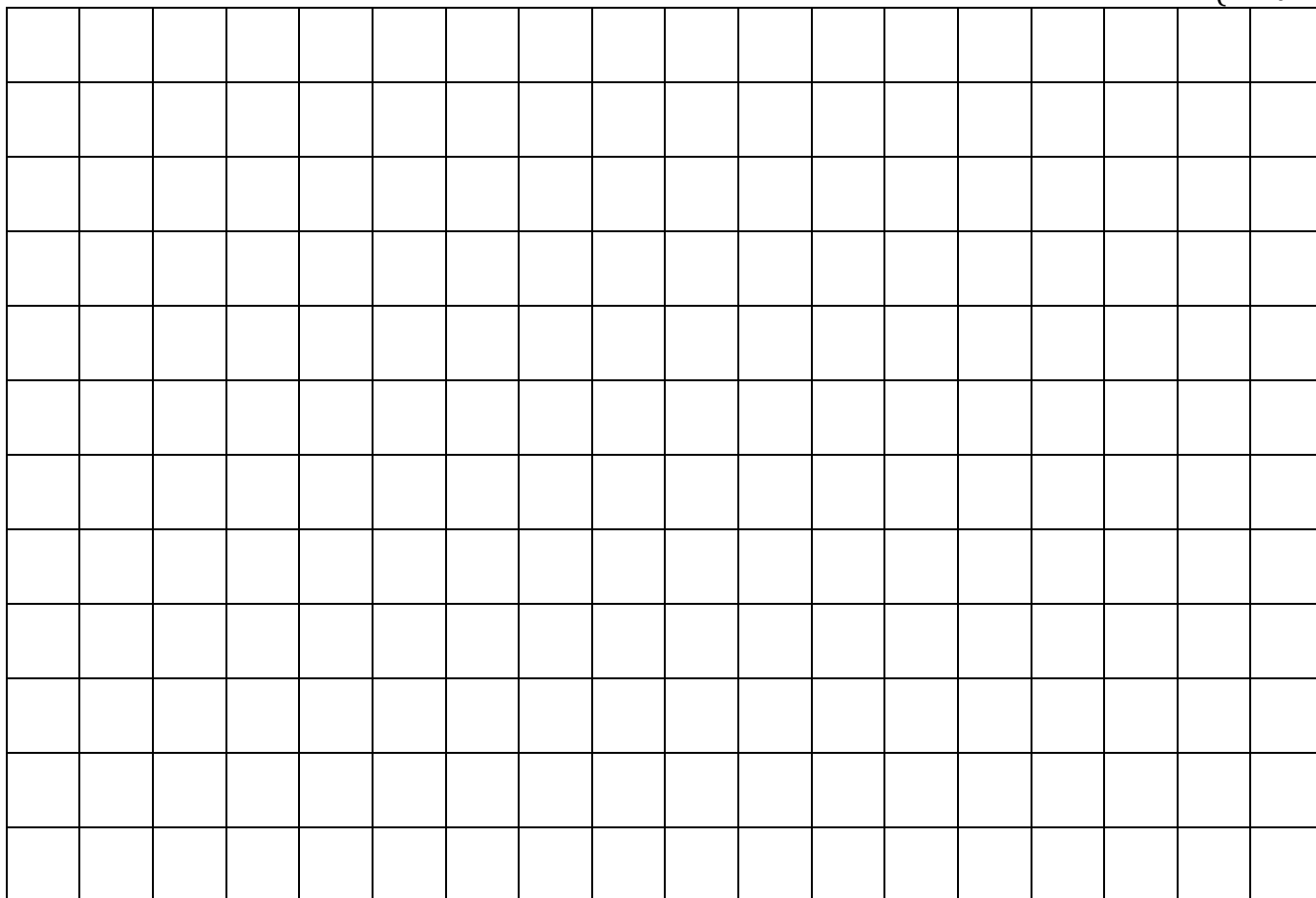
(2 marks)



What is the perimeter of the shape? _____ (1 mark)

c. In the space below, draw a shape with an area of 24 square units and a perimeter of 20 units.

