KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

PREPARATORY EXAMINATION

SEPTEMBER 2023



Stanmorephysics

MARKS: 150

TIME: 3 hours

This question paper consists of 15 pages and an Addendum with 4 Annexures.

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.

2 Use the ANNEXURES in the ADDENDUM to answer the following questions.

- ANNEXURE A for QUESTION 2.1
- ANNEXURE B for QUESTION 2.2
- ANNEXURE C for QUESTION 5.1
- ANNEXURE D for QUESTION 5.2

3. Number the answers correctly according to the numbering system used in this question paper.

4. Start EACH question on a NEW page.

5. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

6. Show ALL calculations clearly.

7. Round off ALL final answers appropriately according to the given context, unless stated otherwise.

8. Indicate units of measurement, where applicable.

9. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.

10. Write neatly and legibly.



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QUESTION 1

1.1

Sinothile wants to make pancakes. Below is a Soufflé Pancake Recipe for two.
She starts making the pancakes at 12:53.

SOUFFLÉ PANCAKE RECIPE
Serves: 2 people
Prep Time: 15 mins **Cooking Time:** 15 mins.
Total Time: 30 mins

Ingredients:

Yolks:

- 1 egg yolk 18g
- 1 tbsp sugar 12g
- 2 tbsp milk 30ml
- 3 tbsp flour 30g
- $\frac{1}{4}$ tsp baking powder 1g

Whites:

- 2 large egg whites 60g
- $\frac{1}{8}$ tsp cream of tartar 0,4g
- 1,5 tbsp sugar 18g

[Source:iamafoodblog.com]

Use the information in the recipe above to answer the following questions.

1.1.1 Write in 12-hour format the time Sinothile will be done making the pancakes. (3)

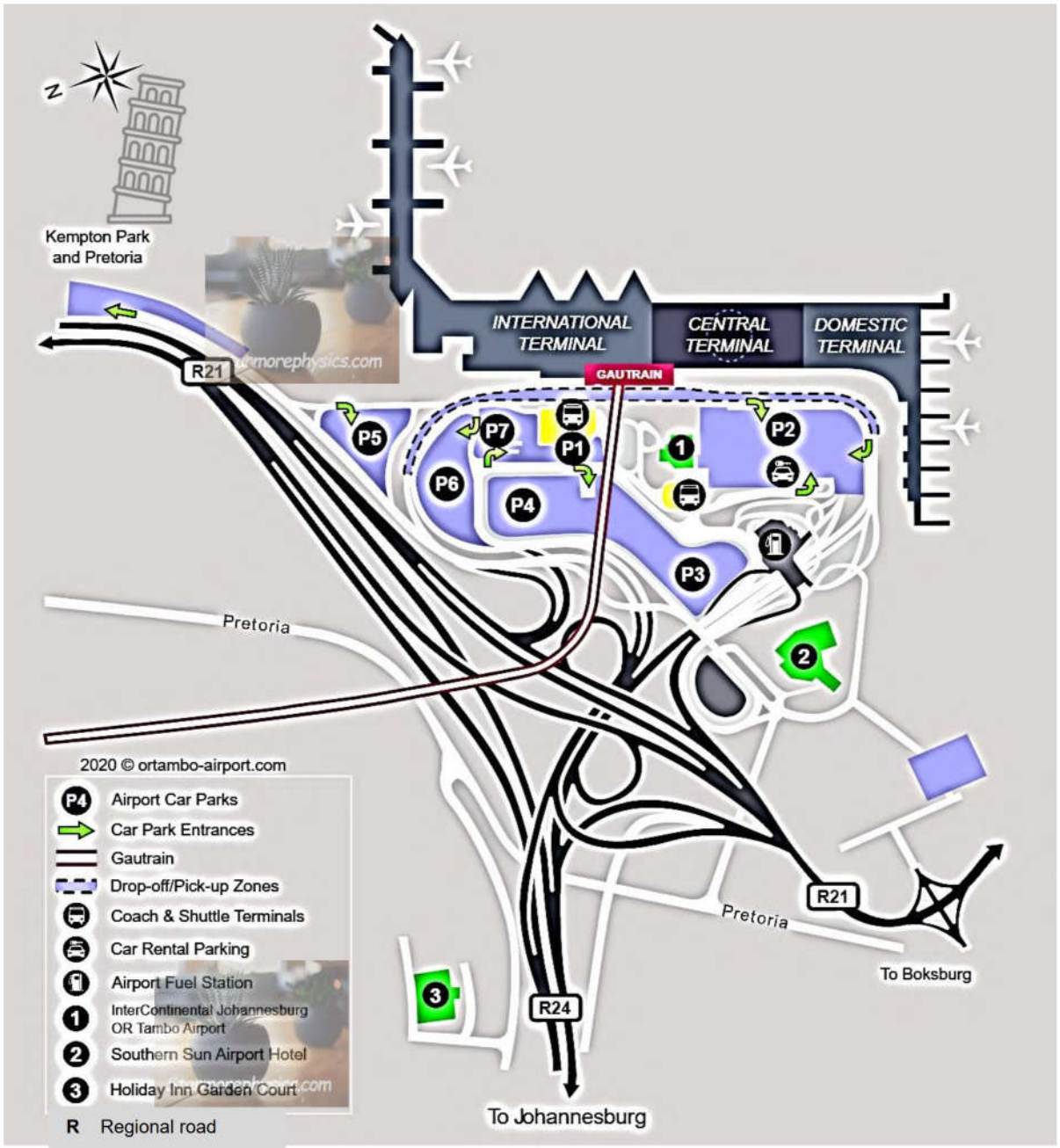
1.1.2 Write the cooking time as a fraction of an hour. (3)

