



Province of the  
**EASTERN CAPE**  
EDUCATION



**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2023**

**MATHEMATICAL LITERACY P2  
(DEAF)**

**MARKS: 150**

**TIME: 3 hours**

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This question paper has 14 pages and an addendum with 4 annexures.

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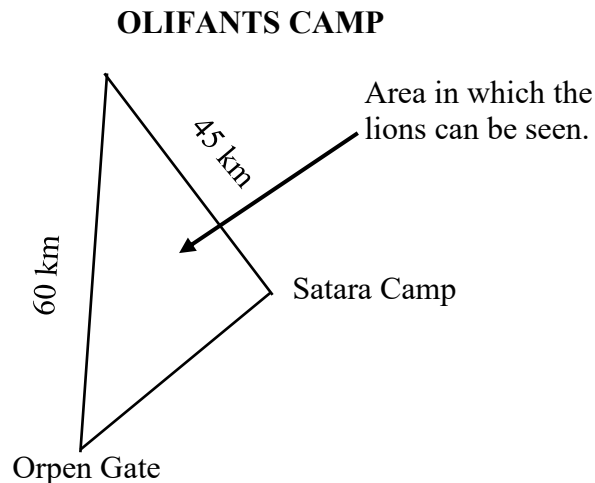
**INSTRUCTIONS AND INFORMATION**

1. This question paper has **FIVE questions**.
2. Use the **ANNEXURES** in the **ADDENDUM** for::
  - ANNEXURE A for QUESTION 1.3
  - ANNEXURE B for QUESTION 3.1
  - ANNEXURE C for QUESTION 4.1
  - ANNEXURE D for QUESTION 5.1
3. Answer **ALL** the questions.
4. **Number** the **answers** the **same** as the **numbers** on the **examination paper**.
5. **Maps and diagrams** are **NOT** always **drawn** to **scale**.  
**Some questions** will give **information** about the **scale**.
6. **Round off** ALL final **answers** to **fit** the **content** of the question.  
**Some questions** will **tell** you **how** to **round off**.
7. **Write** all **units** of **measurement** where needed.
8. Start **EACH** **question** on a **NEW** **page**.
9. **Show** ALL **calculations**.
10. Write **neatly**.  
Your **work** must be **easy** to **read**.

## QUESTION 1

1.1

In the **Kruger National Park**, lions can be seen in an area from the **Orpen Gate**, to the **Satara Camp** and the **Olifants Camp**. The **direct distance** between **Olifants Camp** and **Satara Camp** is **45 km**, and the **direct distance** between **Olifants Camp** and the **Orpen Gate** is **60 km**. The **total perimeter** of the area is **144,69 km**.



Use the **information**. Answer the **questions**.

- 1.1.1 Define the term *perimeter* in the above context. (2)
- 1.1.2 Calculate the **direct distance** between **Satara Camp** and the **Orpen Gate**. (2)
- 1.1.3 Write in **simplified ratio form**, **60 km** to **45 km**. (2)
- 1.1.4 Convert **144,69 km** to **mm**. (2)
- 1.1.5 Write the **letter (A–C)** next to **question number (1.1.5)** of the **correct formula** to **calculate the size of the area** where **lions can be seen**.
- A Area = length  $\times$  width
- B Area =  $\pi \times (\text{radius})^2$
- C Area =  $\frac{1}{2} \times \text{base} \times \text{height}$  (2)

1.2

Aphiwe saw that Omo auto washing powder detergent(washing powder) is on promotion at two shops.

PROMOTION SHOP A 3 KG WASHING POWDER	PROMOTION SHOP B 2 KG WASHING POWDER
<div>Price = R129,99</div> 	<div>Price = R84,99</div> 

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

**NOTE:**

- Promotion available from 28 February 2023 to 30 April 2023.
- 3 kg washing powder will wash 30 loads in a washing machine.

Use the information. Answer the questions.

