

EXAMINATION		NATIONAL SENIOR CERTIFICATE	
GRADE		12	
DATE		MAY/JUNE 2026	
SUBJECT		MATHEMATICAL LITERACY	
PAPER		2	
MARK TOTAL		150	
DURATION (HOURS)		3	
NUMBER OF PAGES		14	



SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE
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INSTRUCTIONS AND INFORMATION

1. This question paper consists of **4** questions and 14 pages.
2. Answer **ALL** the questions.
3. Number the answers according to the numbering system used in the question paper.
4. Use the **ANNEXURES** as follow:
ANNEXURE A to answer question 2.2.
ANNEXURE B to answer question 4.2.
5. Start each question on a new page.
6. An approved non-programmable and non-graphical calculator may be used.
7. Show **ALL** calculations clearly.
8. Round **ALL** final answers off according to the context, unless stated otherwise.
9. Indicate **ALL** units where applicable. Units **MUST** be shown in final answers.
10. Maps and diagrams are **NOT** necessarily drawn to scale, unless stated otherwise.
11. Write neatly and legibly, in **BLUE** ink only.



QUESTION 1

1.1 Waihi Beach in New Zealand provided the following tide chart for June.

JUNE 2025

Waihi Beach

SUN-MOON-TIDES

		High Tides		Low Tides		Best Fishing	Moon Phase	Moon Rise/Set	Sun Rise/Set
1 Sun	AM	10:51	2.1	4:44	0.4	4:37		R 11:55	R 7:21
	PM	11:21	2.2	4:57	0.3	5:02		S 10:19	S 5:07
2 Mon	AM	11:44	2.0	5:38	0.4	5:26		R 12:24	R 7:22
	PM			5:49	0.4	5:49		S 11:24	S 5:06
3 Tue	AM	12:13	2.1	6:31	0.5	6:10		R 12:48	R 7:22
	PM	12:38	2.0	6:42	0.5	6:31		S 5:06	S 5:06
4 Wed	AM	1:04	2.0	7:23	0.5	6:51		S 12:24	R 7:23
	PM	1:32	1.8	7:37	0.6	7:11		R 1:11	S 5:06
5 Thu	AM	1:54	2.0	8:15	0.5	7:31		S 1:23	R 7:24
	PM	2:26	1.8	8:31	0.6	7:51		R 1:32	S 5:06
6 Fri	AM	2:44	2.0	9:06	0.5	8:10		S 2:21	R 7:24
	PM	3:20	1.8	9:25	0.6	8:30		R 1:53	S 5:05
7 Sat	AM	3:32	1.8	9:56	0.5	8:51		S 3:19	R 7:25
	PM	4:11	1.8	10:17	0.6	9:11		R 2:16	S 5:05
8 Sun	AM	4:19	1.8	10:43	0.5	9:33		S 4:18	R 7:25
	PM	5:00	1.8	11:05	0.6	9:55		R 2:42	S 5:05
9 Mon	AM	5:05	1.8	11:28	0.5	10:18		S 5:19	R 7:26
	PM	5:46	2.0	11:51	0.6	10:41		R 3:12	S 5:05
10 Tue	AM	5:50	1.8			11:06		S 6:20	R 7:26
	PM	6:30	2.0	12:11	0.5	11:31		R 3:49	S 5:05
11 Wed	AM	6:34	1.8	12:35	0.6	11:57		S 7:21	R 7:27
	PM	7:13	2.0	12:52	0.5			R 4:32	S 5:05
12 Thu	AM	7:17	1.8	1:18	0.6	12:24		S 8:18	R 7:27
	PM	7:54	2.0	1:33	0.4	12:51		R 5:24	S 5:05

[Source adapted from: <https://www.waihibeachinfo.co.nz/weather-and-tides/>]

Use the information above to answer the questions that follow.