1.1.3 Determine the total grams of sugar required for 4 people in this context. (3)

1.1.4 Convert the milk required for the recipe to litres. (2)

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1.2 The parking layout plan at OR Tambo airport is given below.



[Source:ortambo-airport.com]

Use the information above to answer the following questions.

1.2.1 Determine the total number of airport car parks available at OR Tambo airport. (2)

1.2.2 Determine the number of hotels available around or near the Airport. (2)

1.2.3 Explain the term *layout plan* in this context. (2)

1.2.4 Name the regional roads shown on the map. (2)

1.2.5 Between which two terminals can the Gautrain be found? (2)

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1.3

Information regarding THREE different water bottles is given below.

WATER BOTTLES WITH DIMENSIONS AND ABILITY TO HOLD TEMPERATURE			
			
CAPACITY	260 *ml*	500 *ml*	750 *ml*
Base Diameter (mm)	66,5	70	79,5
Bottle Height (mm)	200	258	300
Hours Cold	20	24	32
Hours Hot	10	12	15

[***Source: www.waterbottle.tech***]

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

1.3.1 Determine the radius of the base of the smallest bottle. (2)

1.3.2 Write as a ratio in unit form, the capacity of the 500 ml to 750ml bottle. (3)

1.3.3 Explain the meaning of the term *Capacity* in the context of the question. (2)

1.3.4 Which bottle holds liquids colder more than two times longer than hot liquids? (2)

[30]

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QUESTION 2

2.1 Shown in ANNEXURE A is the economy class seating plan of a plane flight.

Use the seating plan in ANNEXURE A to answer the following questions.

2.1.1 Determine the total number of seats in economy class. (3)

2.1.2 Give one possible reason why the seats in Row 20 might be preferred to the rest of the seats? (2)

2.1.3 When a plane has landed and it is safe to disembark, which would be the nearest emergency exit to a person sitting in seat 27F? (2)

2.1.4 Identify one disadvantage of sitting at the back of the plane. (2)

2.1.5 Give a reason why this seating plan cannot be used to determine the length and width of the economy class of the plane. (2)

2.2 The map with different transportation routes from Johannesburg is shown in ANNEXURE B.

Use the map in ANNEXURE B to answer the following questions.

2.2.1 Identify the type of scale seen on the map in Annexure B. (2)

2.2.2 Which direction is Cape Town from Johannesburg? (2)

2.2.3 Determine how many hours longer a train trip is, compared to a bus trip. (2)

2.2.4 Determine the arrival time of a plane at Cape Town International airport, if a flight departed OR Tambo at 2: 53 pm (2)

2.2.5 Measure the straight-line distance from Johannesburg to Cape Town and use the scale on the map to calculate the actual distance in km. (4)

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2.3

A survey was done on a group of people about fear of flying. The two-way table below shows data on male and female participants.

TABLE 1: SURVEY ON FEAR OF FLYING

	Afraid	Slightly afraid	Not Afraid	Don't know	Total
Male	11	23	77	2	113
Female	21	43	21	2	87
Total	32	66	98	4	

[Adapted source: today.yougov.org]

Use the information in TABLE 1 above to answer the following questions.

