

# MATHEMATICAL LITERACY

**GRADE 12**

2024

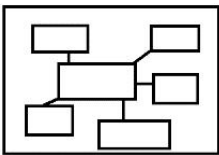

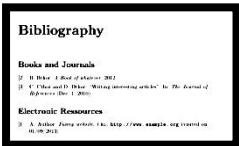
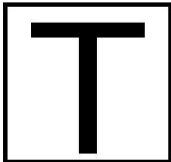
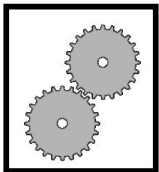

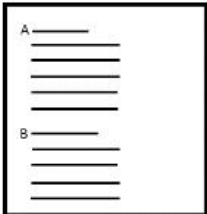

# LAST PUSH

**TEACHER AND LEARNER  
CONTENT MANUAL**



## MATHEMATICAL LITERACY PROGRAMME FOR 2024 SPRING CLASSES

STRUCTURE OF THE EXAMINATION			
PAPER	TOPICS	TOTAL MARKS	WEIGHTING
<b>PAPER 1:</b> (FINANCE & DATA HANDLING)	Finance	±90	± 60 %
	Data Handling	±53	± 35 %
	Probability	7	5%
<b>TOTAL</b>		<b>± 4</b>	<b>± 32%</b>
<b>PAPER 2:</b> (MEASUREMENT, MAPS, PLANS & SCALES)	Measurement	± 83	± 55%
	Maps, Plans and Scale	± 60	± 40%
	Probability	7	5%
<b>TOTAL</b>		<b>150</b>	<b>±100%</b>
Post-test to be administered since it's a revision of Term 3			

ICON DESCRIPTION			
<b>MIND MAP</b> 	<b>EXAMINATION GUIDELINE</b> 	<b>BIBLIOGRAPHY</b> 	<b>TERMINOLOGY</b> 
<b>WORKED EXAMPLES</b> 	<b>STEPS</b> 	<b>CONTENTS</b> 	<b>ACTIVITIES</b> 

## MATHEMATICAL LITERACY PROGRAMME FOR 2024 SPRING CLASSES

TOPICS FOR PAPER 2			
Plans, Instructions and Assembly diagrams and Models	Plans (1 hour)	± 48	± 45%
	Instructions and Assembly diagrams (1 hour)	± 14	± 13%
	Models (2 hours)	± 45	± 42%
Exchange Rates	Strengths of Currency		
Level 1 Questions	May-June 2022 – 2024 November 2022 - 2024		
Level 1 - 4	May-June 2022 – 2024 November 2022 - 2024		
<b>TOTAL</b>		<b>± 110</b>	<b>100%</b>
Post-test to be administered since it's a revision of Term 3.			

**CONTENTS****PAGE**

<b><u>TOPIC 4:</u> Maps, Plans &amp; other representations of the physical world</b>	
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➤ Models	22 - 28
➤ Exchange Rates	29 - 34
➤ Revision (Last Push) P1 & P2 Topics	35 - 70

# Plans & Models (Packaging)

## LESSON OBJECTIVES

### Plans

Learners must be able to:

- |    |   |
|----|---|
| 1. | Different types of plans  |
| 2. | Understand the symbols and notations used on plans  |
| 3. | Describe what is being presented on the plans   |
| 4. | Analyse the layout of the structure shown on the plan.  |
| 5. | Determine actual length of a plan using measurements and a given scale.   |
| 6. | Determine the most appropriate scale in which a plan must be drawn  |
| 7. | Connect the features shown on elevation plans which features on perspectives shown on a floor of the same structure |

### Instructions and Assembly Diagrams

Learners must be able to:

- |    |  |
|----|--|
| 1. | Use instruction/assembly diagrams, containing words and/or pictures.                                   |
| 2. | Complete the task given in the instructions and/or explain what the instructions mean and/or represent |
| 3. | Analyse the aspects of the design of a structure and make suggestions for alterations                  |

### Models

Learners must be able to:

- |    |   |
|----|---|
| 1. | Determine the most appropriate way to package can/or optimum use of space                         |
| 2. | Determine the most cost-effective way to package a number of can and/or boxes                     |
| 3. | Investigate the best packaging shape for packaging a particular product                           |
| 4. | Investigate the best packaging shape to use for fragile and irregular shaped objects              |
| 5. | Investigate possible ways to stack/arrange boxes in a storeroom in order to maximise wasted space |

## IMPORTANT TERMINOLOGY

Plans, Assembly Diagrams and Models	
<b>Plan</b>	A more detailed representation of a smaller area, often showing landmarks or objects. E.g., layout plan of a school hall.
<b>Floor Plan</b>	A two-dimensional view of a building/ structure from above, excluding the roof of a building and provides information regarding the size and shape of each room, together with positions of exterior and interior walls, doors, windows.
<b>Layout Plan</b>	A layout plan is a top view that shows the arrangement of features/A layout plan is the structural arrangement of items within a certain space.
<b>Elevation Plan</b>	A two-dimensional picture of the outside of a building/structure and provides information regarding the height of the building/structure and external features.
<b>North Elevation</b>	The side view of the building from the northern side
<b>South Elevation</b>	The side view of the building from the southern side
<b>Design Plan</b>	A drawing which shows how a building/structure is made and how it functions or looks and provides manufacturing and or assembly details such as measurements and points of attachment for individual components.
<b>Assembly diagram</b>	A set of instructions, which can be in the form of diagrams, pictures, words or a combination thereof, which is used in the assembly or construction of a product.
<b>Model</b>	A three-dimensional representation of an object/structure, which is made to scale of the original or proposed object/structure.

## Plans

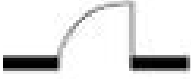



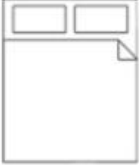



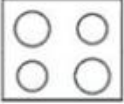

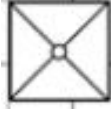

### What is a Floor Plan?

A Floor Plans is a diagram which shows a two-dimensional view of a building from above excluding the roof of a building.

The following information may be obtained from the floor plan:

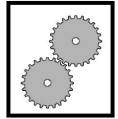
- The size and shape of a building/house including all the dimensions of each room.
- The position of all the features of the building, the doors, windows, basins, toilets cupboards, showers etc.

### Symbols that are used for floor plans:

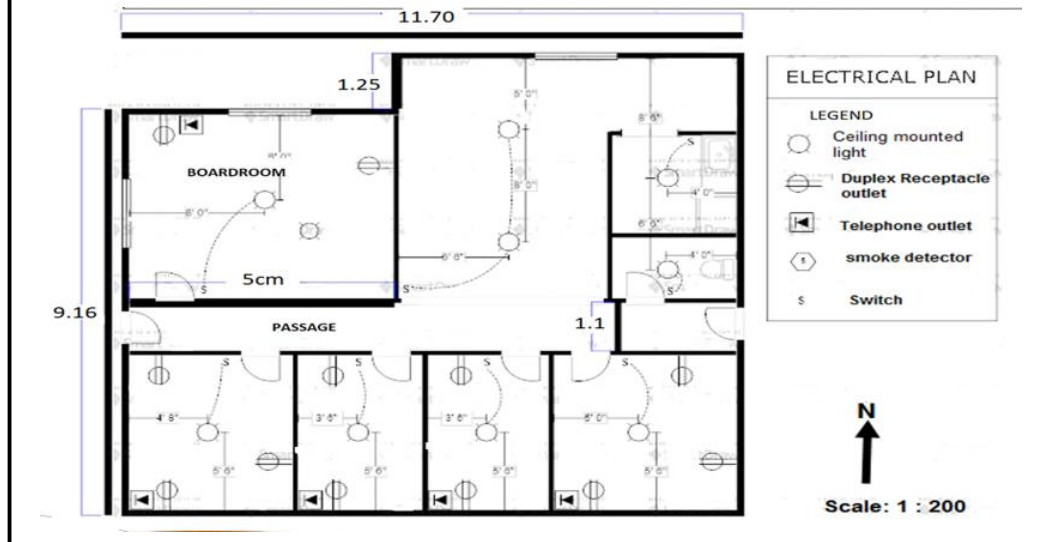
Door 	Window 	Sliding door 
Toilet 	Bed 	Bathtub 
Bathroom sink 	Kitchen sink 	Stove 
Stairs 	Shower 	Wall 



## Worked Example



1. A floor plan for offices is given below. The length of the building on the plan is 11.70 cm and the width is 10.40 cm. An electrical plan is also attached to the floor plan. Use the information on the floor plan to answer the following questions.



- 1.1 Determine the number of telephone outlets in the building. (2)

**Possible answer: 05**

- 1.2 Write down the ratio of the outside doors to the inside doors in simplest form. (3)

**Possible answer:**

**2 : 6**

**1 : 3**

- 1.3 Explain the meaning of the scale 1:200 on the plan. (2)

**Possible answer**

**One cm on the map equals 200 cm in reality**

- 1.4 Use the given scale to determine the actual dimensions of the building. (3)

**Possible answer:**

**Length =  $11,7 \times 200$   
= 2 340 cm  
= 23,4 m**

**Width =  $10,4 \times 200$   
= 2 080 cm  
= 20,8 m**

- 1.5 Determine the probability of finding a window on the eastern wall of the offices. (2)

**Possible answer: 0%**

## Elevation Plans

### What are Elevation plans?

- They are 2-dimensional pictures of the outside of the building.

We have two elevations:

<b>North Elevation</b> The side view of the building from the northern side	<b>South Elevation</b> The side view of the building from the southern side
<b>East Elevation</b> The side view of the building from the east side	<b>West Elevation</b> The side view of the building from the west side.

The image displays a set of architectural drawings for a small house. At the top is the North Elevation, showing a side profile with a gabled roof and a chimney. Below it is the West Elevation, showing the front facade with a central entrance and a large window. To the right of the West Elevation is a floor plan, which is a 2D layout of the interior rooms, including a living room, kitchen, and bedrooms, with dimensions noted. To the right of the floor plan is the East Elevation, showing the back facade with a large window and a chimney. Below the floor plan is the South Elevation, showing the front facade with a central entrance and a large window.

- Elevation plans shows the information about the height of the building and the external features.
- These plans are named using the compass directions.
- The information about the dimensions of the rooms are not shown.

## Worked Example



1. Jane and Tom are the newly-weds. They plan to build a house using the floorplan and elevations shown in ANNEXURE A in the addendum.

Use the information above and ANNEXURE A to answer the questions that follow.

- 1.1 How many bedrooms are shown on the floorplan? (2)

**Possible answer: 03**

- 1.2 The elevations are numbered from 1 to 4. Match the elevation with the correct number e.g., West elevation 3.

- (a) North elevation  
(b) South elevation  
(c) West elevation  
(d) East elevation (4)

**Possible answer:**  
**North Elevation – 2**  
**South Elevation – 1**  
**West Elevation – 4**  
**East Elevation - 3**

- 1.3 Is this plan for a single or double storey house? (2)

**Possible answer:**  
**Double storey**

- 1.4 The actual length of the northern wall is 20 metres. Calculate the length on the floorplan. (3)

**Possible answer:**  
**length on the floorplan**  
**1 : 250**  
**1 cm : 250 cm**  
**20 m × 100**  
**= 2 000 cm**  
**length =  $\frac{2\,000}{250}$**   
**= 8 cm**

**OR**  
**length on the floorplan**  
**1 : 250**  
**1 mm : 250 mm**  
**20 m × 1 000**  
**= 20 000 mm**  
**length =  $\frac{20\,000}{250}$**   
**= 80 mm**

- 1.5 How many doors are found on the first floor? (2)

**Possible answer:**  
**5 doors**

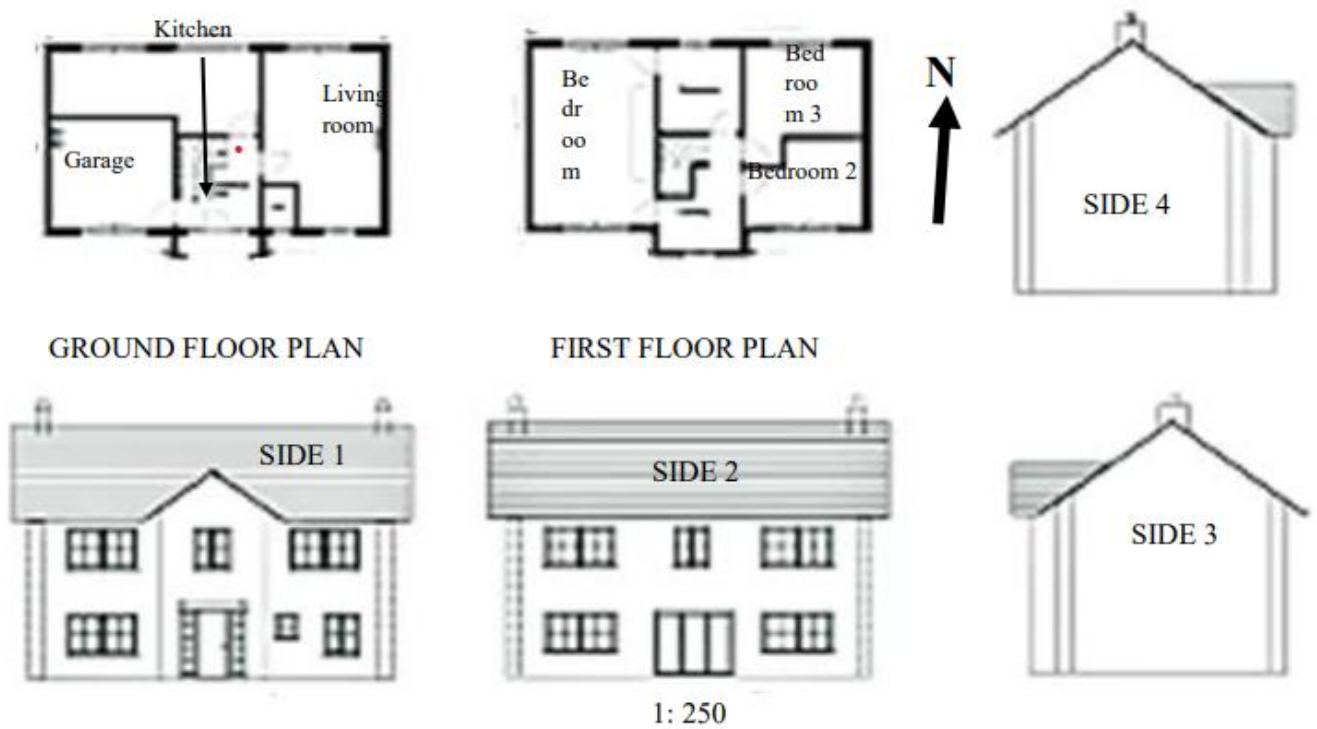
- 1.6 Give the compass direction of the kitchen from the garage. (2)

**Possible answer**  
**East**

- 1.7 Which symbol represents a door on the floorplan? (2)

**Possible answer:**  
**Quarter circle OR Drawing symbol of a quarter circle**

## ANNEXURE A



Source: [www.floorplans.com](http://www.floorplans.com)

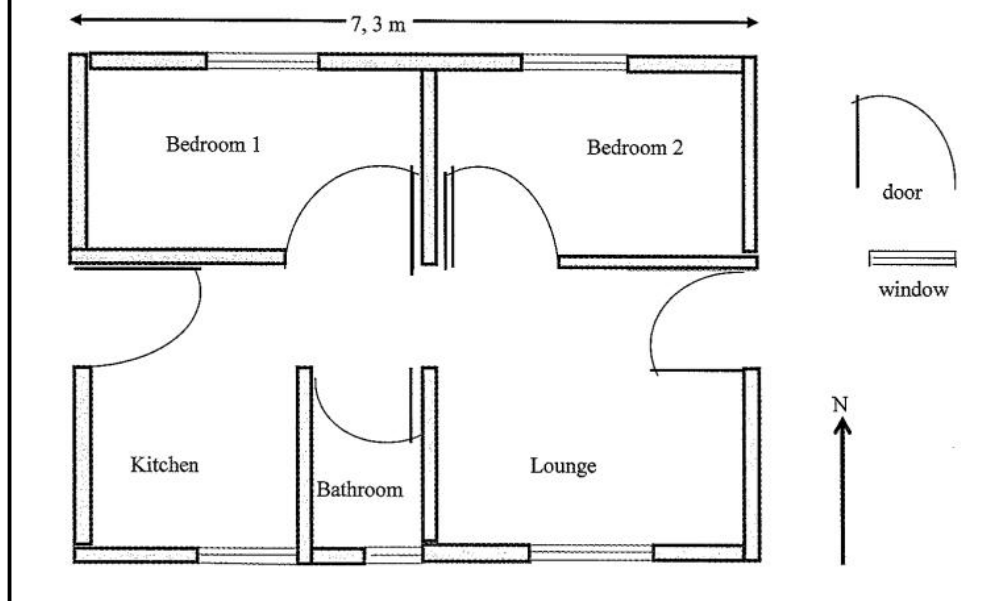
## ACTIVITY 1: Floor and Elevation Plans



(28 marks: 25 minutes)

1.1

Siya owns a company that was hired to build RDP houses for 100 families. Below is the floor plan of one of the RDP houses that were build.