- 1.2.1 Determine the total number of days this promotion is available. (2)
- 1.2.2 (a) Calculate the cost per load for the 3 kg washing powder. (2)
- (b) Write the price per kg for the 2 kg bag. (2)
- 1.2.3 Determine how many loads can be washed with 4 kg washing powder if it is in the same ratio as the 3 kg bag. (2)
- 1.2.4 Aphiwe has  $\frac{3}{4}$  of a 2 kg bag left at home. (2)
- Write how many grams is left in the bag.

- 1.3 Eldrid and his son **decide** to **travel** from their **hometown** of **Vanrhynsdorp** in **South Africa** to **Keetmanshoop** in **Namibia**, for a **hunting expedition**.
- On ANNEXURE A is a strip chart **indicating**<sub>(showing)</sub> their route.

Use ANNEXURE A. Answer the questions.

- 1.3.1 What do the **distances** on the **right** of the **N7** **indicate**<sub>(show)</sub> **versus** the **distances** on the **left**? (2)
- 1.3.2 Write the **distance** from **Cape Town** to **Keetmanshoop** in **meters**. (2)
- 1.3.3 Calculate the **distance** that **Eldrid** and **his son** must **travel** to reach **Keetmanshoop**.  
It is **2 km** from **their home** to the **main road**. (3)
- 1.3.4 Write the **road number** on which **they** will **travel** when **they** are in **Namibia**. (2)
- 1.3.5 How **many towns** would **Eldrid** and **his son** **pass** while **travelling** **through South Africa**? (2)
- [31]

## QUESTION 2

2.1

Terrence **builds models of furniture**. He noticed a **chair** on the **internet** that **he would like to build**. He **decided to use a scale of 1 : 15**. Below is a **picture** of the **chair** with some of the **actual<sub>(real)</sub> dimensions<sub>(measurements)</sub>** shown.

**NOTE: Dimensions of the chair**

Height = (H)	Width = (W)	Depth = (D)
1,2 m	0,6 m	



Scale 1 : 15

[Adapted from <https://www.xoticbrands.net>]

Use the **information**. Answer the questions.

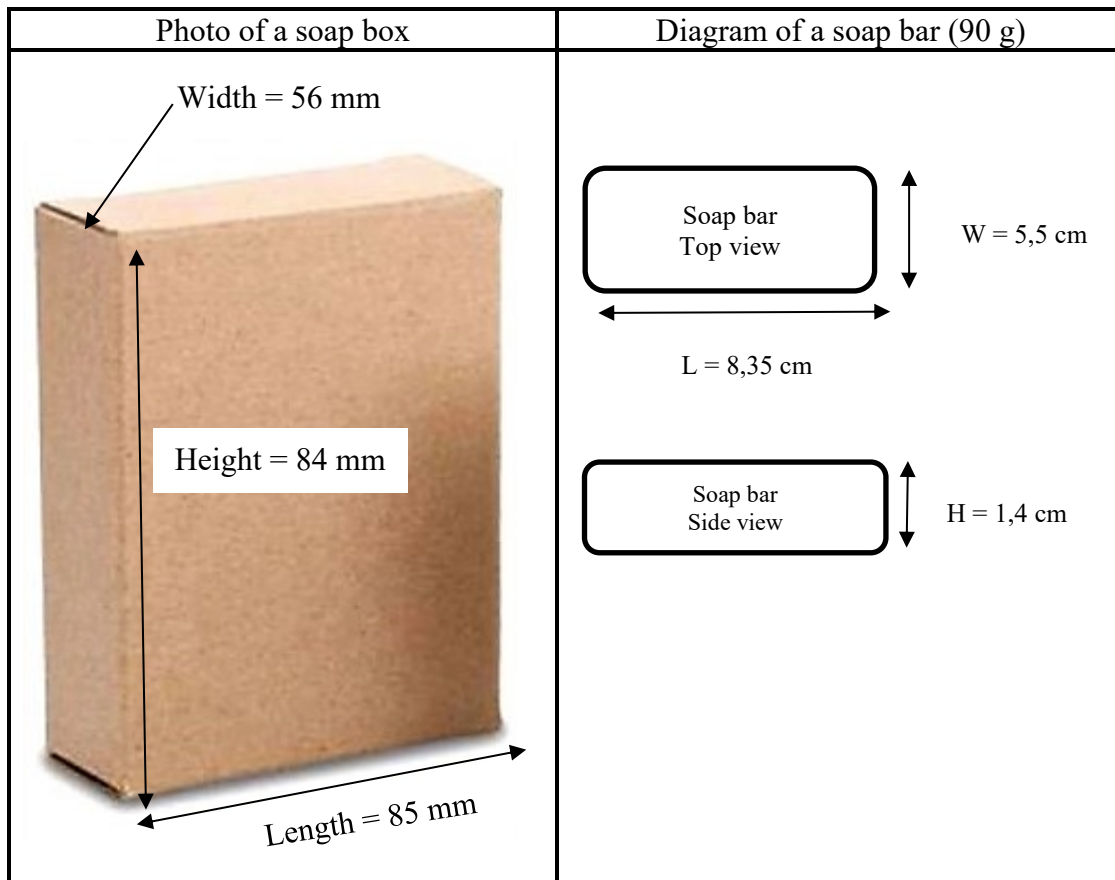
2.1.1 **Define the meaning of the scale 1 : 15.** (2)