2.3.1 Determine the total number of people who participated in the survey. (2)

2.3.2 If a participant was selected randomly, what is the probability as a percentage, that the participant would be male and afraid? (3)

2.3.3 Determine the probability, as a decimal number, that a participant randomly selected would be female. (2)

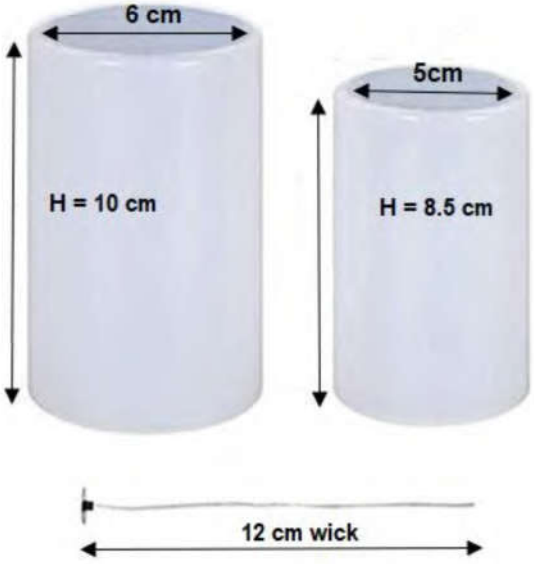
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QUESTION 3

3.1

Anathi wants to make candles to sell at the local craft market.
The mold that is used to make the candles and the dimensions of the candles are given below.

DIAGRAM 1: PICTURE OF DECORATED CANDLE AND DIMENSIONS OF SHORT AND LONG CANDLES

PICTURE OF CANDLES	DIMENSIONS OF CANDLES
Picture is not drawn to scale. 	

[Source: pinterest]

NOTE:

- One set sold is made of a long and short candle
- A 12 cm long wick (a piece of string to light candle) is used
- A jute string is wound 10 times around each candle for decoration
- 1 000 cm^3 = 1 litre
- Wax is a substance used to make candles

Use the information and the images above to answer the following questions.

3.1.1 Determine the volume of wax required to make ONE set of candles.

You may use the formula:

Volume of a Cylinder = 3,142 × radius ^{2} × height (5)

3.1.2 Determine how many kilograms of wax is required to make 50 sets of candles, if 1 kg of solid wax = 1,304 litres of liquid wax. (6)

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3.1.3 A wick is a piece of string used to light the candle. The wick should be 2 cm more than the height of the candle. Determine the total length of string, in cm, required to make 50 sets of candles. (4)

3.1.4 Anathi claims that the minimum total length (in metres) of Jute string required to decorate 50 sets of candles is 200m.

Verify this claim, showing all calculations.

You may use the formula:

Circumference of a circle = 3,142 × diameter (7)

3.2 Anathi wants to make a rectangular candle tray like the image below for two smaller candles and a bigger one in the middle. The diameter of the biggest candle is 8 cm and the smaller candle is 5cm.



[Source:www.decorpad.com]

Use the information in the image above to answer the following questions.

3.2.1 There is a 2cm space between the candles and tray on the length and a 1 cm space on either side of the candle on the breadth of the tray.

Determine the minimum length and breadth of the candle tray, (5)

3.2.2 Calculate the area of the tray in m^2.

You may use the formula:

Area = length × breadth

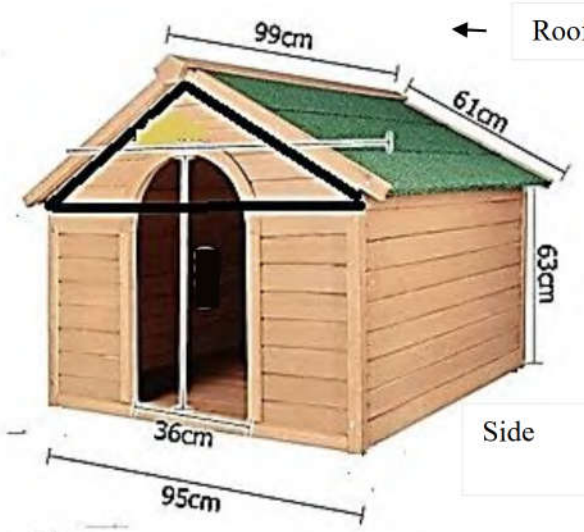
(3)

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QUESTION 4

4.1 Amahle plans to paint a wooden kennel for her dog. The diagram of the wooden kennel is given below.

DIAGRAM 2: PICTURE OF DOG KennEL WITH DIMENSIONS



NOTE:

- The front and back of the kennel is made up of triangular and rectangular shapes.
- Area of the Triangle with the missing semi-circle in the front of the kennel = 509cm^2
- Area of the Triangle in the back of the kennel = 1140 cm^2
- The BASE of the kennel will not be painted.