1.1.1 Write down the height, in metres, of high tide on the evening of 1 June. (2)

1.1.2 On which date will you not find a best fishing time in the evening? (2)

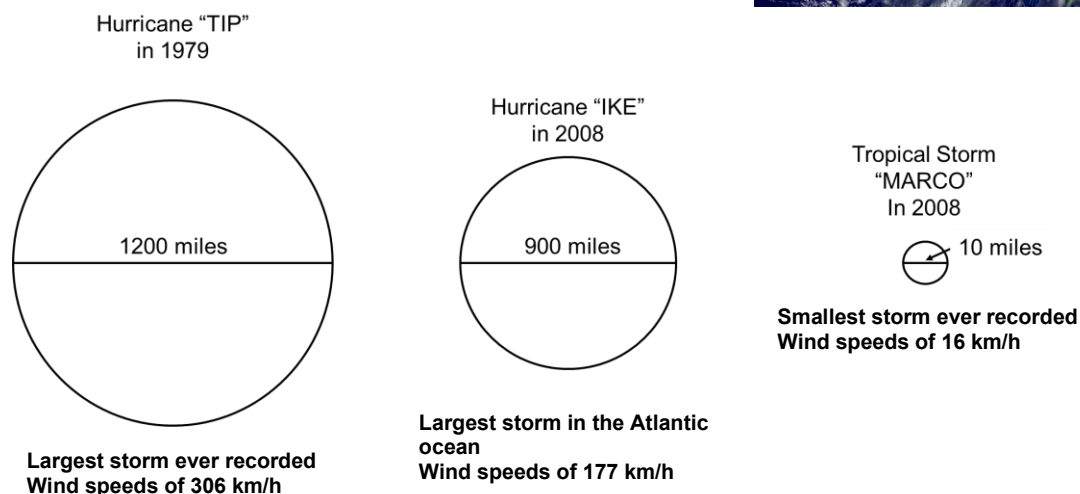
1.1.3 Calculate the difference in height between the morning high tide and low tide on 3 June. (2)

1.1.4 Write down the earliest time in the day you can find high tide on this chart. (2)

1.1.5 Calculate the time duration between high tide and low tide on the morning of 8 June. (2)



- 1.2 No two tropical storms or hurricanes are exactly alike, but every system has the same basic structure. Hurricanes and typhoons (tropical cyclones) can come in all shapes and sizes. The diagram below shows the immense differences in size of three storms that broke records for size.



[Source adapted from: <https://www.sky-chaser.com/schurr.htm>]

Use the above information to answer the questions that follow.

- 1.2.1 What basic geometric shape is used to illustrate a hurricane? (2)
- 1.2.2 Choose the correct **WORD** inside the brackets, that will complete the sentence accurately. 'The 900 miles across Hurricane Ike represents the **(radius/diameter)** of the hurricane.' (2)
- 1.2.3 Calculate the radius for Hurricane Ike in miles. (2)
- 1.2.4 It is 29 years between the largest storm and the smallest storm recorded. Calculate how many months have passed between these two storms. (2)
- 1.2.5 Select the correct **LETTER** from the following list that calculates the circumference of tropical storm Marco. Write down **ONLY** the correct **LETTER**, e.g. D. (2)

Circumference of a circle = $2\pi r$, where $\pi = 3,142$

A	$2 \times 3,142 \times 10 \text{ miles} = 62,84 \text{ miles}$
B	$2 \times 3,142 \times 20 \text{ miles} = 125,68 \text{ miles}$
C	$2 \times 3,142 \times 5 \text{ miles} = 31,42 \text{ miles}$



- 1.3 Hurricanes also bring storm surge. Storm surge is the level at which sea water rises above its normal level. Surge refers to the amount above the normal tide level at a given time, so a 15-foot storm surge at high tide can be far more devastating than the same surge at low tide.

Tropical Cyclone Categories			
Category	Wind Speed (mph)	Damage at Landfall	Storm Surge (feet)
1	74-95	Minimal While wind speeds are quicker than the speed a cheetah can run, there is not much damage to property.	4-5
2	96-110	Moderate Wind speeds are as fast or faster than a baseball pitcher's fastball. This category cyclone may break windows and destroy trees.	6-8
3	111-129	Extensive This wind speed is similar, or close, to the serving speed of many professional tennis players. This category cyclone can break windows and doors.	9-12
4	130-156	Extreme With winds quicker than the world's fastest rollercoaster, there is much damage to property in this category cyclone.	13-18
5	157 or higher	Catastrophic This category cyclone causes the most damage. With wind speeds similar to the speed of some high-speed trains, it destroys buildings.	19+

In the case of Hurricane Helene in 2024, the predicted storm surge at landfall was expected to be over 20 feet.