2.1.2 **Calculate the depth of the chair if it is 37,5% of the height of the chair.** (2)

2.1.3 **Use the scale.**  
**Determine how big Terrence must draw the height and the width of the chair on the plan in cm.** (5)

2.2

**Fragrant**(sweet-smelling) **soap bars** are **packed** in **boxes** to be **shipped**(send) to **shops**. Below is a **picture** of the **soap box** and the **diagram** with **dimensions**(measurements) of the **soap bar**.



**Determine the maximum number of soap bars that will fit in the soap box.**

(5)

2.3

Below is a **map of New Zealand**.

The **Jones couple** from **Auckland** are **planning a trip around New Zealand**.



Use the **information**. Answer the questions.

2.3.1 Give **ONE** advantage of using a bar scale. (2)

2.3.2 The **distance measured** on the **map** between **Auckland** and **Queenstown** is **79 mm**.

**Calculate** (to the nearest km) the **actual distance** between **Queenstown** and **Auckland**. (5)

2.3.3 Write in **which general direction** is **Queenstown** from **Auckland**. (2)

2.3.4 Give **ONE** possible reason why it is said that if you want to travel by car from **Queenstown** to **Auckland** the route will include a ferry or a boat. (2)

[25]



## QUESTION 3

3.1

Miss J. Nolan is **baking brownies** using the **ingredients** and **information** given on **ANNEXURE B**.

She **wants** to be **finished** with the **baking** at 16:45.

She can **only bake one batch** of **brownies** at a **time**.

While a **batch** is in the **oven**, she **prepares** the next **batch**.

She **places** it in the **oven** the **moment** the **previous batch** is **taken out**.

Use **ANNEXURE B**. Answer the questions.

3.1.1 Miss Nolan would **like** to **bake 80 brownies**.

**Determine** the **number** of **batches** she **needs** to **bake**.

(2)

3.1.2 **Calculate** what **time** she must **start preparing** the **first batch** of **brownies** to be **finished** with the **baking on time**.

(6)

3.1.3 **Convert**<sub>(change)</sub> the **baking temperature** to **degrees Celsius (°C)**, rounded off to the **nearest 10 degrees**.

**Formula:**  $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1,8$

(3)

3.1.4 Miss Nolan **only** has  $2\frac{1}{2}$  **blocks** of **butter**.

**Verify**<sub>(prove)</sub> if the **butter** she has is **sufficient**<sub>(enough)</sub> for **80 brownies**.

(8)

3.2

Miss Nolan **uses** a **square baking pan** with **dimensions**<sub>(measurements)</sub> of **8 inches** by **8 inches**.

She **cuts** the brownies in the **baking pan** into **16 equal sized blocks**.