[Adapted source:www.engineering discoveries.com]

Use the information above to answer the following questions.

4.1.1 Verify using calculations, a claim that the total surface area to be painted is 40 000 cm^2.

You may use the formula:

Area = Length × Width (9)

4.1.2 Convert the total surface area to m^2. (2)

4.2

Amahle will be using 5 litre paint for the kennel. Below is a 5 litre paint container and some instructions.

PAINT CONTAINER	INSTRUCTIONS
	• Apply 2 coats. • Wait 12-14 hours between each coat. • Spread rate 6 m^2

[Source: www.ebay.com]

Use the information above to answer the following questions.

4.2.1 Determine the total number of litres of paint required to paint the kennel. (4)

4.2.2 Amahle started painting at 9:30. The first coat took 2 hours to complete. Determine the time the second coat can be painted. (3)

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4.3

Amahle wants to know how much of food her dog Charlie requires per day. Charlie is 5 kgs in weight. Feeding instructions can be found below.

FEEDING INSTRUCTIONS	
Weight in Pounds	**Feeding in an 8 ounce cup 8 ounces= 226,8g**
3-12 lbs	$\frac{1}{3} - 1\frac{1}{8}$
13-20 lbs	$1\frac{1}{8} - 1\frac{1}{2}$
Over 100 lbs	$4\frac{1}{2}$ cups plus $\frac{1}{4}$ cup for each 10 lbs of body weight over 100 lbs

[Source:proplanvetdirect]

NOTE: 1 pound = 0,454g

Use the information above to answer the following questions.

4.3.1 Which weight range in pounds does Charlie fall in? (3)

4.3.2 Determine the maximum number of grams of food Charlie should eat based on his weight in pounds. (3)

4.3.3 Amahle's friend's dog weighs 120 lbs. Calculate the number of kgs of dog food he requires in a day. (6)

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QUESTION 5

5.1 The Tour de France is the biggest cycle race in the world. The second stage of the race is shown in ANNEXURE C.

Use the information in ANNEXURE C to answer the following questions.

5.1.1 Identify the type of map shown in ANNEXURE C. (2)

5.1.2 Determine how many metres above sea level the starting point at Vitoria- Gasteiz is. (2)

5.1.3 Determine the total distance of this stage of the race. (2)

5.1.4 Calculate the distance between Legutio and Hernani. (3)

5.1.5 Calculate the speed of the cyclists travelling if the last leg (distance between two places of the race) was finished in 35 minutes. (4)

5.2 A map of Paris is shown in ANNEXURE D. The maps show all the tourist attractions in Paris.

Use the information in ANNEXURE D to answer the following questions.

5.2.1 Measure the distance on the map from the Eiffel Tower to the Arc de Triomphe. Use the distance on the map to determine the number scale of the map.

A statement was made that the actual distance should be 50 000 times bigger.

Verify this statement showing all calculations. (6)

5.2.2 The tourist claims the Musèe du Louvre should also be 5km from Arc de Triomphe.

Verify this claim, showing all calculations. (5)

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5.3

TABLE 2 below shows the entrance prices to the Eiffel Tower.

TABLE 2: ENTRANCE PRICE TO THE EIFFEL TOWER IN EUROS

	COST OF TICKETS			
	Adult rate	(12 to 24 years)	(4 to 11 years)	Under 4 years
2nd floor	17,10	8,60	4,30	Free
Summit	26,80	13,40	6,70	Free

[Source:www.lattesandrunways.com]

Use the information in TABLE 2 to answer the following questions.

5.3.1 Determine the entrance fee to the Summit for 2 adults, a 4-year-old and a 2-year-old. (3)

5.3.2 Determine how much cheaper it would be to visit the second floor instead of the summit for the same family from Question 5.3.1. (3)

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TOTAL MARKS: 150

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ADDENDUM

PREPARATORY EXAMINATIONS

SEPTEMBER 2023

This Addendum consists of 5 pages with 4 Annexures.