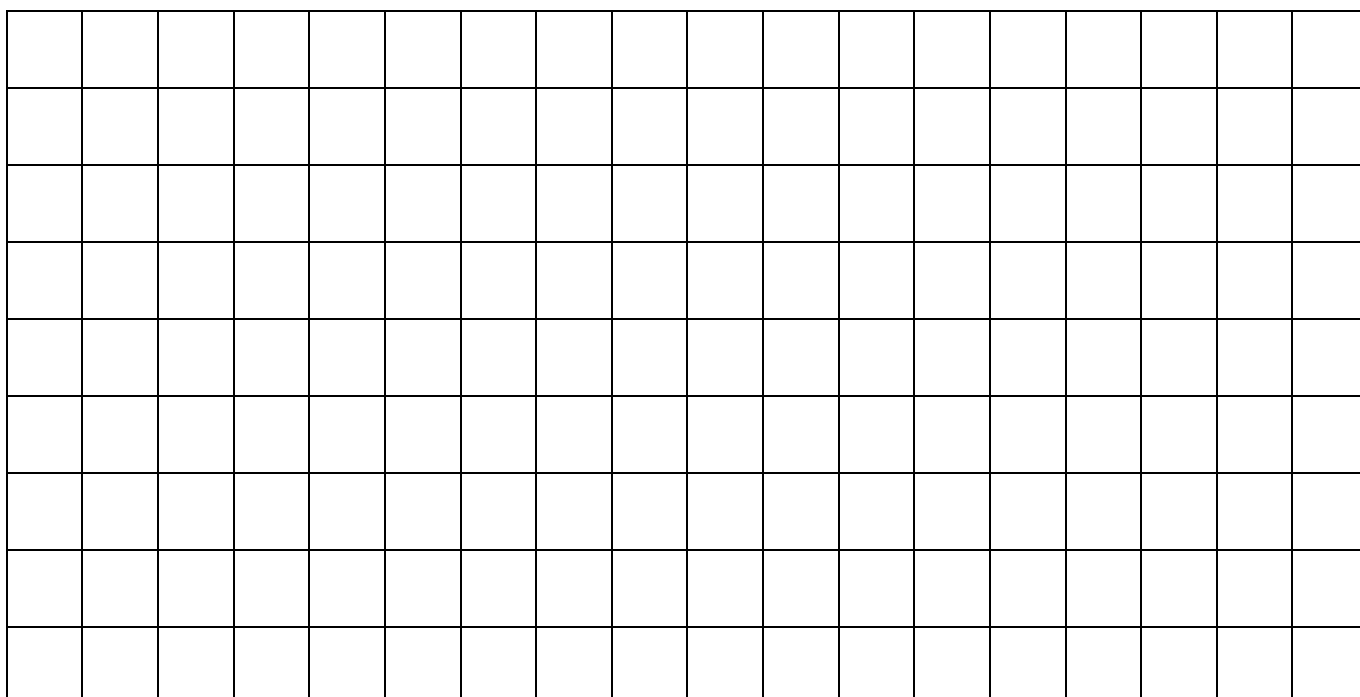
(2 marks)



d. Choose 2 odd numbers: _____ and _____

In the space below, draw a shape with an area of your first odd number and a perimeter of your second odd number.

(2 marks)



Task 3: Building and Visualizing 3D Shapes

(20 marks)

Objective: This task allows you to construct 3D solids using building materials and then create detailed front, side, and back views of these solids. Additionally, students will engage in an activity to explore isometric drawings to enhance their understanding of 3D geometry.