Use the plan above to answer the questions that follow:

- 1.1.1 Explain the term floor plan. (2)
- 1.1.2 Determine the number of windows on the above plan. (2)
- 1.1.3 Give the general direction of bedroom 1 from the lounge (2)
- 1.1.4 The actual length of the house is 7,3 m and, on the plan, it is 133 mm. Determine the scale used the form 1 : ... . (4)
- 1.1.5 If the width of the house is 7,1 m. Calculate the area covered by the house.

You may use the following formula:

**Area of a rectangle = length x width** (2)

- 1.1.6 Does the door leading to the bathroom open to the right or the left? (2)

- 1.2 The layout and elevation plans of a clinic is shown on ANNEXURE A.

Use the following information:

1 foot = 0,3048 m

1 inch = 2,54 cm

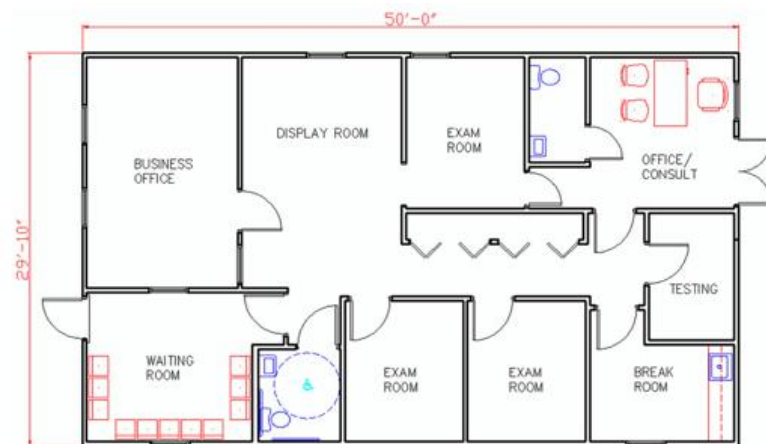
50' represents 50 feet

10" represents 10 inches.

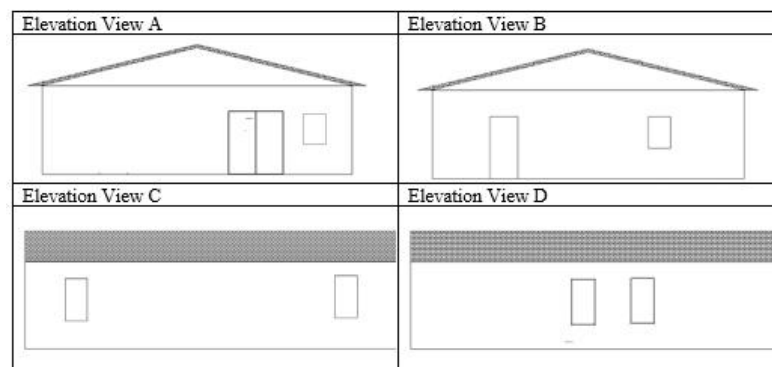
Study ANNEXURE A and answer the questions that follow.

- 1.2.1 If the outer door of the waiting room is facing north, determine the direction the window of the break room is facing. (2)
- 1.2.2 The width of the clinic is 29 feet and 10 inches. Convert the width to metres. (4)
- 1.2.3 Calculate the scale of the plan if the length of the clinic is 50 feet as indicated on the plan and the measurement on the plan is 135 mm.  
Express your answer in the form 1 : ... (5)
- 1.2.4 Which one of the elevation plans is incorrect? Justify your answer. (3)

## ANNEXURE A



[Source: Adapted from <http://www.roseoffices.com/floorplans>]



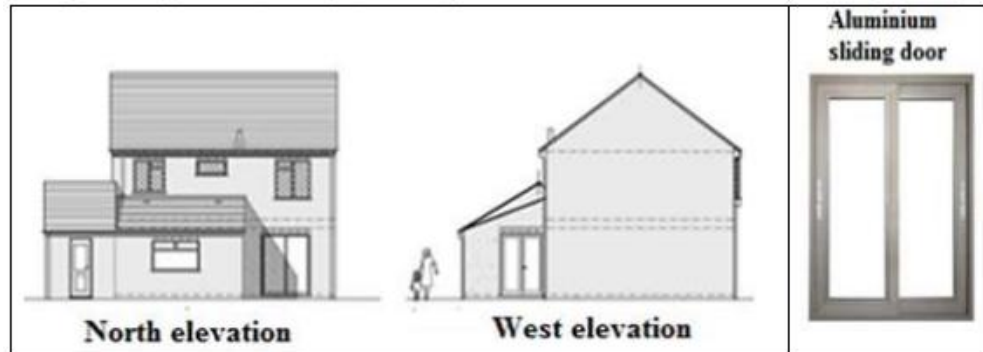
## ACTIVITY 2: Floor and Elevation Plans

(20 marks: 15 minutes)



- 1.1 DIAGRAM 5 below shows Miss Ndoe's family home in Witbank, Mpumalanga. The house has one aluminium sliding door on the North elevation and one aluminium door on the West elevation. Each door is fitted with two panels of safety glass. The aluminium sliding door (DIAGRAM 6) is shown alongside the elevation plans.

**DIAGRAM 5: ELEVATION PLANS**



**DIAGRAM 6**

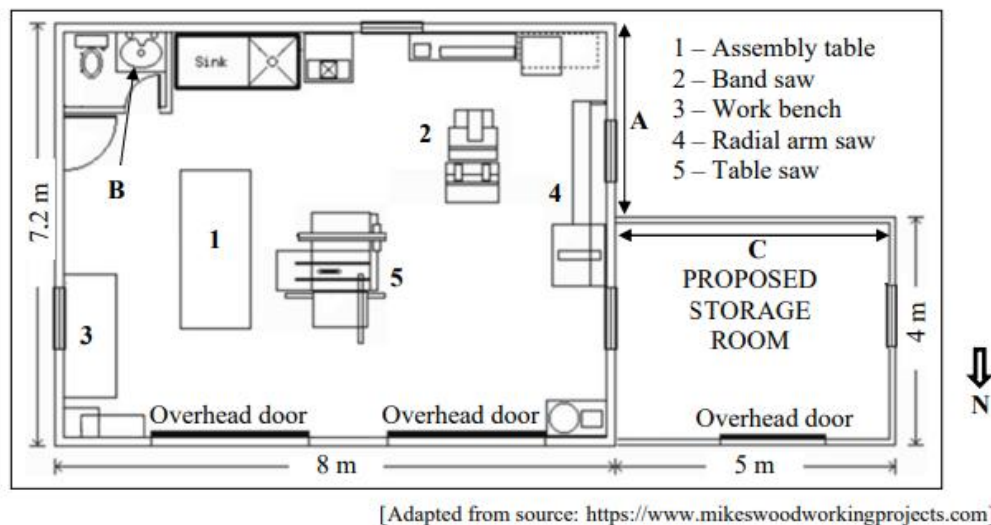
Aluminium  
sliding door

[Source: [www.vectorstork.com](http://www.vectorstork.com)]

Use the elevation plans and information above to answer the questions that follow.

- 1.1.1 Define the term "elevation plan". (2)
- 1.1.2 Measure the height (in cm) of the safety glass of the aluminium sliding door in DIAGRAM 6. (2)
- 1.1.3 Describe the term used for the space within the perimeter of a two-dimensional flat surface. (2)
- 1.1.4 How many windows are shown on the plan's West elevation? (2)

- 1.2 The plan below shows the workshop of Loyiso with a key that shows some of his machinery, tools, work surfaces and its location within the



workshop.

Study the plan above and answer the questions that follow.

- 1.2.1 Write down the number of windows found on the western wall of the workshop. (2)
- 1.2.2 Determine the length of the outer wall, marked A. (2)
- 1.2.3 Name the feature that is indicated by the letter B on the plan. (2)
- 1.2.4 Give ONE change to the plan that you would suggest to the draftsman in terms of accessibility for the proposed storage room. (2)
- 1.2.5 The length of C is 4,77 m. If the thickness of the wall is 0,23 m, determine the perimeter of the inner walls of the proposed storage room. (4)



## INSTRUCTIONS AND ASSEMBLY DIAGRAMS

- When we buy goods such as furniture (TV stands, chairs, etc) or electronic equipment (cell phones, computers, printers, etc), they sometimes comes in pieces, and we need to follow instructions provided in manuals to assemble them.
- It is therefore important to make sense of the instructions if you want the optimal use from the item that you have bought.
- Failing to follow the instructions might lead to the equipment not been able to work properly.

### Note to learners:

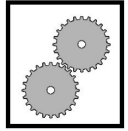
The following points are important when you have to write your own set of instructions:

- Use short and clear sentences.
- Use precise and descriptive words.
- Numbering, arrows, and dotted lines help to show the measurement and direction.
- Diagrams and pictures should be clear, large and easily understandable.
- Colourful diagrams are very effective.

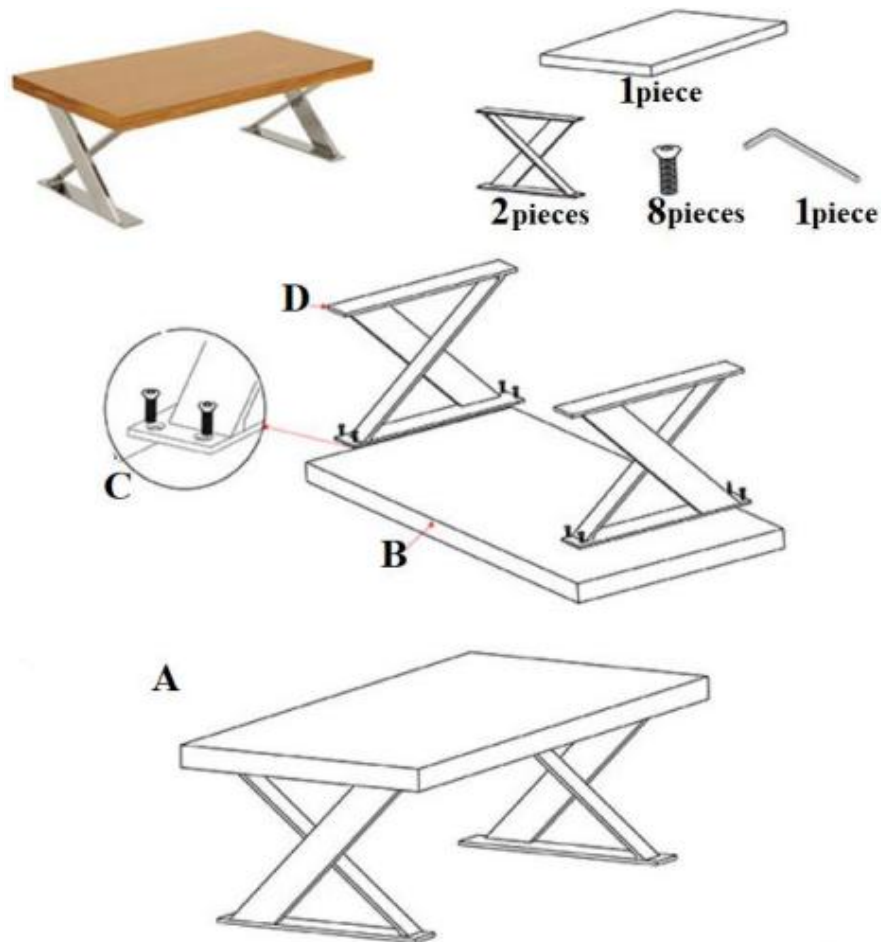
Example:

Instructions to assemble the Cell phone holder		
Clean the desired location then peel the protective skin from the suction pad. 	Place the suction pad on the desired surface. 	Pull down the lever to secure the mount. 
Adjust the car mount in any angle. 	Place your cell phone on the holder and adjust the holder according to the size of the cell phone. 	Pull on the tab at the side for easy removal. 

## Worked Example



- 1.1 The diagrams below show the pieces that can be assembled to make a table that Anathi bought.



Study the diagram above and answer the questions that follow.

- 1.1.1 Determine the number of pieces needed to assemble this table. (2)

**Possible answer**

**1 piece + 2 pieces + 8 pieces + 1 piece  
= 12 parts**

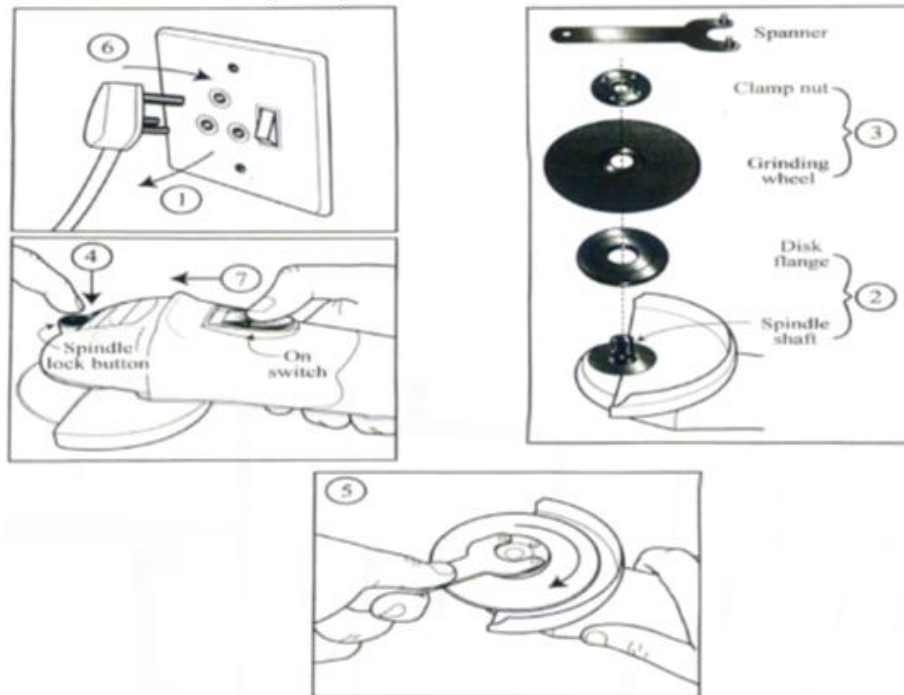
- 1.1.2 Arrange the given steps (using A to D) to show Anathi how this table can be assembled. (4)

**Possible Answer**

**B, D, C, A**

1.2

The school maintenance supervisor had to install a new grinding disc onto an angle grinder.