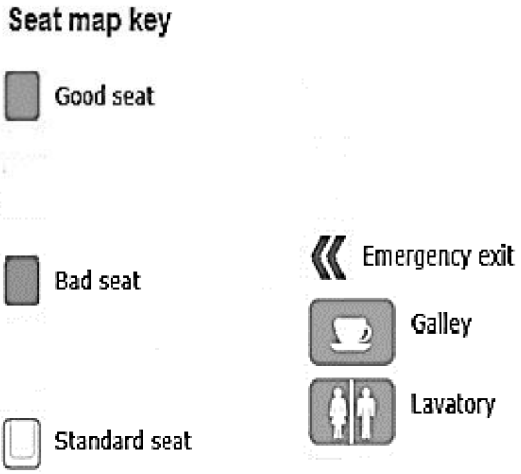
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ANNEXURE A

QUESTION 2.1

SEATING PLAN ON A PLANE





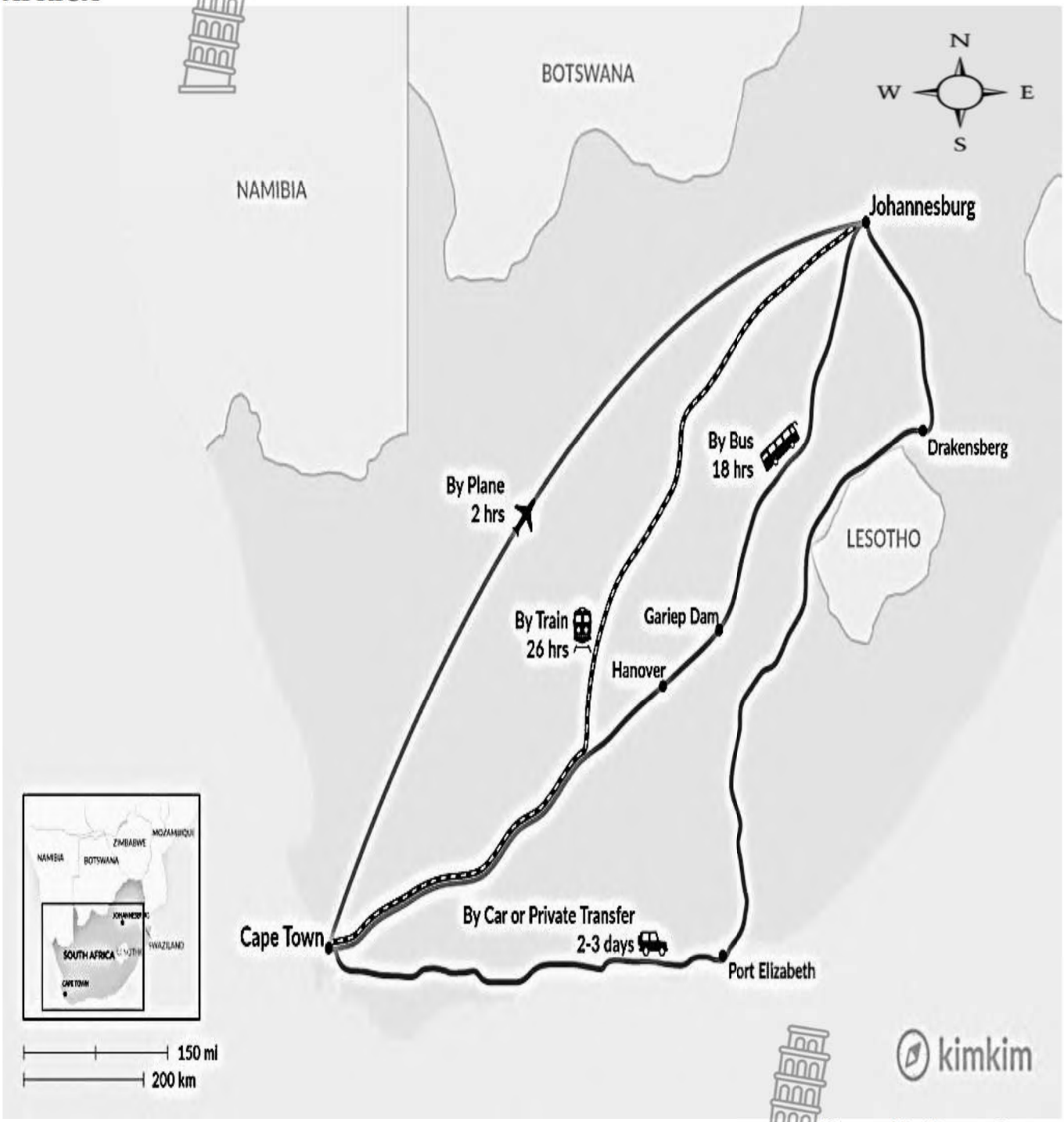
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[Adapted source:seatguru.com]