[Source adapted from: <https://earthsky.org/earth/hurricanes-category-6-climate-change/>]

Study the information above and answer the questions that follow.

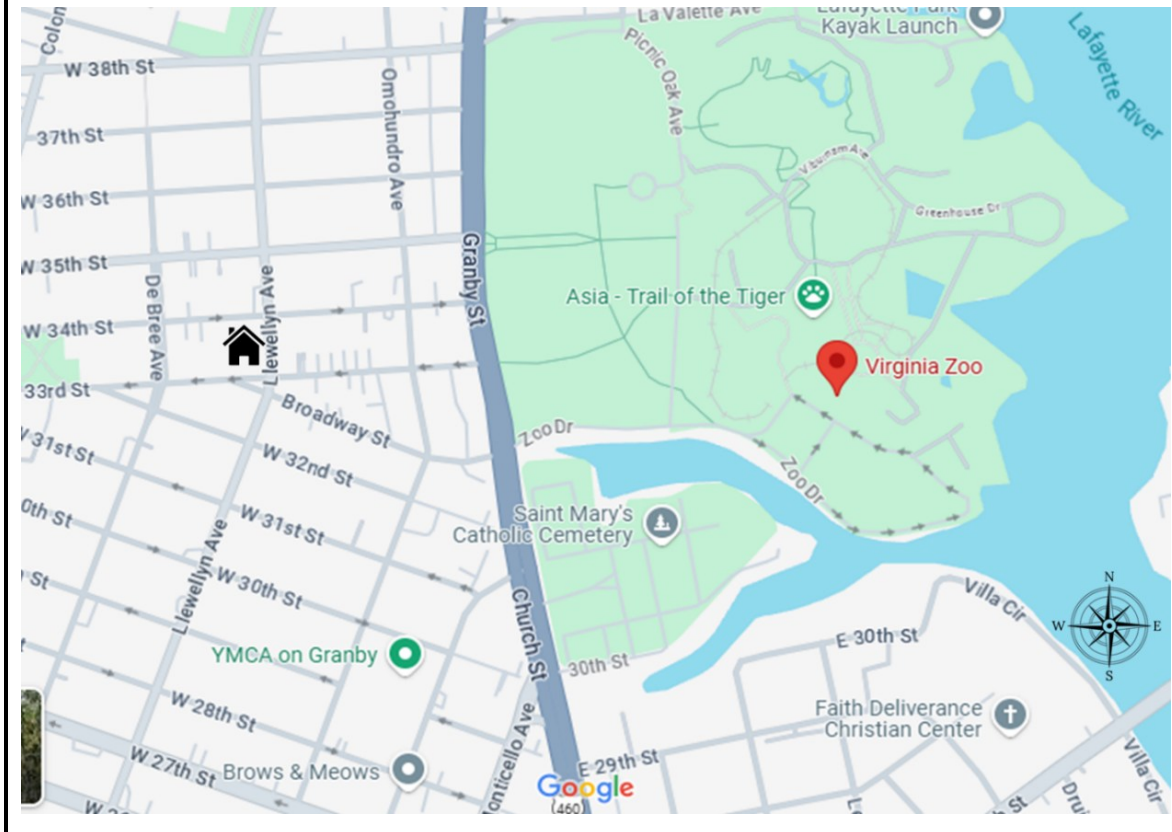
- 1.3.1 Write down the height of storm surge that will cause moderate damage at landfall. (2)
- 1.3.2 Show that the surge of 20 feet is equal to 6,096 m, if 1 foot = 0,3048 m. (2)
- 1.3.3 Hurricane Ike had wind speeds of 110 mph. What category hurricane was it classified as? (2)
- 1.3.4 State if the following statement is **TRUE** or **FALSE**.
'Hurricane Helene was a category 5 hurricane.' (2)
- 1.3.5 Choose the correct **WORD** inside the brackets, that will complete the sentence accurately. 'Tropical storm Marco had wind speeds of more than 70 mph and the likelihood that it did severe damage at landfall was (*certain/likely*).' (2)

[30]



QUESTION 2

- 2.1 Eric lives in Virginia and stays in a house on Llewellyn Avenue. He wants to take his children to Virginia Zoo.