Write the instructions below (A to G) in the correct order.

(7)

- A. Push down on the spindle lock button to lock the spindle before tightening the clamp nut with the spanner.
- B. Put the disc flange on the grinder spindle shaft, and then put the grinding wheel on top.
- C. Plug the three-pin plug into the power socket.
- D. Isolate and remove the angle grinder plug before assembling the grinding disc.
- E. Put the clamp nut on top of the grinding wheel and screw until tight onto the spindle shaft.
- F. Once the spindle lock button is pressed, tighten the clamp nut onto the grinding disc with the spanner, turning clockwise.
- G. Push the ON switch forward to test the grinder.

**Possible answer**

**A = 4, B = 2, C = 6, D = 1, E = 3, F = 5, G = 7**

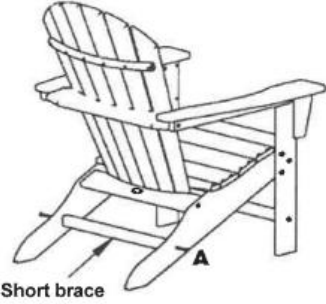
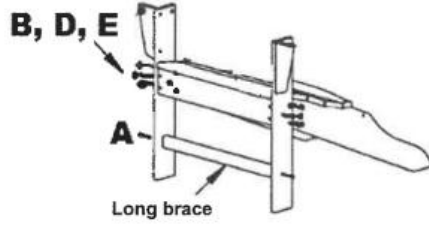

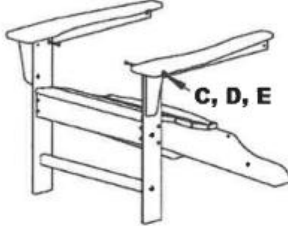
## ACTIVITY 3: Assembly Diagrams

(14 marks:10 minutes)








- 1.1 Illustrated below are steps and some instructions to assemble a deck chair. To assemble the deck chair, the wooden pieces are joint together using fasteners (screws, bolts, washers and nuts). There are 32 pieces in the packet of fasteners. Each bolt is screwed by a nut and a washer.

**STEPS TO ASSEMBLE A DECK CHAIR**

<p style="text-align: center;"><b>STEP 4 COMPLETED CHAIR</b></p> 	<p style="text-align: center;"><b>STEP 1</b></p>  <p>Attach the seat using bolts (B), nuts (E) and washers (D) to the two front legs. Attach the long brace using the screws (A).</p>
<p style="text-align: center;"><b>STEP 3</b></p>  <p>Attach the back to the seat and arms using the screws (A).</p>	<p style="text-align: center;"><b>STEP 2</b></p>  <p>Attach the arms to the two front legs using the bolts (C), nuts (E) and washers (D).</p>

TYPE OF FASTENER				
A	B	C	D	E
Screw	Bolt	Bolt	Washer	Nut
				
Quantity	8	6	...	8

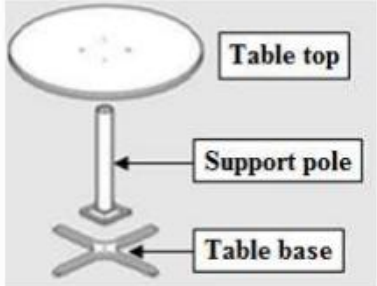
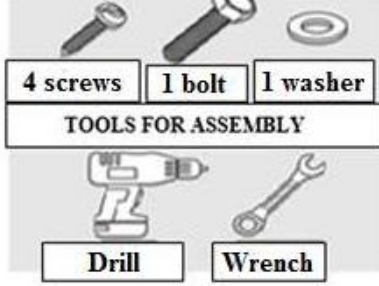
[Adapted from [www.bin.com](http://www.bin.com)]

Use the information above to answer the questions that follow.

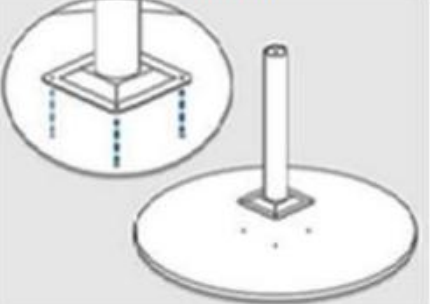
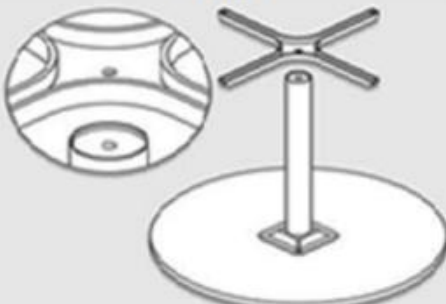
- 1.1.1 Determine the number of type C bolts used to assemble the deck chair (2)
- 1.1.2 State the number of nuts left over after step 1 is completed. (2)
- 1.1.3 Name the piece required to complete the assembly of the deck chair. (2)

- 1.2 Miss Ndoe, the manager of the theatre bought a table for her home. The pieces needed to assemble the table comes in a box and the assembly instructions are as shown below.

**DIAGRAM 2: TABLE- & JOINING PIECES AND TOOLS NEEDED**

TABLE PIECES	JOINING PIECES AND TOOLS NEEDED
 <p>Table top</p> <p>Support pole</p> <p>Table base</p>	 <p>4 screws</p> <p>1 bolt</p> <p>1 washer</p> <p>TOOLS FOR ASSEMBLY</p> <p>Drill</p> <p>Wrench</p>

**DIAGRAM 3: ASSEMBLY INSTRUCTIONS**

STEP 1	STEP 2
	

[Source: [www.globalindustrial.com](http://www.globalindustrial.com)]

Use DIAGRAM 2 AND DIAGRAM 3 above to answer the questions that follow.

- 1.2.1 Determine the number of screws that are provided to assemble this table. (2)
- 1.2.2 Name ONE tool that must be used to assemble the table. (2)
- 1.2.3 Identify the STEP (give number only) in the ASSEMBLY INSTRUCTIONS that represents the following instruction:
- “Use the bolt and the washer to install the table base to the table support pole.” (2)
- 1.2.4 What kind of shape is the long part of the support pole? (2)

## Models

### What is a model?

- A three-dimensional representation of an object/structure, which is made to scale of the original or proposed object/structure.

**When investigating the most cost effective and most appropriate way to package cans and/or boxes for optimal use of space, we can use one of two ways**

**▪Practical Method:**

**▪Using 2-D diagrams or 3-D models of the scenario, to evaluate how many can/boxes can fit into a space, using lengths, breadths, heights and diameters.**

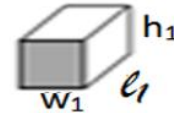
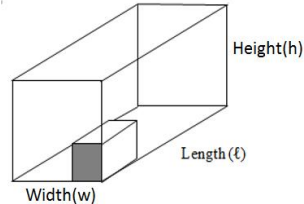
**▪Mathematical method:**

**▪Using volume and surface area formulae to analyse the scenario. Remember the need to round down, as rounding up would result in the can/box not fitting in the desired space.**

## Packaging



### PACKAGING LENGTH-WISE

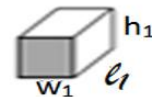
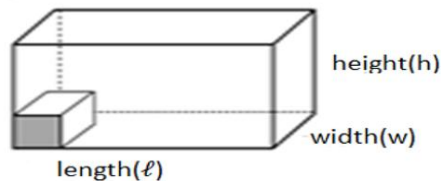


The **Length( $l_1$ )** of the small box is packed along the **Length( $l$ )** of the large box.

**CALCULATION:**

The number of small boxes = **Length** of large box  $\div$  **Length( $l_1$ )** of the small box that can be packed along **Length( $l$ )** of the large box.

### PACKAGING WIDTH-WISE

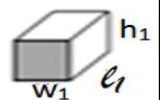
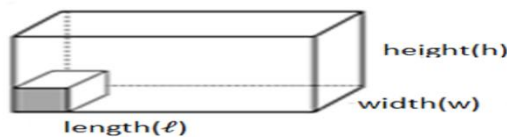


The **Width** of the small box is packed along the **Width/Breadth** of the large box.

**CALCULATION:**

The number of small boxes = **Width( $w$ )** of large box  $\div$  **Width( $w_1$ )** of the small box that can be packed along **Width( $w$ )** of large box

### PACKAGING HEIGHT-WISE



The **Height( $h_1$ )** of the small box is packed along the **Height( $h$ )** of the large box.

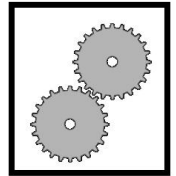
**CALCULATION:**

The number of small boxes = **Height( $h$ )** of large box  $\div$  **Height( $h_1$ )** of the small box that can be packed along **Height( $h$ )** of the large box

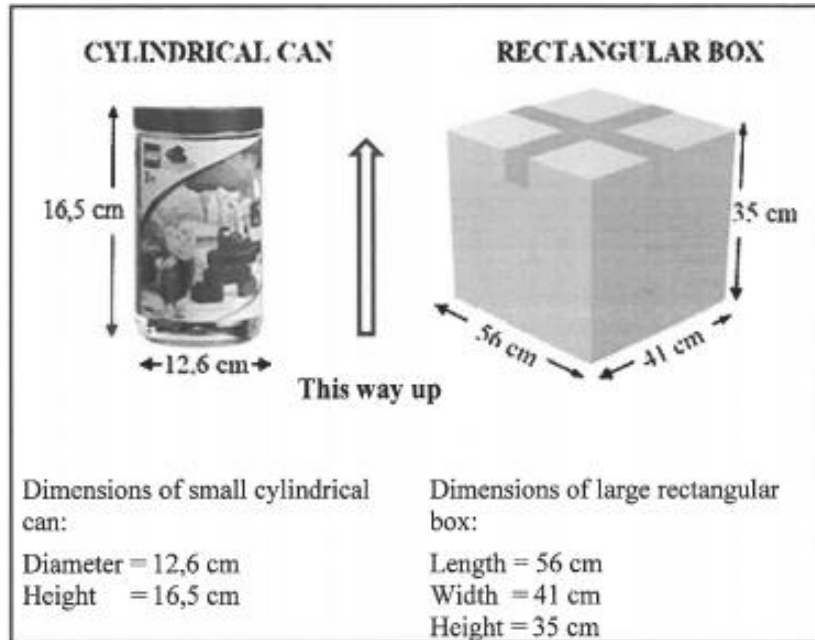
Total number of small = number at length  $\times$  number at width  $\times$  number at height boxes packed



## Worked Example



- 1.1 The building blocks are packed into small cylindrical cans that are then packed into a large rectangular box as shown in the diagrams below.



The cylindrical cans are placed upright in the box.

- 1.1.1 Determine the number of layers of cans that can be placed in an upright position of the box. (2)

**Possible answer**

$$\begin{aligned}\text{Number of layers} &= 35 \text{ cm} \div 16, \\ &= 2,12... \\ &\approx 2\end{aligned}$$

- 1.1.2 Hence, determine the maximum number of cans that can be packed into ONE box. (3)

**Possible answer**

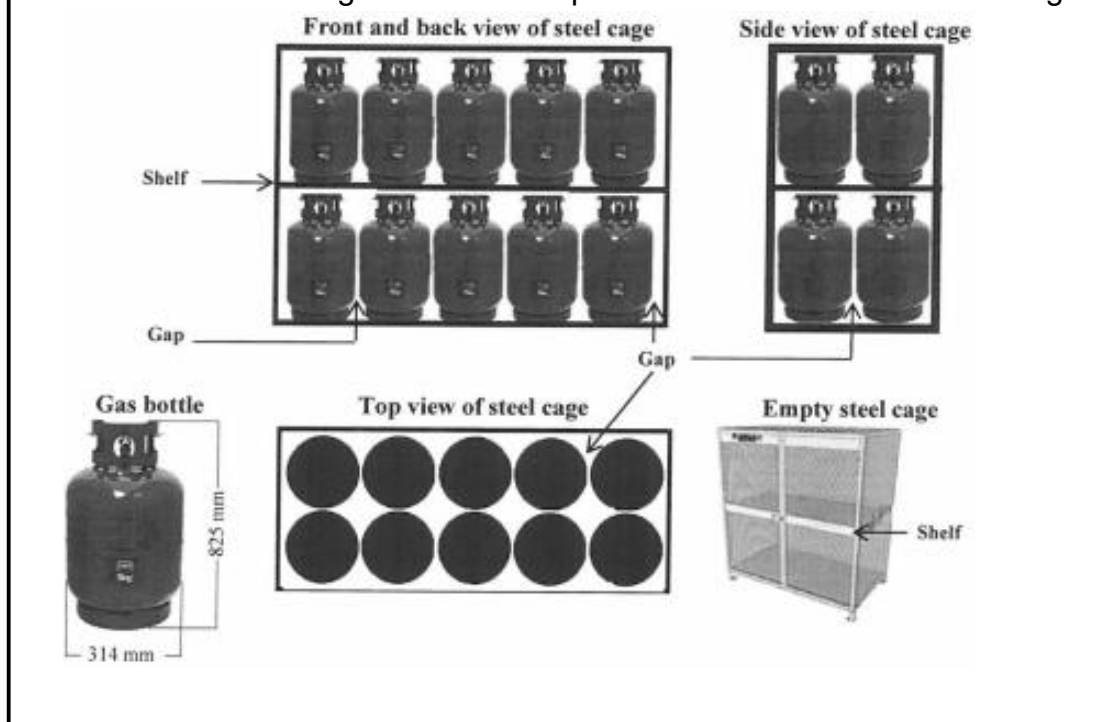
$$\begin{aligned}\text{Number of cans which can be packed lengthwise} &= 56 \text{ cm} \div 12,6 \text{ cm} \\ &= 4,444... \\ &\approx 4\end{aligned}$$

$$\begin{aligned}\text{Number of cans which can be packed width-wise} &= 41 \text{ cm} \div 12,6 \text{ cm} \\ &= 3,253... \\ &\approx 3\end{aligned}$$

$$\text{Maximum number of cans} = 4 \times 3 \times 2 = 24$$



- 1.2 A certified gas dealer sells 9 kg bottles. These cylindrical bottles are stored outside the shop in a steel cage, as shown below. There is a gap of 10 mm on either side of each gas bottle when placed on the shelf in the steel cage.