ANNEXURE B

QUESTION 2.2

TRANSPORTATION ROUTES BETWEEN JOHANNESBURG AND CAPE TOWN IN SOUTH AFRICA

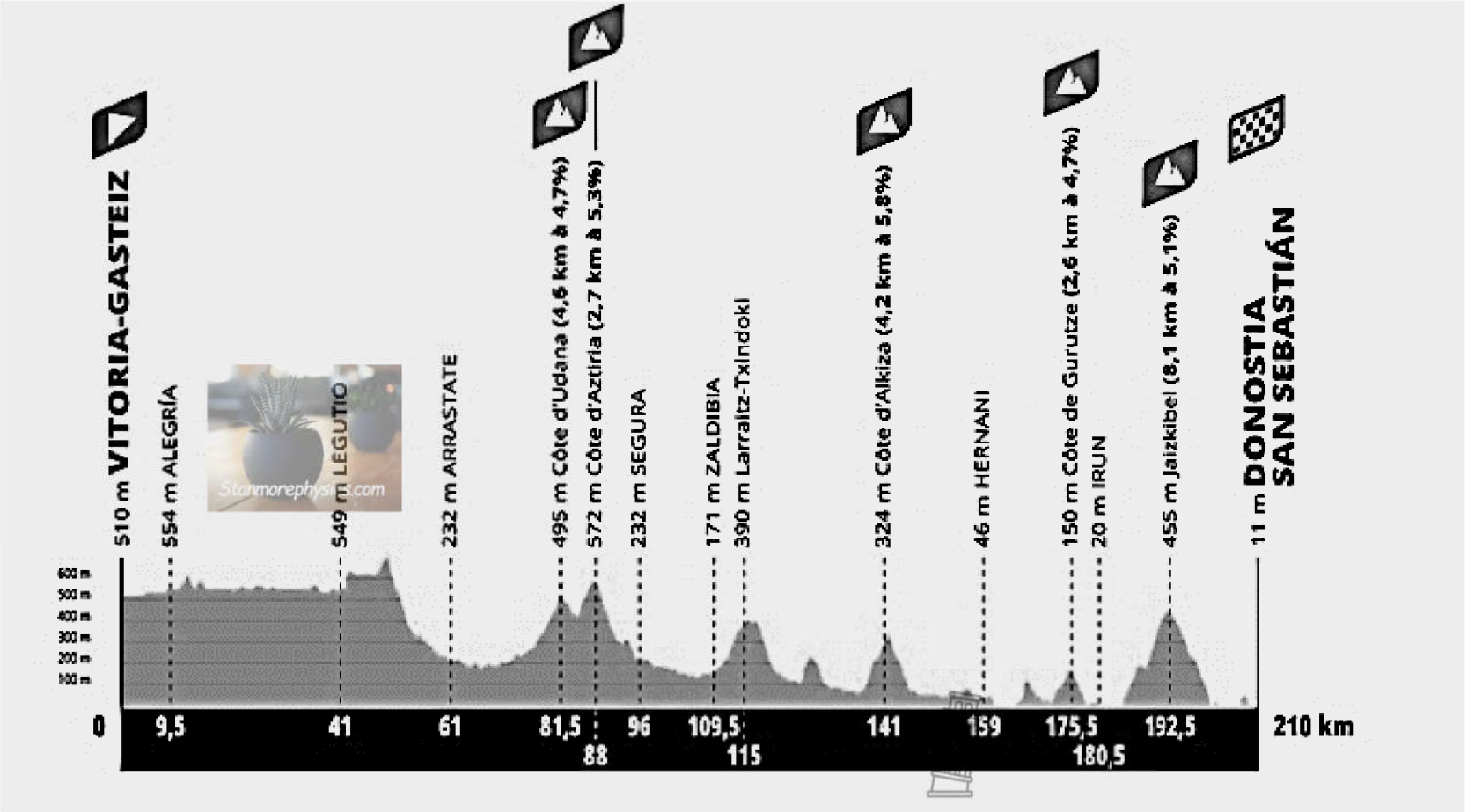


[Source:kimkim.com]