Build a 3D Solid

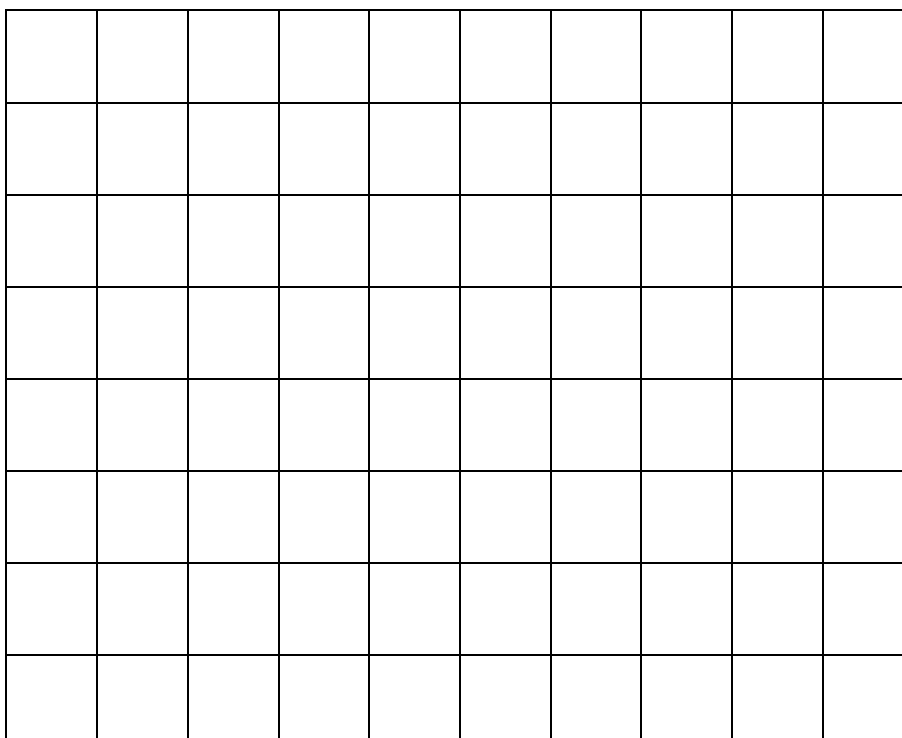
- Select a 3D solids to construct (e.g. cube, rectangular prism or compound solids eg a square and a rectangle).
- Use building blocks to assemble the 3D solid on your workspace.
- Answer the following questions:
 - a. How many blocks were used to make the solid? _____ (1 mark)
 - b. How many vertices does your solid have? _____ (1 mark)
 - c. How many edges does your solid have? _____ (1 mark)
 - d. How many faces does your solid have? _____ (1 mark)

Front, Side, Top and Back Views (12 marks)

Observe the 3D solid from the front, side, top and back. Imagine that you're looking at it from these different perspectives. Draw the 3D solid from the front, side, top and back views on the sheet of grid paper attached. Label the faces, edges and vertices of the 3D solid on each view you've drawn. Use a ruler and a pencil to draw the diagrams.

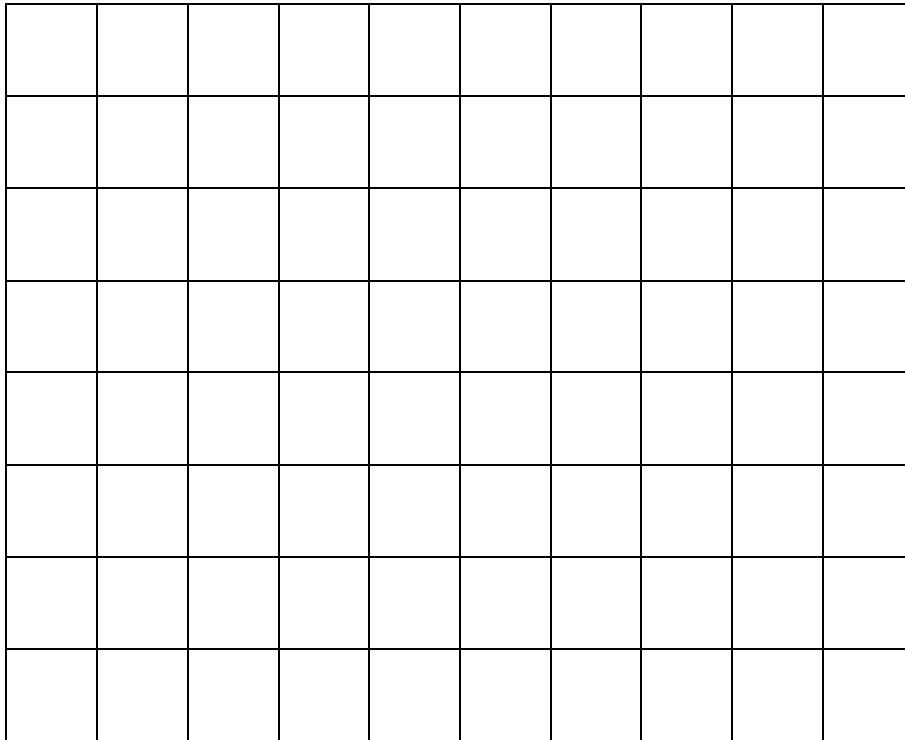
Front View

(3 marks)