- 1.2.1 Calculate the maximum number of gas bottles that can fit into ONE steel cage. (2)

**Possible answer**

**Length = 5 bottles**

**Width = 2 bottles**

**Height = 2 bottles**

**Number of bottles in cage =  $5 \times 2 \times 2 = 20$  bottles**

- 1.2.2 A company sells rectangular metal sheets with dimensions 3,4 m by 2,1 m.

Determine, showing ALL calculations, the maximum number of shelves for the steel cage that could be cut from ONE metal sheet. (8)

**Possible answer**

**Length of shelf =  $10 \text{ mm} \times 6 + 314 \text{ mm} \times 5$**   
**=  $60 \text{ mm} + 1\,570 \text{ mm}$**   
**=  $1\,630 \text{ mm}$**

**Width of shelf =  $10 \text{ mm} \times 3 + 314 \text{ mm} \times 2$**   
**=  $30 \text{ mm} + 628 \text{ mm}$**   
**=  $658 \text{ mm}$**

**Length of sheet of metal = 3,4 m = 3 400 mm**

**Width of sheet of metal = 2,1 m = 2 100 mm**

**Lengthwise by lengthwise = 2 shelf lengths**

**Width wise by width wise = 3 shelf widths**

**Total number of shelves =  $2 \times 3 = 6$  shelves**

## ACTIVITY 4: Packaging

(45 marks:40 minutes)



- 1.1 The cylindrical bottles of Coca-Cola are packaged as shown below:



Dimensions of the trailer cover:

- Length = 8,1 m
- Width = 2,45 m
- Height = 2,6 m

Measurements of a 2 litre Coca-Cola bottle:

- Radius = 52 mm and height = 327 mm
- Size of pallet consists of 8 x 8 bottles

NOTE:

- 1 ton = 1 000 kg
- 1 kg = 1 litre

Use the information above to answer the questions that follow.

- 1.1.1 Calculate the maximum number of the Coca-Cola pallets that could be loaded on the second trailer of the truck. (8)

- 1.1.2 Duan states that 12 pallets of the load from the second trailer will fit into a smaller van used by a shop owner for his own stock.

The van load size is 1,5 tons.

Verify, showing ALL calculations, whether his statement is true. (5)

- 1.2 The TVs are boxed and packed into shipping containers before they are exported. The boxes the TVs are packaged into have the dimensions  $97\text{ cm} \times 10\text{ cm} \times 59\text{ cm}$ . The shipping containers have the dimensions  $6\text{ m} \times 2,4\text{ m} \times 2,6\text{ m}$ .



Use the information above to answer the following questions.

- 1.2.1 An employee calculates how many TVs will fit in one container. His calculations are shown below:

$$\begin{aligned}\text{Volume of container} &= 6 \times 2,4 \times 2,6 \\ &= 37,44\text{ m}^3\end{aligned}$$

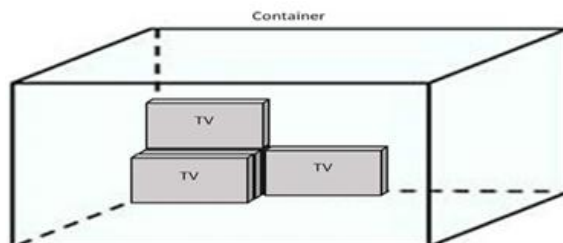
$$\begin{aligned}\text{Volume of each TV box} &= 0,97 \times 0,59 \times 0,1 \\ &= 0,05723\text{ m}^3\end{aligned}$$

$$\begin{aligned}\text{Number of TVs in container} &= \text{Volume of a container} \div \text{Volume of a box} \\ &= 37,44 \div 0,05723 \\ &= 654,2 \\ &\approx 654\text{ TVs}\end{aligned}$$

Neo, a Mathematical Literacy learner, recognises that the employee has made a common mistake in calculating the number of boxes that can fit.

Explain, in words, the mistake that the employee made. (2)

- 1.2.2 Neo stated that 576 TVs can fit into this container if the boxes are packed as in the diagram shown below. Show, by means of calculations, whether he is correct or not.



Note: The diagram is not drawn to scale and shows only a few of boxes.

(10)

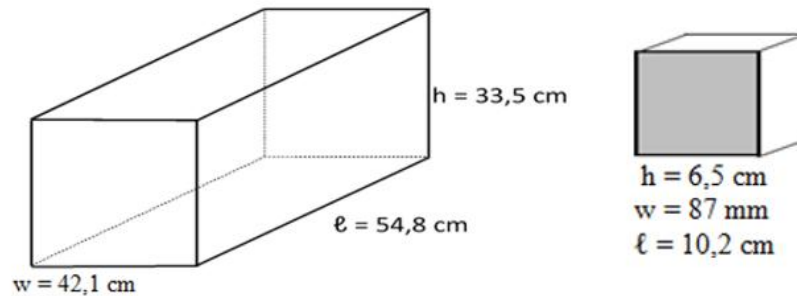
- 1.3 A company is selling biscuits packed in small boxes which are then packed in large boxes.

Verify which of the following packaging options will be cost effective:

**Option 1:** The length of the small box along the length of the large box.

**Option 2:** The width of the small box along the length of the large box.

Show all calculations to justify your answer.



(15)

- 1.4 Sipho opened a Spaza shop. He will purchase cans of Diet Coke from the wholesaler. A box of 24 cans of Diet Coke is displayed below. The radius of a can of Diet Coke is 3.5 cm. The cans are packed as shown in the picture. Calculate the minimum length and minimum width of the box to contain the 24 cans of Diet Coke.



(5)

# Exchange Rates

## LESSON OBJECTIVES

### IMPORTANT TERMS AND DEFINITIONS/TERMINOLOGY

#### EXCHANGE RATES

<b>Exchange Rate</b>	The value of one currency relative to the value of another currency.
<b>Currency</b>	A medium of exchange for goods and services.
<b>Strong currency</b>	A currency is classified as strong when it is worth more than another country's currency.
<b>Weak currency</b>	A weak currency refers to a nation's money that has seen its value decrease in comparison to other currencies.
<b>Foreign Investment</b>	Capital flows from one country to another, granting the foreign investors extensive ownership stakes in domestic companies and assets.
<b>Import</b>	Bring (goods or services) into a country from abroad for sale.
<b>Export</b>	Send (goods or services) to another country for sale.

#### EXCHANGE RATES:

Learners must be able to:

1. Explain terminology associated with exchange rates section.
2. Differentiating between “STRONG” and “WEAKER” currency.
3. Compare the currency from different countries.
4. Use the given exchange rate to calculate from the value of one currency to another.

## Question 1 Exchange Rates

## FS Daily Assessment Tasks

- 1.1 Mr Gwabeni intends to visit his friend in the United States. He has R30 000 to spend while he is there. The exchange rate on that date is 1 dollar (\$ ) = R13,97

**Worked Example****Exchange Rate**

Note the following:

5. Compare the value of different currencies to each other.
6. If we were to compare the value of the Rand to Dollar, we would see that **R1** could buy **\$0,0625** or **R1 = \$0,0625**.
7. To put it another way; **\$1 = R16,00**.
8. Take note that the exchange rates will use up to four decimal places being quotes.
9. When converting use the “left” to “right” rule Left Right, **multiply** Right Left, **divide**.
10. Exchange rates are determined based on the supply and demand basis.
11. If there is more demand for a currency and people want the products manufactured by that country or want to invest in the country.
12. The price of that currency will increase relative to the other currencies.
13. If the demand is less (or bigger supply) the price of that currency will decrease relative to the other currencies. This usually happens when foreign investors pull out of a country, or a currency needs to start importing most of their products.

**Example 1:**

We want to convert **\$75** to Rands.

Using: = R1= \$0,0625  $\longrightarrow$   $\$75 \div 0,0625 = \text{R1 } 200,00$

Using: = \$1= R16,00  $\longrightarrow$   $\$75 \times 16 = \text{R1 } 200,00$

**Important:**

*In real life there would be a small difference between your results depending on which rate you chose to use. This is due to a rounding error caused by the rates being rounded to four decimal places.*

- 1.1.1 Explain the term exchange rates within the context above. (2)
- 1.1.2 State whether the rand is stronger or weaker than the dollar (2)
- 1.1.3 Calculate how much his spending money is worth in dollars. (2)

1.2 TABLE 1 below indicates the exchange rate between South Africa (SA) and some other high-ranking countries.

<b>Exchange rate of SA and other Countries October 02, 2017 09:00</b>		
<b>CURRENCY</b>	<b>UNITS PER ZAR</b>	<b>ZAR PER UNIT</b>
US Dollar	0,073482	13,608770
European Euro	0,062562	15,984219
British Pound	0,055187	18,120130
Indian Rupee	4,811223	0,207847
Australian Dollar	0,094072	10,630196
Canadian Dollar	0,091895	10,881951

[Source: [www.x-rates.com](http://www.x-rates.com)]

- 1.2.1 On which date was the exchange rate recorded? (2)
- 1.2.2 Determine the amount of South African rands (ZAR) that are equivalent to 1US Dollar. (2)
- 1.2.3 Name the currency used in Australia. (2)
- 1.2.4 Express 10,881951 as a whole number. (2)

1.3

Sipho decides to buy a pair of sneakers online. The sneakers cost \$178,57 in New York (USA) and the same pair of sneakers costs £156,49 in London (UK). The table below shows the exchange rate for the US dollar and the UK pound.

<b>\$1</b>	<b>ZAR 14,52</b>
<b>£1</b>	<b>ZAR 18,71</b>

Pearson Navigation pack

- 1.3.1 Determine the cost of the sneakers in both cities in ZAR and calculate how much Sipho would save if he buys the sneakers from the cheapest city. (6)
- 1.3.2 Sipho sees the same pair of sneakers advertised for R3 000 in the local newspaper. The price of the sneakers includes an inflation rate of 5,9%. Determine the price of the sneakers before inflation. (3)
- 1.3.3 The main engine crankshaft of a Volvo FX 380 HP truck was not available in South Africa, so he had to import the part from Sweden. The price of the part as shown on the internet is 40 329,21 Kr (Swedish Krona). Calculate the total cost in rands to get the part to South Africa if import tax and postage cost amount to R1 250 and must still be added. (3)



- 2.1 During the Covid-19 crisis in 2020 the South African Rand (ZAR) declined to a record low level compared to some other currencies. Below is a table indicating the exchange rates as on 20 May 2020.

May 20, 2020		
Currency	Units per ZAR	ZAR per unit
US Dollar	0,055124	18,141002
Euro	0,050319	19,873189
British Pound	0,405000	22,222255
Indian Rupee	4,176797	0,239418
Australian Dollar	0,084102	11,890347
Japanese Yen	5,933915	0,168523

Use TABLE 1 and the information above to answer the questions that follow.

- 2.1.1 On what date were the exchange rates recorded? (2)
- 2.1.2 How many South African rands (ZAR) are equivalent to 1 British Pound? (2)
- 2.1.3 What is the name of the currency used in Japan? (2)

2.2

Anelle's brother, Tony, who lives in the United States of America, decided to send her money to buy the vegetable slicer using Payment Option 1.

TABLE 7 below shows the exchange rate of South Africa in relation to the currencies of other countries.

May-June 2021

**TABLE 7: EXCHANGE RATES TABLE ON 6 FEBRUARY 2020**

1 ZAR = 0,067251 US dollars (\$)	US dollar (\$) = ZAR14,86966737
1 ZAR = 0,061147 euros (€)	Euro (€) = ZAR16,35403209
1 ZAR = 0,051856 pounds (£)	Pound (£) = ZAR19,28417155
1 ZAR = 7,386276 yen (¥)	Yen (¥) = ZAR0,1352362217

[Adapted from [www.x-rates.com/table](http://www.x-rates.com/table)]

Use the information and TABLE 7 above to answer the questions that follow.

2.2.1 Identify the currency that is weaker than the rand. (2)

2.2.2 Tony sent Anelle US\$130,00.  
Determine, rounded to the nearest rand, the amount Anelle received from Tony. (3)

2.3

Mandla's younger sister studies medicine in Britain. Mandla sent her R34 152,69 to travel back home.

2.3.1 How many pounds did he send to his sister if £0,048373 = 1ZAR? (2)

# Question 1s:

## [May-June 2022-2024] [November 2022-2024]

### Question 1





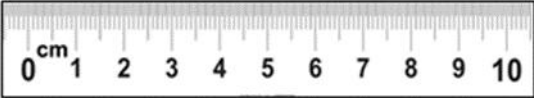
P2 May-June 2022

2.1

Sifiso is a builder who uses building plans and measuring instruments.

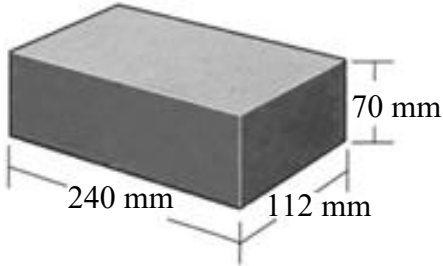
Some measuring instruments and scales used by builders are shown below.

Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–G) next to the question numbers (1.1.1 to 1.1.5) in the ANSWER BOOK.

	COLUMN A	COLUMN B
1.1.2	The most appropriate scale to draw a map of South Africa	<b>A</b>  0 100 200 km
1.1.2	The instrument most suited to measure the circumference of a dinner plate	<b>B</b> 
1.1.3	The most appropriate scale to draw a plan of a house	<b>C</b> 
1.1.4	The instrument most suited to measure the width of a soccer field	<b>D</b> 1 : 50 000
1.1.5	The instrument most suited to measure the length of a pencil	<b>E</b>  <b>F</b>  <b>G</b> 1 cm = 1 m
		$(5 \times 2) = 10$

1.2

The sketch below shows a standard brick, with dimensions, used in South Africa.

SKETCH OF A STANDARD BRICK	DIMENSIONS OF THE BRICK
	<p>Height = 70 mm</p> <p>Width = 112 mm</p> <p>Length = 240 mm</p>

Use the information above to answer the questions that follow.

1.2.1 State which formula (**A**, **B** or **C**) below can be used to calculate the total surface area (TSA) of the given brick.

**A**  $TSA_{(brick)} = \text{Area of front side} + \text{Area of right-hand side} + \text{Area of top}$

**B**  $TSA_{(brick)} = (2 \times 240 \times 70 + 2 \times 240 \times 112 + 2 \times 112 \times 70) \text{ mm}^2$

**C**  $TSA_{(brick)} = (240 \times 70 + 240 \times 112 + 112 \times 70) \text{ mm}^2$  (2)


1.2.2 State the unit of measurement for the volume of this brick. (2)

1.2.3 Convert the length of this brick to metres. (2)

1.2.4 Determine the maximum number of rows of bricks that can be stacked height-wise to a height of 2 100 mm. (3)

1.3

Maria uses the recipe below to bake scones.

Ingredients (makes 1 dozen)	Picture of the scones
75 g butter 2 large eggs 75 g sugar 4 teaspoons baking powder 230 ml milk 500 g flour 1 cup raisins	
Baking Instruction	
Bake for 15 minutes at 200 °C.	

