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Question

CALA LEARNER'S GUIDE

LEARNING AREA   MATHEMATICS

LEVEL   FORM 4

TASK TITLE   SCALE DRAWING

DUE DATE   09 – 07 – 2021

NAME   _____

SCHOOL   _____

CENTRE #   _____

CANDIDATE #   _____

BACKGROUND

There is a need for floor renovations using tiles, therefore you are required to take floor measurements of at least 2 rooms with different dimensions of your own choice. Clearly calculating the areas of each floor and the number of tiles required.

TASK

You are required to take measurements of at least 2 different rooms with different dimensions. Draw up a plan for each room using an appropriate scale. Find the actual area of each room. Calculate the number of tiles needed for each room.

HOW YOU WILL BE ASSESSED

The teacher will assess you on:

- Measuring skills
- Evidence of the appropriate instrument(s) used
- Units of measurement
- Correct use of scale
- Correct scale drawing
- Finding the area of scale drawing
- Finding the scale factor
- The use of scale factor to calculate actual area of the room.
- Calculation of the number of tiles required for each room.

- Size of the tiles you have chosen

TIPS

- Identify 2 rooms of your choice
- State the shape of the rooms
- Explain how you measured the rooms and the instrument(s) used stating the reason(s) for the choice of instrument(s)
- State the scale used for drawing the plan of the rooms
- The dimensions of the actual room are to be written on the drawing (plan)
- Use the scale factor to find the actual area of the room and use correct units
- Calculate the number of tiles needed for each room
- Use any tile of your choice stating its size and shape.

primaEd CALA Learner's Guide: Mathematics November 2021

Discussion: What is CALA?

The acronym CALA means **C**ontinuous **A**ssessment **L**earning **A**ctivity. CALA is an opportunity for students to *apply the concepts* that they have learned in class to **investigate**, **explain**, and **create** useful models and implementation plans to every-day problems or activities.

A good CALA submission is such that any person with basic understanding of the subject tested in the CALA can use, **without needing any additional information**, to carry out the activity required.

Preparing your CALA write-up:

Let's use the CALA for Mathematics November 2021 to illustrate what makes a good CALA submission.

Problem Statement

The CALA question sheet usually gives you a task. The statement that explains the task is often not direct. To show this, here is the statement for the CALA for Mathematics November 2021:

You are required to take measurements of at least 2 different rooms with different dimensions. Draw up a plan for each room using an appropriate scale. Find the actual area of each room. Calculate the number of tiles needed for each room.

You can recreate the question in a more specific way that is easy to follow for you. A good reason to create your own problem statement is to demonstrate that you have understood and interpreted the question well. Here is an example of the much more improvement problem statement.

Problem Statement Example

Measure any two rooms of your choice and create a detailed, easy-to-follow plan about renovating the rooms with tiles. Include a model of the floor with the tiles and show the calculation for the corresponding areas on the plan and on the actual floor.

Method

1. Measure, using a 10-m tape measure, the dimensions of my bedroom (room 1) and the sitting room (room 2).
2. Verify the measured dimensions with the city council schematics for our house.
3. Record the dimensions and calculate the area of the two floors.
4. Get measurements of a block of tiles from a local construction company. *Alternatively: Measure and record the dimensions of the tiles in your home using a tape measure.*
5. Calculate the number of tile blocks required for each room.
6. Calculate the budget for the requirements.
7. Choose a suitable scale to present the flooring plan.
8. Use the area scale to get the area of the floors.

LEARNING AREA	**MATHEMATICS**
LEVEL	**FORM 4**
TASK TITLE	**SCALE DRAWING**
DUE DATE	**09 – 07 – 2021**

NAME _____

SCHOOL _____

CENTRE # _____

CANDIDATE # _____

Method

In this task, I measured and recorded the dimensions of my bedroom floor and our sitting room floor using a 10-meter tape measure. The tape measure length was adequate to measure all the dimensions for the two rooms. In each measurement, I fixed the tap measure flat on one end and then extended the tape-measure out to measure the full length.

I then called a local construction company to request for a catalogue of their flooring tiles. In my flooring plan, I use the 50 cm by 12.5 cm tile blocks. Each block has 8 tiles.

The calculations for the flooring plan for the two rooms are included in this paper.