**NOTE:** 1 inch = 2,54 cm

**Formula:**

**Area of square** = **side**  $\times$  **side**

3.2.1 Calculate the top surface area of one of the square brownie blocks in  $\text{cm}^2$ .

(6)

3.2.2 Only **80%** of the **80 brownies** were sold.

**Write** the **number** that **was left**.

(4)

3.2.3 Write, in **ratio simplified form**, the **ratio number** of **brownies sold** to **number** of brownies left.

(3)

[32]

## QUESTION 4

4.1

Benjamin and Jody's favourite motor sport is **Formula One** racing.  
The **next Formula One Grand Prix** they wish to attend takes place in **Italy**.  
ANNEXURE C shows the **racetrack** for the **Autodrom Nazionale Monza Circuit in Italy**.  
This is where the **Formula One** race will take place.

Use ANNEXURE C. Answer the questions.

4.1.1 Calculate the distance covered after 35 completed laps. (3)

4.1.2 The ticket provider indicated<sub>(showed)</sub> that grandstand seat numbers 18, 21 and 4 are available.  
Benjamin and Jody decide to buy tickets for grandstand 4.

Provide ONE possible reason for their choice. (2)

4.1.3 Write which grandstand is situated north-east of the starting line. (2)

4.2

Lewis Hamilton, a **Formula One** race car driver, set a new lap record during 2020 at the **Autodrom Nazionale Monza Circuit in Italy**.  
His record time lap time (in minutes and seconds) was **1 min : 18,887 sec**.  
In the **2022 Grand Prix Max Verstappen's** average lap time was **1 min : 27 sec**.

Use the information. Answer the questions.

4.2.1 Determine the difference in time between Lewis Hamilton and Max Verstappen lap times.  
Round your answer off to the nearest second. (3)

4.2.2 Calculate to the nearest metre per second the average speed achieved by Lewis Hamilton in the one lap where he set the record.

Formula:

Distance = Speed  $\times$  Time (5)

4.3

The **guidelines relate**<sup>(has to do)</sup> to the **rules governing**<sup>(determining)</sup> the **weight** of the **Formula One race car**:

- The **race car weighs 2002,14 pounds including** the **driver** and **fuel**
- Lewis Hamilton, the **driver** for the **Mercedes race car**, **weighs 73 kg**
- His **height** is **1 740 mm**
- The **fuel** in a **race car weighs 110 kg**

**NOTE: 1 kg = 2,205 pounds**

$$\text{BMI} = \frac{\text{Weight in kg}}{(\text{Height in m})^2}$$

4.3.1 **Determine Lewis Hamilton's body-mass-index (BMI).**

**Round off** your answer to **TWO decimal places**.

(4)

4.3.2 Jody **states** that the **average weight** of the **Mercedes race car** is **790 kg**.

Benjamin **stated** that the **average weight** is **750 kg**.

**Verify**<sup>(prove)</sup>, by **showing** all **calculations** whether the **statements** are **valid**.

(6)

[25]

## QUESTION 5

- 5.1 The **Life Science teacher** is doing a **research** on **bees**.  
 He **focuses mainly** on the **three kinds** of **honey bees**; namely the **worker bee**, **queen bee** and the **drone bee**.  
 As **part** of his **research** he **builds scale models** of the honey bees built.  
 On ANNEXURE D is a **picture** of the **models** he **built**.

[Source: <https://www.pinterest.com.honeybees>]

Use the **information**. Answer the questions.

- 5.1.1 A **queen bee** is **approximately**<sub>(almost)</sub> **2 cm** in length.  
 The **length** of the **teacher's model** is **23 inches**.