Use the information above to answer the questions that follow.

1.3.1 Convert the mass of the flour to kilograms. (2)

1.3.2 Determine the number of large eggs needed to make **30** scones. (2)

1.3.3 Each scone has an average diameter of 7 cm.

Write down the average radius of EACH scone. (2)

1.3.4 Calculate how many full dozen scones can be made with 500 g of butter. (3)

1.3.5 The scones were placed in the oven to bake at 14:10.

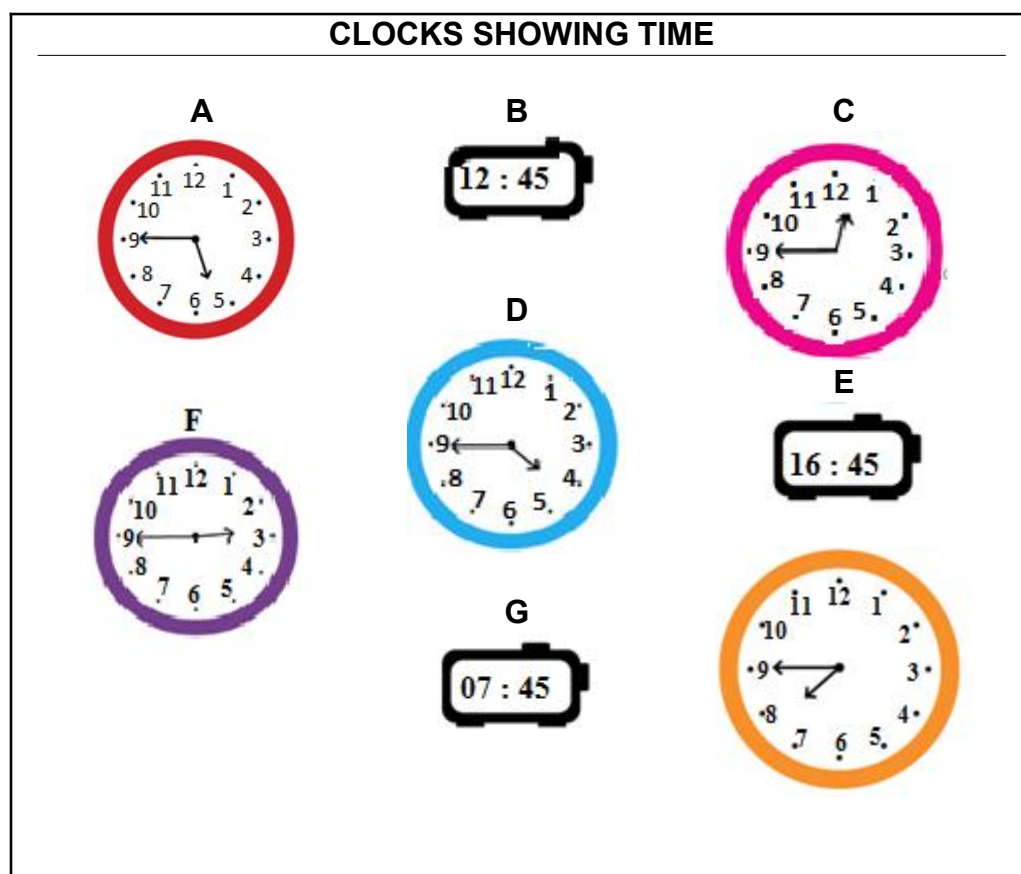
Write down, in words, the time the scones were placed in the oven. (2)

**[30]**

## QUESTION 1

P2 Nov 2022

1.1 Various clocks indicating time are shown below.



Use the information above to answer the questions that follow.

1.1.1 Which ONE of the following (X, Y or Z) best describes the time displayed on EACH clock?

X Nine minutes to the next hour

Y Forty-five minutes to the next hour

Z A quarter to the next hour (2)

1.1.2 Name the TWO-time formats used to display time on the clocks. (3)

1.1.3 Write down, in words, the time displayed on clock **B**. (2)

1.1.4 Write down the number of clocks that clearly indicates a time in the afternoon. (2)

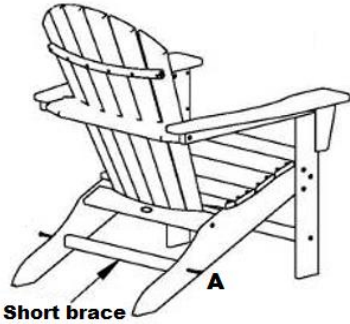
1.1.5 Convert 16 hours and 45 minutes to minutes. (2)

1.2

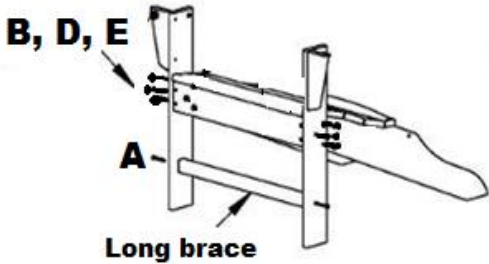
Illustrated below are steps and some instructions to assemble a deck chair. To assemble the deck chair, the wooden pieces are joined together using fasteners (screws, bolts, washers and nuts). There are 32 pieces in the packet of fasteners. Each bolt is secured by a nut and a washer.

### STEPS TO ASSEMBLE A DECK CHAIR

**STEP 4**  
**COMPLETED CHAIR**



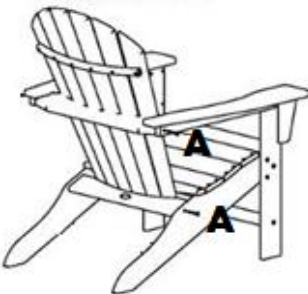
**STEP 1**



**Long brace**

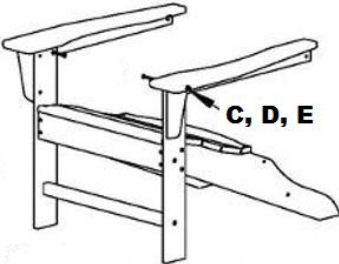
Attach the seat using bolts (**B**), nuts (**E**) and washers (**D**) to the two front legs. Attach the long brace using the screws (**A**).

**STEP 3**








Attach the back to the seat and arms using the screws (**A**).

**STEP 2**



Attach the arms to the two front legs using the bolts (**C**), nuts (**E**) and washers (**D**).

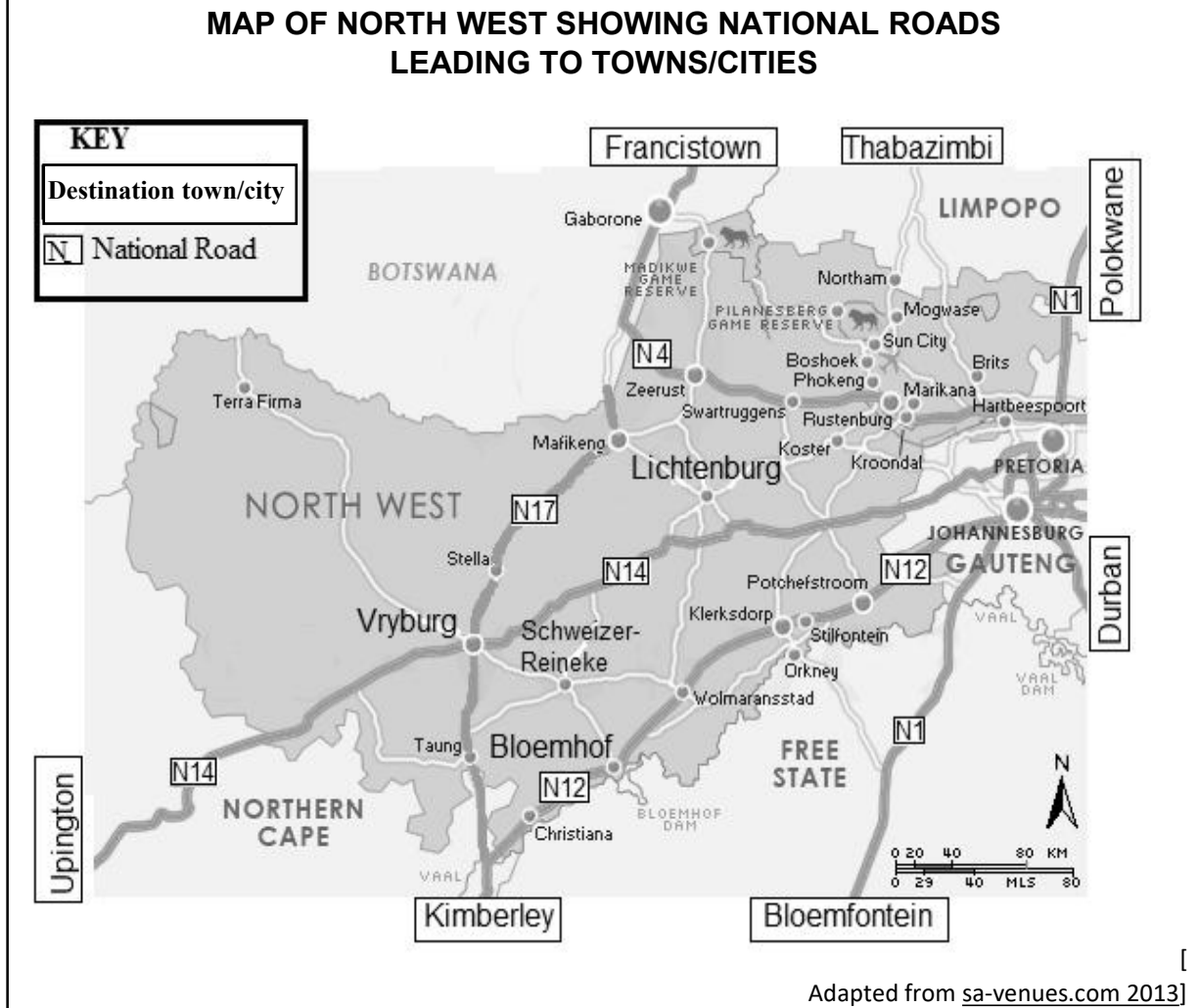
TYPE OF FASTENER					
	<b>A</b> Screw	<b>B</b> Bolt	<b>C</b> Bolt	<b>D</b> Washer	<b>E</b> Nut
					
<b>Quantity</b>	8	6	...	8	8

[Adapted from [www.bin.com](http://www.bin.com)]

Use the information above to answer the questions that follow.

- 1.2.1 Determine the number of type **C** bolts used to assemble the deck chair. (2)
- 1.2.2 State the number of nuts left over after step 1 is completed. (2)
- 1.2.3 Name the last piece required to complete the assembly of the deck chair. (2)

- 1.3 Below is a map of North West showing destination towns/cities and inter-leading roads.



Use the map above to answer the questions that follow.

- 1.3.1 Identify the type of scale used in the map. (2)
- 1.3.2 Name the province that lies east of North West. (2)
- 1.3.3 Identify the national roads passing through Vryburg. (2)
- 1.3.4 Write down the number of destination towns/cities shown on the map. (2)
- 1.3.5 Measure, in mm, the direct distance (as the crow flies) from Bloemhof to Lichtenburg. (2)

[27]



**QUESTION 1****May-June 2023**

- 1.1 In TABLE 1 below is a list of explanations and definitions of concepts used in Mathematical Literacy.

**TABLE 1: EXPLANATIONS AND DEFINITIONS OF CONCEPTS**

<b>A</b>	The distance from the centre of a circle to the outer part of the circle
<b>B</b>	The use of cardinal directions (i.e. north, south, east and west) to describe the location of one point to the other
<b>C</b>	The path or boundary that surrounds a circular-shaped object or surface
<b>D</b>	A position which is not exact, but roughly shows the location of an object
<b>E</b>	A measure of body fat based on the height and weight of an adult person
<b>F</b>	The total area of all the faces of a 3D-shaped object
<b>G</b>	A special type of diagram used to determine the outcomes of an event in probability examples
<b>H</b>	The arrangement of something laid out, such as the structural features of a mall
<b>I</b>	The ratio of the distance in real life compared to the same distance on a map
<b>J</b>	The rate of covering a certain distance over time

Use the information above to write down the letter of the explanation or definition **(A to J)** of EACH of the following concepts:

- 1.1.1 BMI (body mass index) (2)
- 1.1.2 Circumference (2)
- 1.1.3 Map scale (2)
- 1.1.4 Compass direction (2)
- 1.1.5 Tree diagram (2)

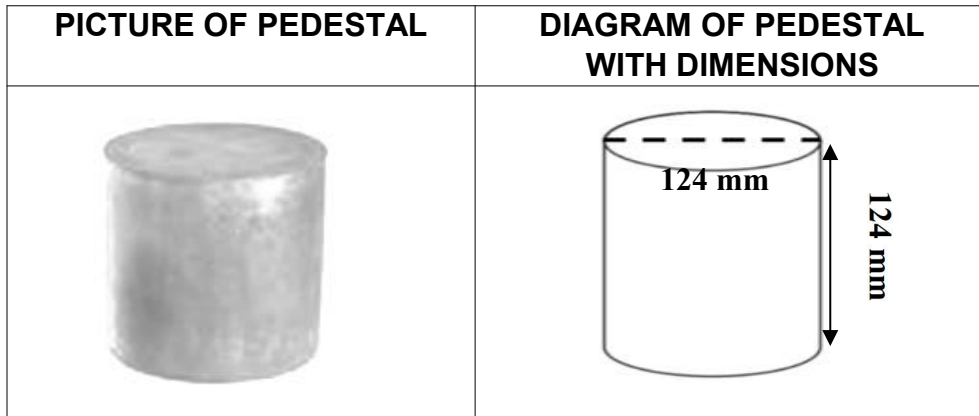
- 1.2 ANNEXURE A shows the layout of a vegetable garden with different plant beds, as well as TABLE 2 which shows plants with their partner plants.

- 1.2.1 Identify THREE plants that have cabbage as a partner. (3)
- 1.2.2 Determine the number of partners of the plant found in bed 4 of the vegetable garden. (2)
- 1.2.3 Name the partner plant which appears four times in the partner column. (2)
- 1.2.4 Give the compass direction of sage from the onions in the vegetable garden. (2)

- 1.2.5 Some of the plant beds in the vegetable garden contain more than one type of plant. Write down the plant bed numbers of these plant beds. (3)

1.3

The sketches below show a pedestal and a diagram of the pedestal with its dimensions. The pedestal can be used as a table, plant stand or as extra seating.



[Source: [ladiff.com/project/unaconcrete-pedestals](http://ladiff.com/project/unaconcrete-pedestals)]

Use the information above to answer the questions that follow.

- 1.3.1 Choose a formula (**A**, **B** or **C**) below which can be used to calculate the total volume of the pedestal.