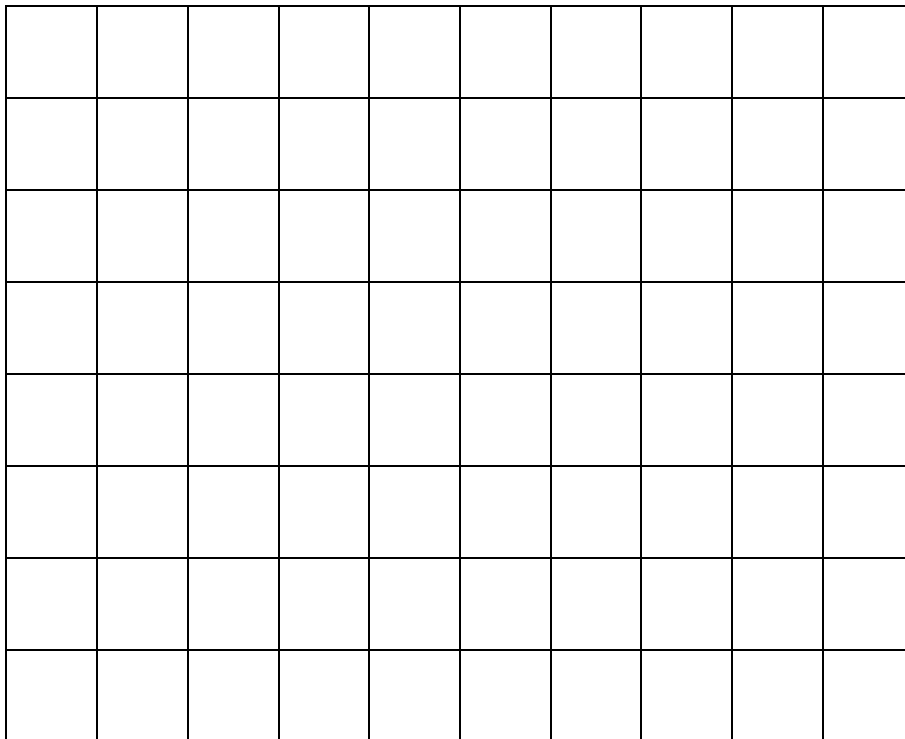
Back View

(3 marks)



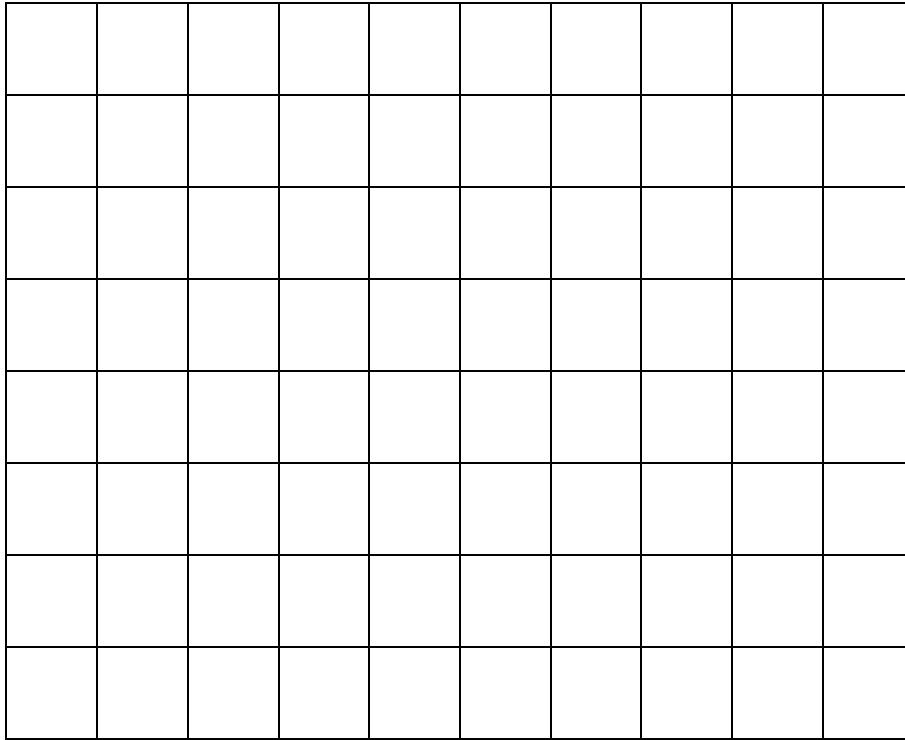
Top View

(3 marks)