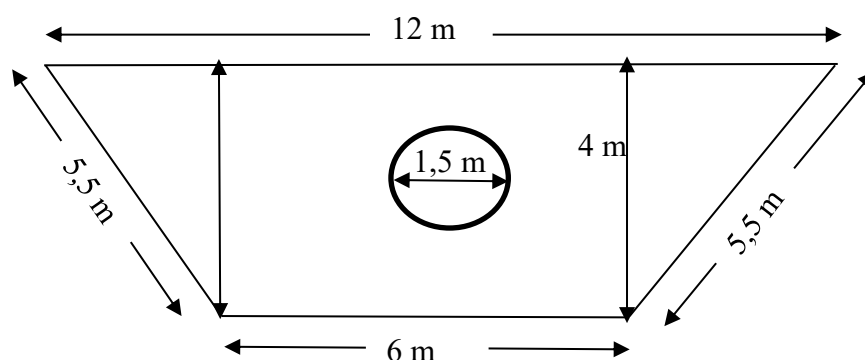
- (a) Show that the **model** that the **teacher built** is **29 times bigger** than the **actual bee**.

**NOTE: 0,5 inches = 12,7 mm** (5)

- (b) Write the **ratio scale** for this **enlargement**. (2)

- 5.1.2 A **honeybee** flies at an **average speed** of **24 km/h** and its **wings** beat **200 times per second** causing their **distinctive buzz**.  
 Show by means of **calculations** that the **bees wings** will beat **300 000 times** if it **flew 10 kilometres**. (5)

- 5.2 **Landscaping gurus** shows the **top view** of a **botanical garden** in the **shape** of a **trapezium**.  
 There is a **circular water tank** with **diameter 1,5 m** in the **garden**.



[Adapted from *New Era Exam guide*]

Use the **information**. Answer the questions.

- 5.2.1 Calculate the **perimeter** of the **botanical garden**. (2)

- 5.2.2 Determine the area taken up by the vegetable garden excluding<sub>(without)</sub> the water tank area.

Use the formulae:

$$\text{Area of triangle} = \frac{1}{2} \times \text{base} \times \text{height};$$

$$\text{Area of rectangle} = \text{length} \times \text{width}$$

$$\text{Area of circle} = \pi \times (\text{radius})^2 ; \text{ where } \pi = 3,142 \quad (8)$$

- 5.2.3 The volume of the water tank is  $8,84 \text{ cm}^3$ .

Calculate the height of the circular water tank rounded off to the nearest m. (5)

Use the formulae:

$$\text{Volume of water tank} = \pi \times (\text{radius})^2 \times \text{height}; \text{ where } \pi = 3,142$$

5.3

At a function<sub>(event)</sub> a helium balloon with the number of the seat was attached<sub>(put on)</sub> to each chair.

There were 60 red balloons, 240 white balloons and 360 pink balloons.

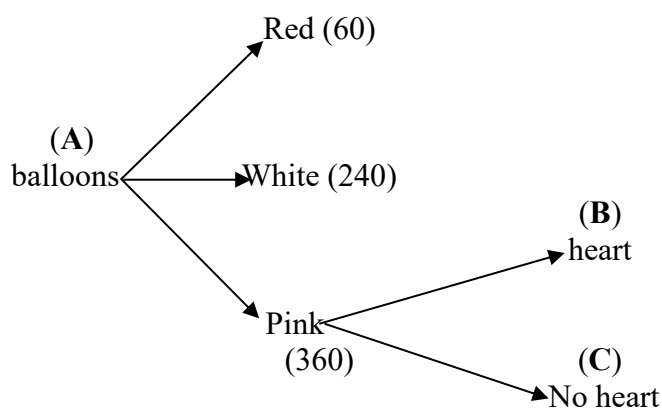
Inside 10% of the pink balloons was a piece of paper in the shape of a heart.

Each learner whose chair had a pink balloon attached<sub>(put on)</sub> to it, received a free rose.

**NOTE:** A *helium balloon* is a balloon that is *filled* with *helium* and *rise* into the air if not held.

Use the information. Answer the questions.

- 5.3.1 The tree diagram was drawn to simplify the information.



- (a) Determine the number of balloons at each of the letters A, B and C. (5)
- (b) Write down the probability of randomly selecting a balloon that has a heart shaped paper in it. (2)

5.3.2 Use **simplified fraction format**.

**Determine the probability of receiving a free rose.**

(3)

[37]

**TOTAL: 150**