**NOTE:** In EACH formula, **r** = **radius** and **h** = **height**.

**A** Volume =  $(2 \times \pi \times r \times h) + (2 \times \pi \times r^2)$

**B** Volume =  $(2 \times \pi \times r^2) \times h$

**C** Volume =  $\pi \times r^2 \times h$  (2)

- 1.3.2 Write down the unit of measurement for the volume of the pedestal using the given unit in the diagram. (2)

- 1.3.3 Convert the height of the pedestal to metres. (2)

**[28]**

**QUESTION 1****DBE Nov 2023**

1.1 In TABLE 1 below is a list of explanations and definitions of concepts used in Mathematical Literacy.

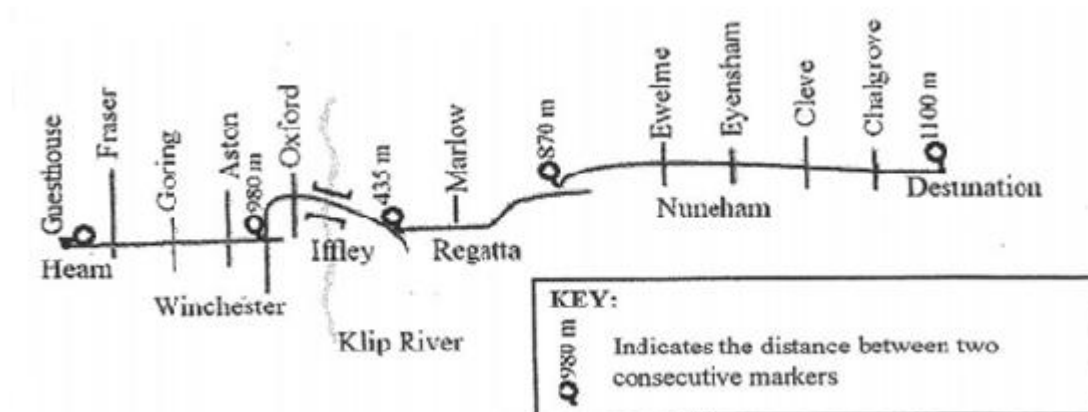
**TABLE 1: EXPLANATIONS AND DEFINITIONS OF CONCEPTS**

<b>A</b>	A drawing showing the streets for a person who drives a car
<b>B</b>	Visual indication of the real-life distance and its distance on the map
<b>C</b>	The boundary that surrounds a circular-shaped object
<b>D</b>	A position which roughly shows the location of an object
<b>E</b>	The sum of the areas of all the faces of a 3-D object
<b>F</b>	The rate of covering a certain distance
<b>G</b>	The amount of space that is enclosed by the perimeter of an object

Use the information above to write down the letter of the explanation or definition (**A to G**) of EACH of the following concepts:

- 1.1.1 Bar Scale (2)
- 1.1.2 Surface area (2)
- 1.1.3 Road Map (2)
- 1.1.4 Speed (2)

1.2 Mr Masunte stays at a guesthouse in Hearn Street. Below is a strip chart showing the streets he will use to reach his destination.



- 1.2.1 Write down how many streets Mr Masunte must cross before turning into Winchester Street. (2)
- 1.2.2 Name the street that goes over the Klip River. (2)
- 1.2.3 Calculate the total distance from the guesthouse to his destination. (2)

1.3

Illustrated below are the steps and components needed to assemble a chair. The components to assemble the chair are labelled alphabetically (A-K).

STEPS TO ASSEMBLE A CHAIR					
<b>STEP 1</b> 	<b>STEP 2</b> 	<b>STEP 3</b> 	<b>STEP 4</b> 		
<b>STEP 5</b> 	<b>COMPLETED CHAIR</b> 				

COMPONENTS NEEDED TO ASSEMBLE THE CHAIR					
<b>A</b> Chair back	<b>B</b> Chair seat	<b>C</b> Seat mechanism	<b>D</b> Gas lift	<b>E</b> Chair base	<b>F</b> Chair arms
<b>G</b> Casters	<b>H</b> Screws	<b>I</b> Screws	<b>J</b> Screws	<b>K</b> Washer	<b>L</b> Assembly tool: Allen key

[Source: <http://www.bing.com>]

Use the information above to answer the questions that follow.

1.3.1 Determine how many different types of screws are needed to assemble the different parts of the chair. (2)

1.3.2 Use the steps to assemble a chair to identify the following:

a) The letter that indicates the chair base (2)

b) The number of screws used in step 4 (2)

1.3.3 Name the tool needed to assemble the chair (2)

1.3.4 Identify the component of the chair that comes as a pair (2)

[25]

**QUESTION 1****May-June 2024**

1.1

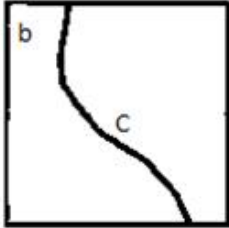
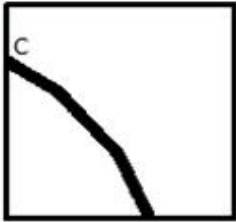
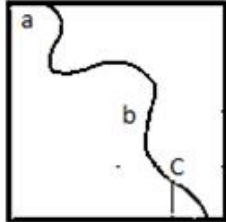
TABLE 1 below shows a list of explanations and definitions in COLUMN B, and mathematical terms and concepts in COLUMN A.

**TABLE 1: TERMS AND CONCEPTS WITH EXPLANATIONS AND DEFINITIONS**

<b>COLUMN A</b>		<b>COLUMN B</b>
<b>1.1.1 Circumference</b>	<b>A</b>	time measurement equivalent to six hundred seconds
<b>1.1.2 Probability</b>	<b>B</b>	the measuring of hotness or coldness
<b>1.1.3 One hour</b>	<b>C</b>	the line from one end of a circle to the other end
<b>1.1.4 Temperature</b>	<b>D</b>	equivalent to the mass of a person divided by the height squared
	<b>E</b>	the boundary that surrounds a circular shape
	<b>F</b>	time measurement equivalent to three thousand six hundred seconds
	<b>G</b>	the likelihood that something might happen
	<b>H</b>	a number showing the relationship between the distance on a map and the actual distance

Use TABLE 1 above and choose an explanation or definition from COLUMN B that matches the term or concept in COLUMN A. Write only the letter (A–H) next to the question numbers (1.1.1 to 1.1.4) in the ANSWER BOOK, e.g. 1.1.5 J. (8 x 1) (8)

- 1.2 The three sketches below represent the same portion of the physical world which is drawn using three different scales (A, B and C) in random order.

Sketch 1	Sketch 2	Sketch 3
		
<p>The following scales (in random order) were used to draw these sketches:</p> <p>A    <b>1 : 100 000</b> B    <b>1 : 25 000</b> C    <b>1 : 50 000</b></p>		

Use the information and sketches above to answer the questions that follow.

- 1.2.1 Name the type of scale used to draw the sketches above. (2)
- 1.2.2 Interpret the scale 1 : 50 000. (2)
- 1.2.3 Write down the scale that was used to draw Sketch 2. (2)

- 1.3 The picture below shows information boards (a traffic sign and distance information) and vehicles heading in a southerly direction.

The numbers displayed next to the names of the towns on the information board show the distance in kilometres from the information boards to that town.



Use the information above to answer the questions that follow.

- 1.3.1 Give the shapes of the information boards. (2)
- 1.3.2 Write down the distance a motorist must still travel, in a northerly direction, to reach Bloemfontein. (2)
- 1.3.3 The 120 on the traffic sign board indicates 120 km/h.  
Interpret 120 km/h in context. (2)
- 1.3.4 Determine the distance from Trompsburg to Johannesburg. (2)
- 1.3.5 State the general direction of Trompsburg from the information sign. (2)
- 1.3.6 The length of one of the road signs is 90 cm.  
Convert this length to metres. (2)

**[26]**

## REVISION ACTIVITIES PER TOPIC USING PAST EXAMINATION PAPERS DBE NSC 2022 - 2024

### Financial Documents: Invoice

DBE May 2023

2.1 John's daughter joined the school's hockey team in 2022.

TABLE 1 below shows the school sport uniform she would need as well as the percentage (%) change in the price compared to the previous year.

**TABLE 1: PRICES OF SCHOOL SPORT UNIFORM WITH PERCENTAGE (%) CHANGE IN PRICE**

ITEM	2021 PRICE	2022 PRICE	% CHANGE IN PRICE
Sport shirt	R267,92	R265,00	– 1,1
Sport shorts	R214,17	R177,00	– 17,4
Sport skirt	R248,70	R232,00	– 6,7
Tracksuit top	R267,78	R382,00	42,7
Tracksuit pants	R87,75	R195,00	122,2
Sport socks	R48,58	R53,50	10,1
Cap	R89,95	R171,00	90,1

[Adapted from

[www.news24.com/fin24/money/education](http://www.news24.com/fin24/money/education)]

Use TABLE 1 to answer the questions that follow.

- 2.1.1 Arrange (in ascending order) the % change in price. (2)
- 2.1.2 Identify the third most expensive item in 2022. (2)
- 2.1.3 Calculate the difference in price of a cap bought in 2022 compared to 2021. (2)
- 2.1.4 Determine the total cost of the school sport uniform in 2021. (2)
- 2.1.5 Name ONE other item NOT listed in the table that John's daughter might need in order to play for the school hockey team. (2)



- 4.1 Katlego is employed at a school by the Presidential Youth Employment Initiative (PYEI). He earns a salary of R4 000 per month.

He presently has a NEDBANK Pay-as-you-use Account but is thinking of changing to a CAPITEC Global One Account.

TABLE 3 below shows the transactional fees for the two banks.

**TABLE 3: TRANSACTIONAL FEES OF TWO BANKS**

TRANSACTION TYPE	2021 PRICE	2022 PRICE
Deposits (ATM)	R1,30 per R100	R1,30 per R100
Deposits (Branch)	R80 + R2,30 per R100	R4,00 per R100
Cash withdrawals (own ATM)	R9,00 per R1 000 (or a part thereof)	R8 per R1 000 (or a part thereof)
Cash withdrawals (other ATM)	R11 + R2,30 per R100 (or a part thereof)	R10 per R1 000 (or a part thereof)
Cash withdrawals (branch)	R80 + R2,30 per R100	N/A
Debit order (internal)	Free	Free
Debit order (external)	R5,00	R1,50
Send cash (R1–R1 000)	R10,00	R8,00
Send cash (R1 001–R5 000)	R15,00	R16,00
Airtime/Data/Electricity (own ATM)	R1,50	R0,50
Airtime/Data/Electricity (other ATM)	R10,00	R8,00

[Adapted from [nedbank.co.za](http://nedbank.co.za) and [capitec.co.za](http://capitec.co.za)]

Use TABLE 1 to answer the questions that follow.

- 4.1.1 Give ONE reason why banks charge more for branch deposits than ATM deposits. (2)
- 4.1.2 Determine the difference in cost of an external debit order using a Nedbank Pay-as-you-use account and a Capitec Global One account. (2)
- 4.1.3 Katlego had the following monthly transactions on his bank statement:
- Two external debit orders
  - One cash withdrawal of R1 500 at own bank ATM
  - One cash withdrawal of R450 at another bank ATM
  - One Send cash transaction of R1 500 to his mother


The CAPITEC banking fees for the listed transactions are R45,00.

Katlego states that he would have saved R20,50 on bank fees if he banked with CAPITEC rather than NEDBANK.

(7)

2.1

**ANNEXURE A**

Levy Statement/Tax Invoice			
Mrs Bongiwe Dlamini			
16 Blueberry Gardens			
48 Vuuren Road			
Glen's Nek			
1806			
		Statement Date:	1 July 2021
		Payments Up To:	19 June 2021
		Premises:	UNIT 16

**Use the following reference on your payment:****Amount Due:****BGD0016****R2 340, 73****Transactions**

Date	Details	Debit R	Credit R	Balance R
1 June 2021	Balance Brought Forward			894,55
1 June 2021	Standard Levy June 2021	1 498,63		2 393,18
1 June 2021	Insurance Additional June 2021	5,59		2 398,77
1 June 2021	Domestic Effluent June 2021	510,55		2 909,32
1 June 2021	Levy CSOS June 2021	30,90		2 940,22
1 June 2021	Maintenance Plan (10 years) June 2021	265,29		3 205,51
1 June 2021	ACB CREDIT SETTLEMENT – BGD0016		-	A
			3 206,00	
1 July 2021	Standard Levy July 2021	1 498,63		1 498,14
1 July 2021	Meter-reading Fee – Electricity July 2021	15,13		1 513,27
1 July 2021	Insurance Additional July 2021	5,59		1 518,86
1 July 2021	Domestic Effluent July 2021	510,55		2 029,41
1 July 2021	Meter Reading Fee – Water July 2021	15,13		2 044,54
1 July 2021	Levy CSOS July 2021	30,90		2 075,44
1 July 2021	Maintenance Plan (10 years) July 2021	265,29		2 340,73

**Amount Due:****R2 340,73**

Bank Details		Important: No cash payments
<b>Bank:</b>	SLR	1. Cheques payable to the body corporate
<b>Branch Code:</b>	3564900	2. All amounts due on the first day of each month
<b>Account Name:</b>	Blueberry Gardens	
<b>Account Number:</b>	11 550 22 456	

[Adapted from Angor Property Specialists]

- 2.1 Bongiwe received her levy statement of account from Rango Property Specialist for her rented unit.
- ANNEXURE A above shows her adapted statement of account.

Use ANNEXURE A to answer the questions that follow.

- 2.1.1 Write down the reference number that Bongiwe must use when she pays her account. (2)
- 2.1.2 Give ONE reason why reference numbers are used when making payments. (2)
- 2.1.3 Calculate the missing value A, which has been omitted from the statement. (2)
- 2.1.4 The total amount due for this invoice is R2 340,73, including 15% VAT. (2)
- Calculate the total amount due, excluding VAT.
- 2.1.5 Calculate (rounded to TWO decimal places) the standard levy for June 2021 as a percentage of the amount due on the statement. (4)
- 2.1.6 Write down a possible payment option Rango Property Specialist will accept. (2)
- 2.1.7 Blueberry Gardens have 49 units in total.
- Calculate the total amount collected by the body corporate if all 49 units paid their levy CSOS on 1 July 2021. (3)
- 2.1.8 The Blueberry Gardens body corporate increased the standard levy by 6,45% from 1 August 2021.
- Calculate the new standard levy after the increase. (4)

2.1 David is a 68-year-old man who works at a grocery store in Swellendam.

David's Bank Statement below shows an extract of David's Bank Statement for the period 1 November 2022 to 1 December 2022. Some amounts have been omitted.

**EXTRACT OF DAVI'S BANK STATEMENT FOR THE PERIOD 1 NOVEMBER 2022 TO 1 DECEMBER 2022**

<b>BANK STATEMENT/TAX INVOICE</b>				
<b>ELITE CHEQUE ACCOUNT</b>		Account number:		1108 762 250 2
Details	Debits (R)	Credits (R)	Date	Balance (R)
Balance brought forward				2 169,55
Service fee ##	1,60–		11 22	2 167,95
Overdraft fees	58,25–		11 25	2 109,70
Excess interest	9,35–		11 25	2 100,35
Salary		A	11 30	10 078,41
Debit check debit order	1 557,45–		11 30	8 520,96
ATM cash withdrawal	3 000,00–		11 30	5 520,96
ATM cash withdrawal	180,00–		11 30	5 340,96
Withdrawal service fees ##	69,00–		11 30	5 271,96
Fixed monthly service fee ##	110,00–		11 30	5 161,96
Debit check debit order	335,62–		12 01	4 826,34
Insure PLA insurance premium	940,39–		12 01	3 885,95
Santam insurance premium	940,39–		12 01	2 945,56
Membership fee – rewards	25,00–		12 01	2 920,56
Electronic transfer credit card	1 307,76–		12 01	1 612,80
These fees include VAT at 14% until 31 March 2018 and at 15% from 1 April 2018.				