[Source adapted from: <https://www.google.com/maps/place/Virginia+Zoo/@36.8769622,-76.2856845,16z>]

Study the above map to answer the questions that follow.

- 2.1.1 Write down the name of the river that flows on the east side of Virginia Zoo. (2)
- 2.1.2 Complete the following directions for Eric to drive to Virginia Zoo. Choose the correct **WORD** inside the brackets that will complete the directions.
 Turn (**right/left**) in Llewellyn Avenue. At the next road turn (**right/left**) onto (**33rd/34th**) street. At the T-junction turn (**right/left**) onto Granby Street. At the next road turn (**right/left**) onto Zoo Drive, continue straight until you see the Virginia Zoo entrance on the right. (5)
- 2.1.3 When travelling south on Granby Street, the street name changes to what name? (2)



2.2

In 1985 the park became the Virginia Zoological Park and is now called the Virginia Zoo. The zoo animals are from around the world and includes more than 700 animals representing more than 150 different species.



The 700 animals range from mega-vertebrates, like rhinos and giraffes, to primates and alpacas. The addition of the World of Reptiles and Friends building in June 2018 added several exotic species including large lizards, venomous snakes and rare frogs.

On average, guests spend around two hours inside the park. The zoo closes each day at 16:00. The zoo is a 2,6-mile (6 000 steps) route with elevation gain of about 13,1 feet and is rated as easy. The zoo is also a smoke-free zone.

Eric buys a map of Virginia Zoo as shown on **ANNEXURE A**.

[Source adapted from: <https://virginiazoo.org/about/zoo-history/>]

Study the information above and **ANNEXURE A** to answer the following questions.

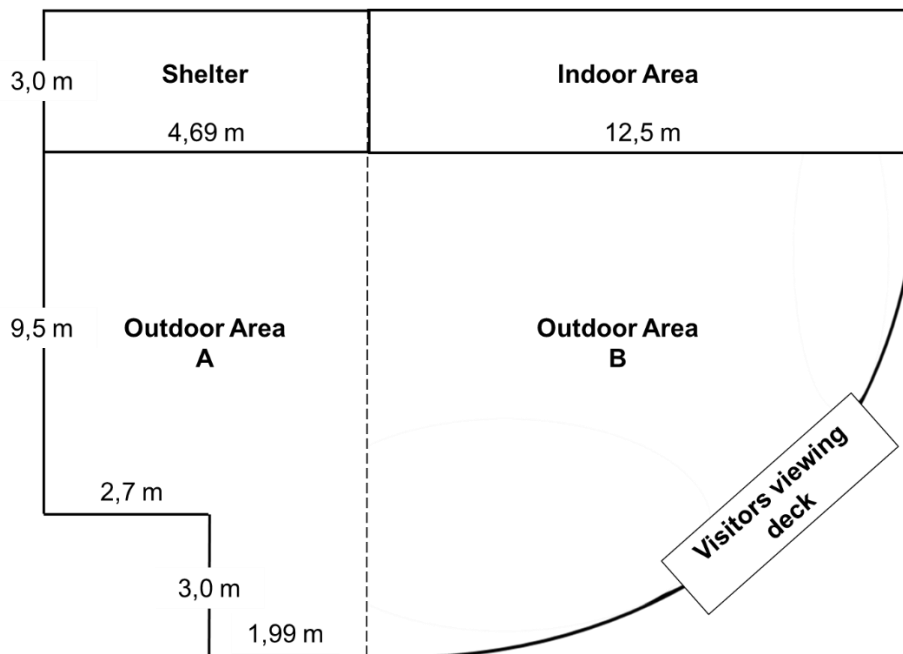
- 2.2.1 Determine how old Virginia Zoo is this year. (2)
- 2.2.2 Write down the ratio of the number of animals to the number of different species in the simplest form. (3)
- 2.2.3 Calculate the walking rate in steps per kilometre, if 1 mile = 1 609,34 m. (6)
- 2.2.4 What is the possibility to find a smoking area inside the zoo? (2)
- 2.2.5 How many bathrooms, according to the map, are there in the zoo? (2)
- 2.2.6 What lies southwest from the World of Reptiles exhibition? (2)
- 2.2.7 Give the general direction of the Animal Wellness Campus from the Fountain Plaza. (2)
- 2.2.8 State if the following statement is **TRUE** or **FALSE**:
'Virginia Zoo is wheelchair friendly.' (2)
- 2.2.9 According to the map of the zoo, how many zoo gardens are there? (2)
- 2.2.10 Write down the number of train stations in the zoo. (2)

[34]



QUESTION 3

- 3.1 The Cleveland Zoo is upgrading and building new enclosures for its animals. The following layout shows a newly built enclosure for the zoo's tortoises.