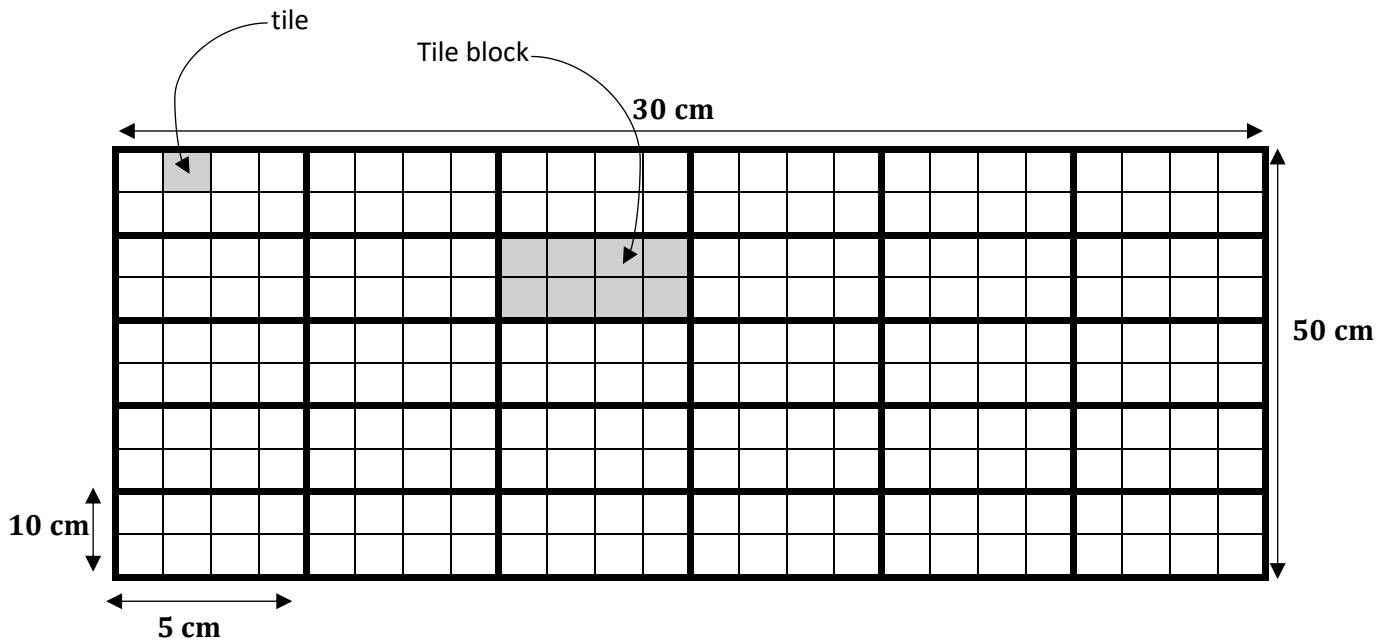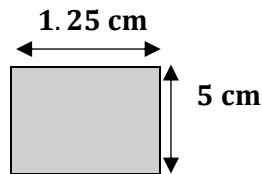## ROOM 1: FLOORING PLAN (Rectangular Shape)

Drawing Details

1.	**Scale Factor**	1 cm : 0.1 m	**1 cm : 0.1 m**
2.	**Area Factor**	$(1\ cm)^2 : (0.1\ m)^2$	**1 cm² : 0.01 m²**

Room 1 Dimensions			Width on Plan
1. **Width**	0.1 m	1 cm	
3 m	3.0 m	more	
	$\dfrac{3\ m}{0.1\ m} \times 1\ cm$		**30 cm**

			Length on Plan
2. **Length**	0.1 m	1 cm	
5 m	5.0 m	more	
	$\dfrac{5.0\ m}{0.1\ m} \times 1\ cm$		**50 cm**

1.25 cm

5 cm

tile

Tile block

30 cm

50 cm

10 cm

5 cm

Area factor	$1\ cm^2 : 0.01\ m^2$
Total Area on Model	$50\ cm \times 30\ cm = 1500\ cm^2$
Actual Area of Floor	$1\ cm^2 : 0.01\ m^2$
	$1500\ cm^2 : more$
	$\dfrac{1500\ cm^2}{1\ cm^2} \times 0.01\ m^2 = \mathbf{15 m^2}$

ROOM 2: FLOORING PLAN(Rectangular Shape)