[Adapted from original bank statement]


KEY: 11 30 = 30/11/2022

Use the above information to answer the questions that follow.

- 2.1.1 Write down the type of account David has. (2)
- 2.1.2 Determine the total amount paid for service fees (##). (3)
- 2.1.3 David's net salary paid into his account is labelled A.  
He has two insurance policies.  
David stated that his total monthly payments for insurance is more than  
a  $\frac{1}{4}$  of his net salary.  
Verify, showing ALL calculations, if his statement is CORRECT. (7)
- 2.1.4 The fixed monthly service fee of R110,00 on 30/11/2022 includes VAT of 15%.  
The same service fee, excluding VAT, was charged on 30/11/2017.  
  
Determine the service fee amount, including VAT, that would have been paid on 30/11/2017. (5)

- 2.1 Mr Warren Heyns received his Titanium credit card statement for his account at Standard Bank, dated 9 September 2023.

Below is an adapted statement of Mr Warren Heyns' credit card account..

Titanium Credit Card		
MR W HEYNS 4 BEND STREET GQEBERHA 6020		<b>Statement details</b> Page 1 of 1 Date: 9 Sep. 2023
 <b>Standard Bank</b>		
Tax Invoice		
Transaction details		Account 2593 **** *
		6582
Date	Description	Amount
10/8/23	Balance Brought Forward	606,36
Credits		
6/9/23	Payment, Thank You	-2 000,00
Debit		
12/8/23	Caltex	1 376,15
14/8/23	Oranje Meganies	1 450,00
24/8/23	Pro Shop – Rovic RV2 Golf Push Cart	3 299,99
27/8/23	Bossa Cafe Soneike	384,00
28/8/23	Checkers Zevenwacht	177,64
1/9/23	Ucount Fee	25,00
7/9/23	Last Minute	160,00
8/9/23	C* Yoco *Koek	55,00
9/9/23	Credit Protection Policy	40,08
9/9/23	# Card Fee	42,00
9/9/23	# Service Fee	40,00
Closing balance		5 656,22

STATEMENT SUMMARY ON: TITANIUM CREDIT CARD ACC. 2593 **** *	
6582	
Payment Information	
Total amount owing on this statement	5 656,22
<b>Minimum payment due</b>	<b>169,68</b>
<b>Payment due date</b>	4 Oct 2023
<b>Credit:</b>	
Credit limit	20 000,00
Outstanding authorisations on revolving account	6 020,00
Available money to spend	8 323,78

[Adapted from original credit card statement]

Use the above information to answer the questions that follow.

- 2.1.1 Write down the amount paid to Standard Bank by Mr Heyns during September 2023. (2)
- 2.1.2 Give ONE valid reason why some numbers have been omitted from the account number. (2)
- 2.1.3 Outstanding authorisations refer to purchases that must still be finalised.
- Show, by means of calculations, how the amount of R8 323,78 for available money to spend was determined. (3)
- 2.1.4 The amount paid to Caltex on 12/08/2023 was for 54,1365 litres of petrol. (3)
- Calculate the price per litre of petrol on that particular day.
- 2.1.5 The purchase at the Pro Shop on 24/08/2023 was for a Rovic RV2 golf push cart at a discounted price.
- If a 17,5% discount was given on the price paid, calculate the original price of the Rovic RV2 golf push cart. (4)

## Income Tax (PAYE)

### QUESTION 5

May-June 2022

- 5.1 Shamila, a teacher at a local high school, is going on retirement. The estimated value of her full pension fund benefit is R3 457 920,00.

She has two options to consider when she retires.

**Option 1:** Withdraw a third of the full pension fund benefit.

**Option 2:** Withdraw 100% of her full pension fund benefit.

TABLE 4 below indicates the tax payable on retirement benefits.

**TABLE 4: RETIREMENT BENEFIT TAX TABLE**  
(1 March 2021 to 28 February 2022)

TAXABLE INCOME (R)	RATES OF TAX (R)
1–500 000	0% of taxable income
500 001–700 000	18% of taxable income above 500 000
700 001–1 050 000	36 000 + 27% of taxable income above 700 000
1 050 001 and above	130 500 + 36% of taxable income above 1 050 000

[Adapted from [sars.gov.za](https://sars.gov.za)]

Use the information above to answer the questions that follow.

- 5.1.1 Write out Shamila's full pension fund benefit in words. (2)
- 5.1.2 Determine the amount of money that Shamila can withdraw if she chooses Option 1. (2)
- 5.1.3 Shamila decides to choose Option 2 as she wants to loan money to her daughter, Suraya, who intends on relocating to New Zealand.
- (a) Shamila states that the amount of tax she will pay on the estimated value of her pension fund of R3 457 920,00 is more than R1 000 000. Verify, showing ALL calculations, whether her statement is CORRECT. (6)
- (b) The ratio of the estimated value of Shamila's full pension (before tax) to her daughter's loan amount is:  
9,8798 : 1.  
Determine, to the nearest thousand rand, the amount that her daughter will borrow. (4)
- (c) Suraya agrees to borrow the money at a simple interest rate of 7,8% per annum. She intends to repay the total amount with interest at the end of a three-year period.
- Determine the total amount she will have to repay after three years. (4)



## QUESTION 5

May-June 2024

- 5.1 Malcolm, a 65-year-old consultant, earns an annual taxable income of R981 500 for the 2023/2024 tax year. He does not belong to a medical aid.

TABLE 8 below shows the tax table for the 2023/2024 tax year.

TABLE 9 shows the rebates for different tax ending years.

**TABLE 8: 2023/2024 TAX TABLE (1 MARCH 2023 TO 29 FEBRUARY 2024)**

ANNUAL TAXABLE INCOME (R)	RATES OF TAX (R)
1–237 100	18% of taxable income
237 101–370 500	42 678 + 26% of taxable income above 237 100
370 501–512 800	77 362 + 31% of taxable income above 370 500
512 801–673 000	121 475 + 36% of taxable income above 512 800
673 001–857 900	179 147 + 39% of taxable income above 673 000
857 901–1 817 000	251 258 + 41% of taxable income above 857 900
1 817 001 and above	644 489 + 45% of taxable income above 1 817 000

**TABLE 9: REBATES FOR DIFFERENT TAX ENDING YEARS**

AGE OF PERSON	REBATE FOR YEAR ENDING LAST DAY OF FEBRUARY				
	2024	2023	2022	2021	2020
Person younger than 65	R17 235	R16 425	R15 714	R14 958	R14 220
Person 65 and older	R9 444	R9 000	R8 613	R8 199	R7 794
Person 75 and older	R3 145	R2 997	R2 871	R2 736	R2 601

Use the tables and the information above to answer the questions that follow.

- 5.1.1 State the total number of rebates Malcolm qualifies for. (2)
- 5.1.2 Calculate Malcolm's monthly tax payable. (7)

# TARIFFS, INTERESTS & INCOME AND EXPENDITURE

## Question 4

P1 May-June 2022

4.2

John considers moving from Toronto in Canada to either Cape Town or Ekurhuleni in South Africa.

TABLE BELOW shows a comparison of the water tariffs in some of the metropolitan areas in South Africa.

John estimates that he will use an average of 45 kℓ of water per month.

Use TABLE BELOW to answer the question that follows.

John states that if he chooses to live in Cape Town, he will be paying R3 600 more per year compared to a person living in Ekurhuleni who also uses an average of 45 kℓ of water per month.

Show, by means of calculations, whether John's statement is CORRECT. (10)

COMPARISON OF WATER TARIFFS IN SOME METROPOLITAN AREAS IN SOUTH AFRICA									
		CAPE TOWN		ETHEKWINI		EKURHULENI		JOHANNESBURG	
		Monthly use (kℓ)	R/kℓ	Monthly use (kℓ)	R/kℓ	Monthly use (kℓ)	R/kℓ	Monthly use (kℓ)	R/kℓ
RESIDENTIAL	Step	Fixed monthly cost	104,50	Fixed monthly cost	N/A	Fixed monthly cost	N/A	Fixed monthly cost	26,52
	1	0–6	15,10	0–6	23,42	0–6	13,5	0–6	0,00
	2	>6–10,50	20,75	>6–25	27,70	>6–15	22,24	>6–10	18,99
	3	>10,5–35	28,20	>25–30	36,90	>15–30	27,24	>10–15	19,82
	4	>35	52,04	>30–45	56,91	>30–45	33,90	>15–20	27,79
	5	-	-	>45	62,58	>45	41,80	>20–30	38,40
	6	-	-	-	-	-	-	>30–40	42,00
	7	-	-	-	-	-	-	>40–50	52,99
	8	-	-	-	-	-	-	>50	56,79
Commercial & Industrial		Fixed monthly cost	104,50	Fixed monthly cost	291,84	Fixed monthly cost	N/A	Fixed monthly cost	234,07
	1	Not stepped	27,04	Not stepped	36,52	0–5 000	29,17	0–200	44,97
	2					5 001–25 000	29,64	>200	47,44
	3					>25 000	30,92	-	-

- 5.2 Malcolm is planning to buy a motor vehicle. The cash price of the motor vehicle is R334 000. He considers the following payment options to finance this motor vehicle to the value of R300 000.

OPTION 1: Motor vehicle loan without a residual (balloon payment)  
 OPTION 2: Motor vehicle loan with a 20% residual (balloon payment)  
 The balloon payment will be the 73<sup>rd</sup> payment.  
 OPTION 3: Personal loan from a bank

TABLE 10 below shows the different motor vehicle payment options.

**TABLE 10: MOTOR VEHICLE PAYMENT OPTIONS**

	OPTION 1	OPTION 2	OPTION 3
Interest rate	13%	13%	17,5%
Monthly instalment	R6 115,47	R5 498,19	R6 864,00
Balance outstanding at the end of 72 months	R0	20% of loan value	R0
Cost of loan	<b>X</b>	R156 494,00	R194 208
Total payable	R440 313,84	<b>Y</b>	R494 208,00
Loan period	6 years	73 months	6 years

[Adapted from [www.wesbank.co.za](http://www.wesbank.co.za)]

Use TABLE 10 and the information above to answer the questions that follow.

5.2.1 Define the term *interest rate* in context. (2)

5.2.2 Determine the difference between the monthly instalments of Option 1 and Option 2. (2)

5.2.3 Calculate missing value **X**.

You may use the formula:

$$\text{Cost of loan} = \text{Instalments} \times \text{number of months} - \text{loan value} \quad (3)$$

5.2.4 Determine missing value **Y**. You may use the formula:

$$\text{Total payable} = \text{Instalments} \times \text{number of months} + \text{balloon payment} \quad (5)$$

5.2.5 Give ONE reason why banks charge more interest on a personal loan compared to a motor vehicle loan. (2)

**QUESTION 4****P1 May-June 2024**



- 4.1 The fundraising committee of St Mark's Anglican Church is planning a braai. At the braai, plates of food will be sold to raise funds for a new generator. Each plate of food will be sold for R35.

Each plate of food will consist of:

- 1 × chop
- 1 × boerewors
- 1 × salad and relish
- 1 × paper plate
- 1 × bread roll – no charge (sponsored)

They bought 16,7 kg of chops and 13 kg of boerewors at a local butcher enough for 200 plates of food.

The normal prices (per kg) of the meat products bought are given in TABLE 7 below.

MEAT PRODUCTS	PICTURE	PRICE/kg
Chops		R149,95
Boerewors		R99,99

[Adapted from [www.fairfieldmeats.co.za](http://www.fairfieldmeats.co.za)]

- The fundraising committee negotiated a discount of 15% with the butcher on the total purchase made.

Use TABLE 7 and the information above to answer the questions that follow.

- 4.1.1 Calculate the total amount the fundraising committee paid for the meat products at the local butcher. (7)
- 4.1.2 The cost of the salad, relish, paper plates and charcoal is an additional R850,00.
- Calculate the cost price of ONE plate of food. (4)
- 4.1.3 The profit made from selling 200 plates of food was not sufficient. The fundraising committee still had a shortfall of R2 850,00 to buy the new generator.
- They decided to continue selling more plates of food to meet this shortfall.
- Determine, rounded to the nearest TEN, the total number of plates of food they had to sell to buy the new generator. (6)

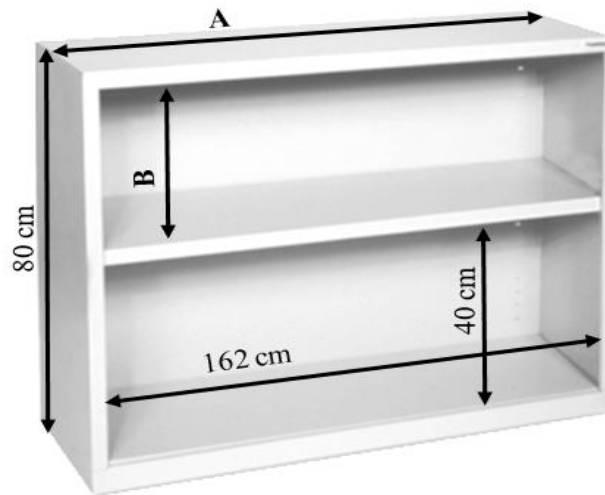
# MEASUREMENT, SCALE, MAPS AND PLANS

## QUESTION 3

DBE NOV 2021

- 3.1 Tshidi needs a bookshelf to store her files. She decides to buy a second-hand wooden bookshelf with two shelves, as illustrated below.

The shelf has a thickness of 1,5 cm all around.



### DIMENSIONS:

Inside width 162 cm

Total outside height 80 cm

Inside height of the

bottom shelf 40 cm

### NOTE:

Area of a rectangle = length  $\times$  width

Use the information above to answer the questions that follow.

- 3.1.1 Determine **A**, the outside length of the bookshelf. (2)
- 3.1.2 The base of the bottom shelf is 4,5 cm thick.  
Determine **B**, the inside height of the top shelf. (3)
- 3.2 The total outside height of the bookshelf is 31,496 inches.  
Determine (rounded to TWO decimal places) the conversion factor for the height in the form **1 inch = ... cm**. (3)

Tshidi bought the bookshelf at a discounted price because the backboard which covers the entire width and height of the bookshelf, needed painting. She decides to do the following:

- Remove the backboard.
- Paint the back of the backboard with a single coat of paint.
- Paint the front of the backboard with two coats of paint.
- Nail the backboard to the bookshelf.