ANNEXURE C

QUESTION 5.1

MAP OF second (2nd) LEG OF TOUR DE FRANCE RACE



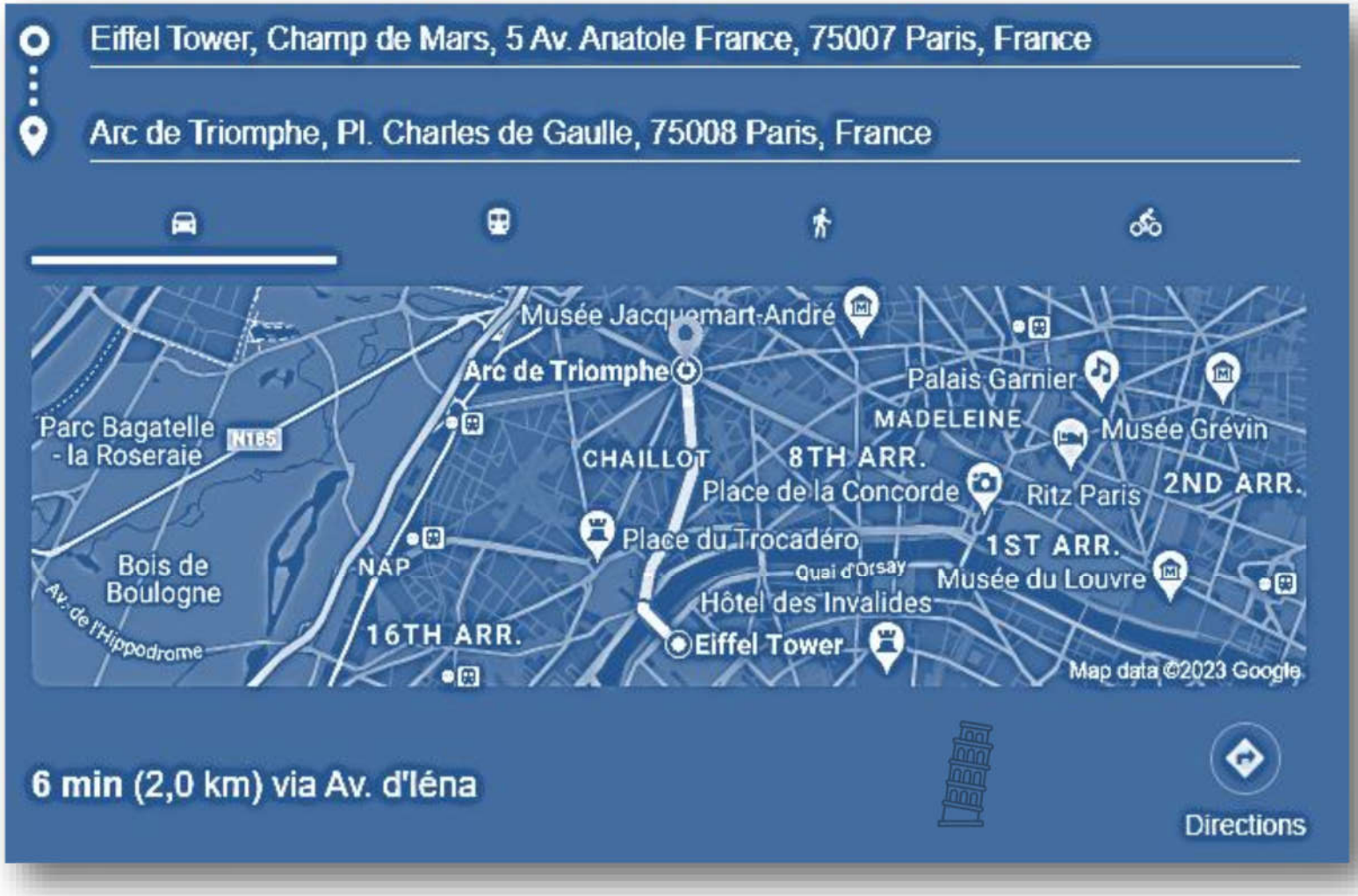
[Source: www.cyclingstage.com]

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ANNEXURE D

QUESTION 5.2

GOOGLEMAP OF TOURIST SITES IN PARIS



[Source:www.googlemaps]

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