Drawing Details

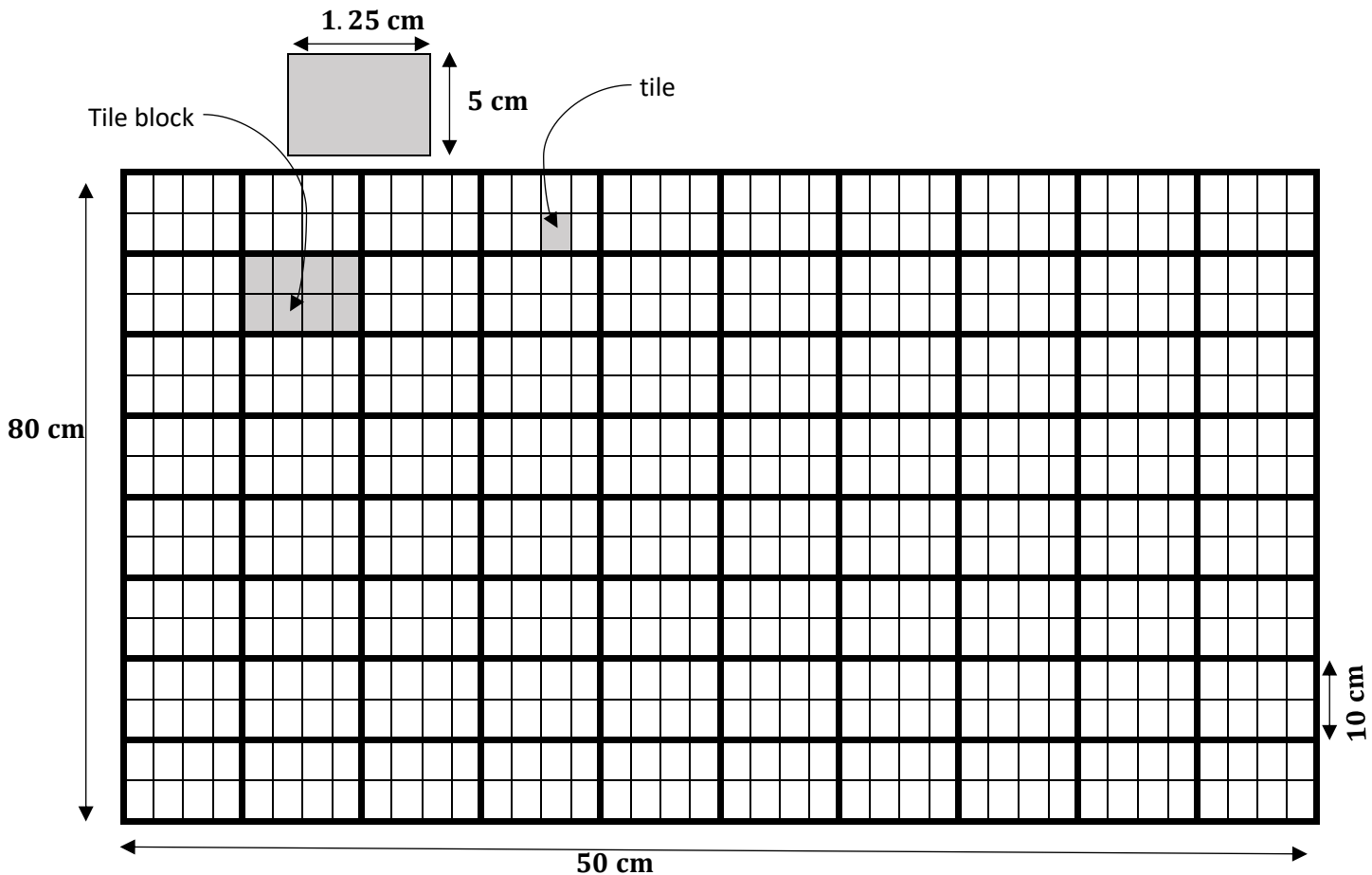|				
1.	**Scale Factor**	1 cm : 0.1 m		1 cm : 0.1 m
2.	**Area Factor**	$(1\text{ cm})^2 : (0.1\text{ m})^2$		$1\text{ cm}^2 : 0.01\text{ m}^2$

Room 1 Dimensions			Length on Plan
3. **Length**	0.1 m	1 cm	
8 m	8.0 m	more	
	$\dfrac{8\text{ m}}{0.1\text{ m}} \times 1\text{ cm}$		**80 cm**
4. **Width**	0.1 m	1 cm	Width on Plan
5 m	5.0 m	more	**50 cm**

Scale	$1\text{ cm}^2 : 0.01\text{ m}^2$
Total Area on Model	$80\text{ cm} \times 50\text{ cm} = 4000\text{ cm}^2$
Actual Area of Floor	$1\text{ cm}^2 \quad : 0.01\text{ m}^2$
	$4000\text{ cm}^2 \quad : \text{more}$

$$\frac{4000\text{ cm}^2}{1\text{ cm}^2} \times 0.01\text{ m}^2 = \mathbf{40\text{ m}^2}$$

SUMMARY

Results

1. **Floor Measurements**

   Room 1: 3m × 5 m

   Room 2: 5m × 8 m

2. **Official Floor Schematics** (*to verify*)

   From House Plan

   Room 1: 3m × 5 m

   Room 2: 5m × 8 m

3. **Area Measurements**

   Room 1: 15 m^2

   Room 2: 40 m^2

4. **Tile Dimensions & Specifications**

   3D Rectangular Tile Panel/Block by Gushungo

   0.05 m × 0.0125 m

   Rectangular Tile

   8 tiles per block;

   1m × 0.5 m = 0.5 m^2 area/block.

   USD 3.50 per block

5. Number of Blocks Required

   Room 1: 30

   Room 2: 80

6. Number of Tiles

   Room 1: 30 blocks × 8 tiles/block

   =240 tiles

   Room 2: 80 blocks × 8 tiles/block

   =640 tiles

6. Budget

   Room 1: 30 blocks ×USD3.50/block

   USD 105.00

   Room 2: 80 blocks ×USD3.50/block

   USD 280.00

-THE END-

ADDITIONAL MATERIAL

The following materials are not required in the question. They are just meant to help you understanding the planning.

0.125 m

0.5 m

tile

Tile block

3 m

5 m

1 m

0.5 m

0.125 m

0.5 m

Tile block

tile

0.5 m

1 m

5 m

10