3.3.1 Calculate (in  $\text{cm}^2$ ) the area of one side of the backboard. (2)

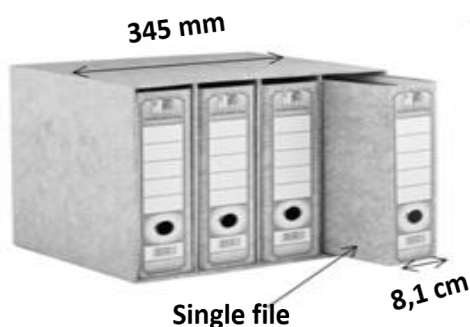
3.3.2 Convert the answer in QUESTION 3.3.1 to  $\text{m}^2$  (2)

3.3.3 One litre of paint covers  $6,9 \text{ m}^2$ . Determine (rounded to TWO decimal places) the number of litres of paint required to paint the backboard completely. (5)

3.3.4 Tshidi stated that one 500 ml can of paint is sufficient to paint the backboard completely. Verify, with calculations, whether her statement is valid. (3)

Tshidi wants to organise her documents in files. She was informed that you can store files separately (single files) or in a filing box as shown in the picture below.

#### PICTURE OF A FILING BOX WITH FILES



#### MEASUREMENTS

- A single file has a width of 8,1 cm.
- The width of the filing box is 345 mm

3.4.1 Determine the maximum number of filing boxes that could fit on one shelf, which is 162 cm wide. (4)

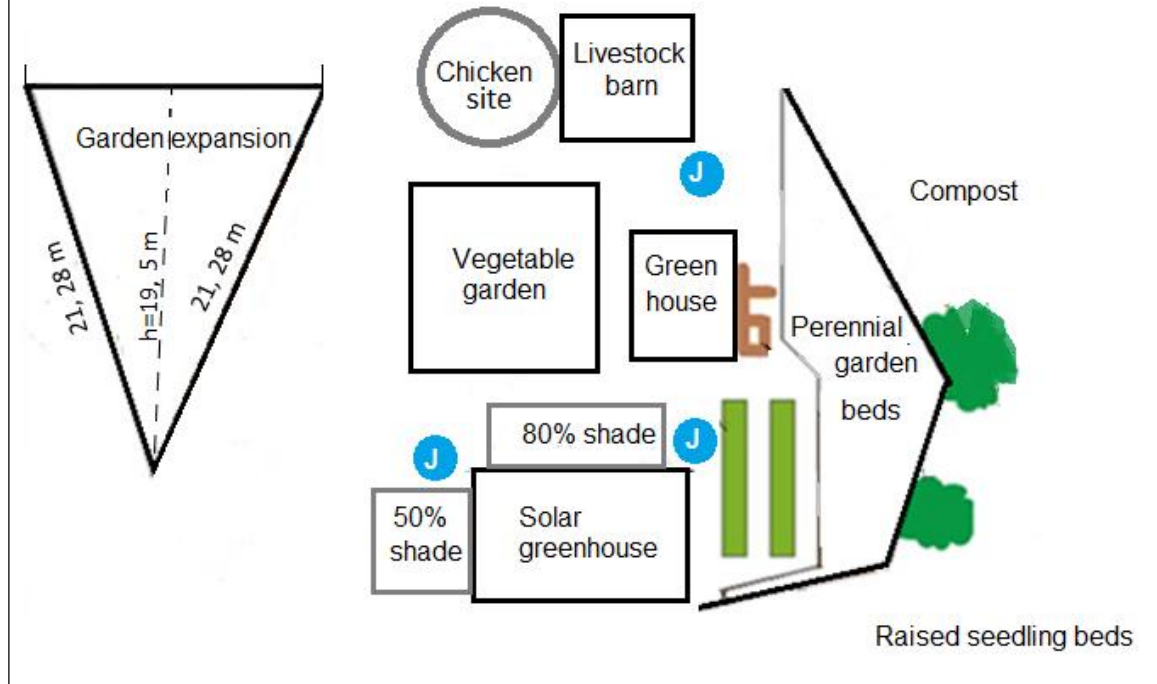
3.4.2 Calculate the difference in the number of files that she can place on one shelf if she packs the shelf with single files rather than the filing boxes. (5)

3.4.3 Give a possible reason why Tsidi would prefer the filing boxes. (2)

3.4.4 Tsidi bought filing boxes to pack the top shelf completely. She could not remember in which file she placed a document. She randomly chooses one of the files out of the filing boxes. Determine, as a percentage to TWO decimal places, the probability that the file she chooses will contain the document she is looking for. (3)

Use ANNEXURE B to answer the questions that follow.

- 4.1 Mr Venter bought a farm in order to sell chickens and vegetables.  
On THE SKETCH BELOW is the layout plan of the farmyard.



4.1.1 Name the feature on the layout plan which has an irregular shape. (2)

4.1.2 The letter J on the map represents Jojo tanks.

Give a reason why it is important to have a water tank at one's house. (2)

4.1.3 Jojo tanks are usually filled with rainwater.


Write down TWO structures where the water to fill a Jojo tank could possibly come from. (2)

4.1.4 Calculate (in m<sup>2</sup>) the area of the garden expansion.

You may use the following formula:

$$\text{Area of a triangle} = \frac{1}{2} \times \text{base} \times \text{height} \quad (3)$$

- 4.1.5 Mr Venter decides to replace the fence around the circular chicken site.  
The circumference of the circular site is 18,852 m.

TWO COST OPTIONS FOR THE WIRE MESH	
<b>OPTION A</b> R1 154 for a 10 m roll	<b>OPTION B</b> R127,30 per running metre
 <p>Picture of wire mesh</p>	

By means of calculations, advise Mr Venter which option is more economical. (5)

- 4.2 One of the Jojo tanks on his farm has a 5 000 ℓ capacity. The height of the tank is 220 cm.

**NOTE:** 1 000 cm<sup>3</sup> = 1 ℓ

Calculate (in cm) the radius of the tank.

You may use the following formula:

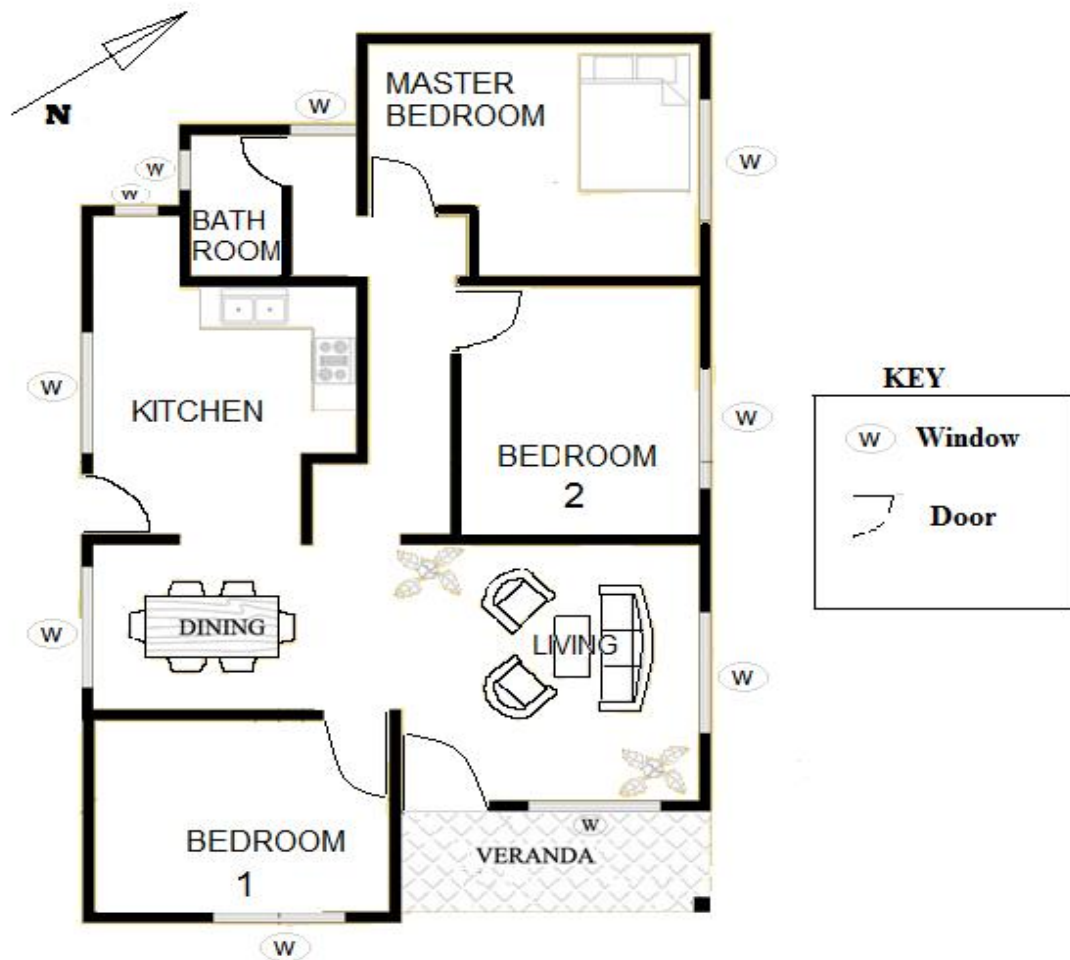
**Volume of a cylindrical tank** =  $3,142 \times (\text{radius})^2 \times \text{height}$  (6)



## QUESTION 2

DBE Nov 2021

The pictures below show the floor plan of Jan's house, with a veranda\*, in South Africa, and also, an artist's drawing of one of the elevations of the house.



Use the above pictures and the information above to answer the questions that follow.

2.1 Write down the number of bedrooms on the floor plan. (2)

2.2 Which room will be the first room you will enter from the veranda?

2.3 In which general direction does the master bedroom window face?

2.4 One of the door locks needs to be changed.

Write down the probability, in simplified fractional form, that it is NOT one of the interior doors. (4)

2.5 Jan remarked that the kitchen gets a lot of sunlight.

Critically comment on his remark. (3)

2.6 Give ONE reason why the windows shown in the above drawing do NOT represent the windows of the kitchen and the dining room. (2)

2.7 The scale used for the floor plan is 1 cm representing 1 000 mm in real life.

2.7.1 Write the given scale in number scale format.

2.7.2 Measure the inner length of bedroom 2 and use the given scale to calculate the actual length (in m) of bedroom 2

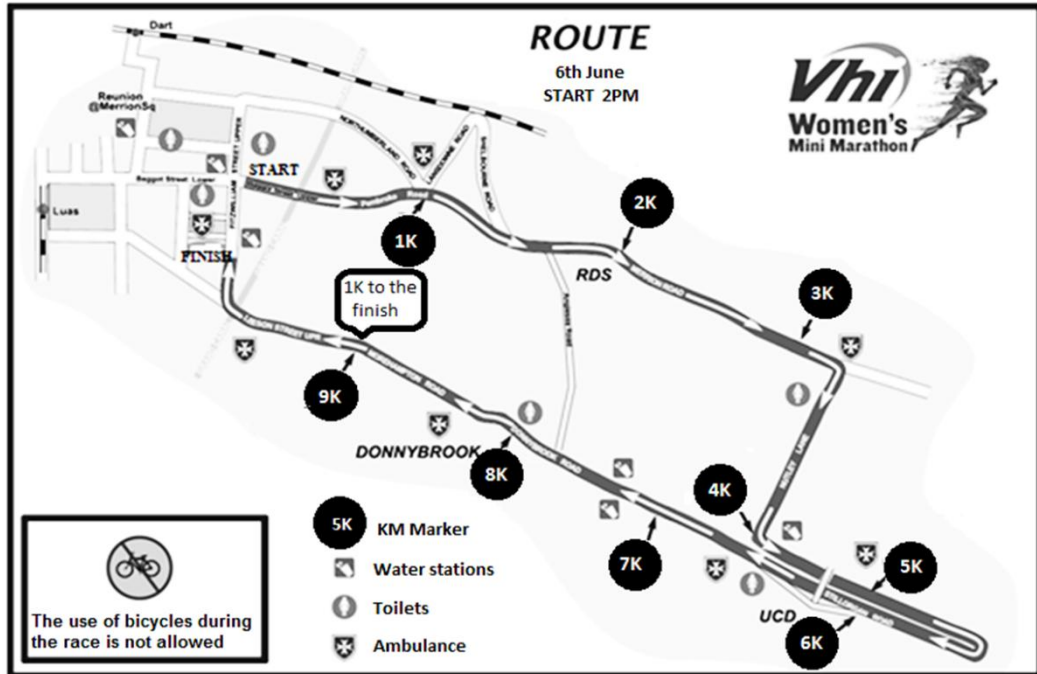
2.7.3 Jan stated that the given scale is NOT very accurate to use if photocopies were going to be made of the plan.

Critically comment on his statement and give a reason for your answer.

**[24]**

**QUESTION 2****P2 May-June 2022**

- 2.1 Busisiwe participated in a Vhi Women's Mini Marathon. The map below shows the route for the mini marathon.



**MAPS**

Use the LAYOUT and the information above to answer the questions that follow

- 2.1.1 Write down the starting time of the mini-marathon using the 24-hour format. (2)
- 2.1.2 Determine the number of places where an ambulance can be found. (2)
- 2.1.3 State which mode of transport is NOT allowed on the mini-marathon route. (2)
- 2.1.4 The distance of a standard marathon is 42,2 km.
- (a) Determine, in simplified form, what fraction of a standard marathon the Vhi Women's Mini Marathon is. (4)
- (b) Give ONE reason why the Vhi Women's Mini Marathon is called a mini marathon. (2)
- 2.1.5 Choose the answer and write only the letter (A–C) next to the question number (2.1.5).  
The probability of a runner crossing the railway line during the mini-marathon is **(definite/0%/100%)** choose correct option. (2)

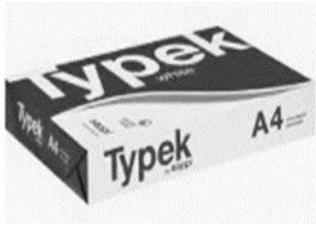
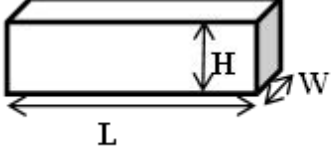

- 2.2 A single layer of the bottled water will be packed on a rectangular base. The packed bottled water will occupy half of the length of the rectangular refreshment table and will not overlap the edges of the table.

Shown below are the pictures and the dimensions of the top of the rectangular refreshment table and the packed bottled water.

<b>DIMENSIONS OF THE RECTANGULAR REFRESHMENT TABLE</b>	<b>PACKED BOTTLED WATER (Rectangular base packaging)</b>
<div></div> <p>Width = 49 cm Length = 290 cm</p>	<div></div> <p>Width = 24,2 cm Length = 36,4 cm</p>

Calculate the maximum number of packed bottles water that can fit on this half of the table.  
(8)

- 2.3 A Mathematical Literacy teacher collected 36 reams of paper from her learners. Shown below is a picture and a diagram, with the dimensions, of a ream of paper. The teacher intends packing the reams of paper in a secure cabinet, as shown in the picture alongside. The dimensions of the maximum space on one shelf are 102 cm long, 44 cm wide and 39 cm high.

DIMENSIONS OF THE RECTANGULAR REFRESHMENT TABLE	PACKED BOTTLED WATER (Rectangular base packaging)
	 <p>Width = 21,49 CM, Length = 27,94 cm and Height = 6,35</p>
<p><b>PICTURE OF A CABINET</b></p> 	

- 2.3.1 Show, with calculations, that all the reams of paper collected can fit on ONE shelf of the cabinet. (7)
- 2.3.2 Give ONE reason why the teacher would like to pack the reams of paper in the cabinet. (2)

**THE END!!**

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