Side View

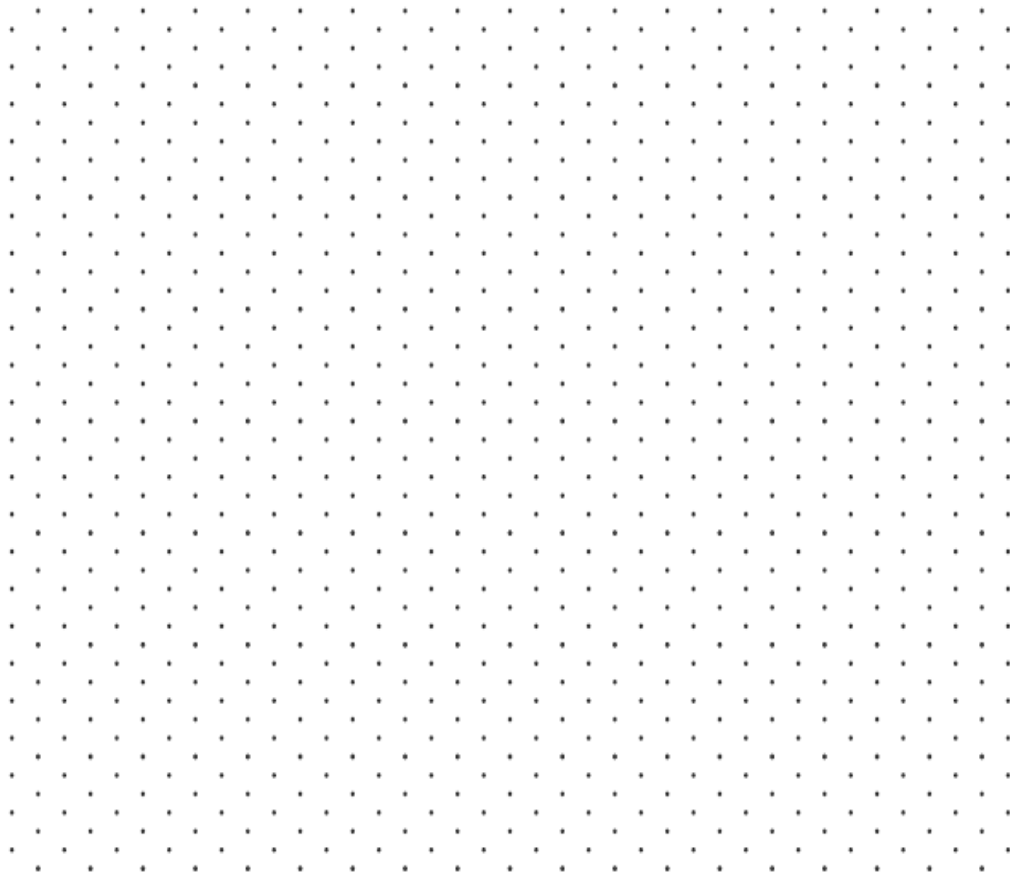
(3 marks)



Isometric Drawing Activity:

(4 marks)

Draw your 3D solid using the isometric paper below: Using the isometric paper attached, draw your 3D solid. Carefully label the solids' vertices, edges and faces on the isometric paper to represent the solid accurately. Use a ruler and a pencil to draw the diagrams.



Extension: Create Your 3D Solid Challenge

(10 marks)

1. Create a 3D model.

(3 marks)

Write a written explanation of your model for another student to construct/draw following your instructions. Your description could include but is not limited to, details about the number of faces, the types of faces (e.g., triangles, squares), the number of vertices and any unique features of the shape.

Include your written explanations in the space below.

Solid Description:

2. Exchange your drawings and descriptions with someone.

(1 mark)

Ask someone to build the solid with blocks. Once they have finished, show them your solid. In the space below, compare their solid with your original solid. Discuss any challenges, differences, and insights gained while the other student replicated the shape.

Your original drawings and descriptions and a picture of the other person's build must be included in your assessment.

Include your original drawing and the other persons drawing at the back of the task.

3. Reflection

Reflect on your instructions, your solid and the other person's solid:

a. Discuss the differences between your and the other person's solid.

(2 marks)

b. List and explain any errors you made.

(2 marks)

c. Discuss how you would change your instructions giving reasons.

(2 marks)