Circumference of a circle = $2\pi r$, where $\pi = 3,142$

Area of a circle = πr^2 , where $\pi = 3,142$

[Source adapted from: <https://www.researchgate.net>]

Use the above information to answer the following questions.

- 3.1.1 Write down the length of the diameter for Outdoor Area B if it was a full circle. (2)
- 3.1.2 Calculate the perimeter of the whole enclosure, in metres. (4)
- 3.1.3 According to the guidelines for holding tortoises the outdoor area needs to be 40 m^2 per animal. Calculate the total outdoor area and determine how many tortoises can be kept in this enclosure. (6)
- 3.1.4 This enclosure must have a water area of 4 m^2 per tortoise and it needs to be 2 metres deep. Calculate how many litres of water this enclosure's water area will have for six tortoises, if $1 \text{ m}^3 = 1\,000$ litres. (3)
- 3.1.5 The zookeeper states that the indoor area is double the shelter area for this enclosure. Calculate the area for the indoor and shelter area to validate his statement. (4)



- 3.2 Cleveland Zoo renovated its tiger enclosure to provide better space for them. The previous enclosure consisted of Habitat A (1 300 square feet) and Habitat B (2 300 square feet).

The new enclosure was updated to:

- Habitat A (7 300 square feet)
- Habitat B (1 620 square feet)
- Habitat C (3 800 square feet)
- Habitat D (1 860 square feet)

The vision for the habitat was to create an enriching environment for the animals while also being engaging for the public. Construction materials were carefully chosen to mimic a tiger's native habitat, and a total of 33 000 pounds of black locust timber were used.

[Source adapted from: <https://wdmarchitects.com/case-studies/rosebrough-tiger-passage-at-cleveland-metroparks-zoo/>]

Use the above information to answer the following questions.

- 3.2.1 Calculate the difference in size of the old enclosure and the new renovated enclosure. (3)
- 3.2.2 Calculate the total percentage increase of habitat area of the newly renovated tiger enclosure. (2)
- 3.2.3 The zookeeper states that they used more than 14 000 kilograms of black locust timber. Validate his statement by calculating how many kilograms of black locust timber were used in the new enclosure, if 1 pound = 0,0714286 stone and 1 kg = 0,157473 stone. (*Stone* = an old English measuring unit) (4)
- 3.2.4 The zookeeper states that new enclosure's Habitat C can hold 4 tigers. According to the guidelines for holding animals, a tiger enclosure must have 144 m² for a tiger plus 100 m² for every extra tiger in the enclosure. Validate his statement by calculating how many tigers the newly built enclosure Habitat C can hold, if 1 m² = 10,7639 square feet. (5)



- 3.3 Cleveland Zoo follows a strict nutritional plan for all its animals. The following is the diet sheet for the zoo's ring-tailed lemurs.

Diet Sheet

Species: Ring-Tailed Lemur

Number of individuals: 12

Presentation: Chop into small pieces and scattered around the enclosure.

Items to avoid: Broccoli, kale, iceberg lettuce, citrus fruit.

Feeding per animal	Vegetables	Fruit	Other
Morning	200 g carrots 150 g parsnips (cooked) 50 g peppers 50 g cauliflower	50 g apple	100 g primate pellets
Afternoon	100 g carrots 100 g sweet potato 50 g butternut 50 g fennel	20 g pear 20 g banana 20 g apple	Handful of sunflower seeds
Night	150 g swede (cooked) 80 g carrots 80 g endive 80 g leek (cooked) 50 g tomato 50 g courgette 20 g peppers		200 g primate pellets

[Source adapted from: <https://wildwelfare.org/wp-content/uploads/Nutrition.pdf>]

Use the above information to answer the following questions.

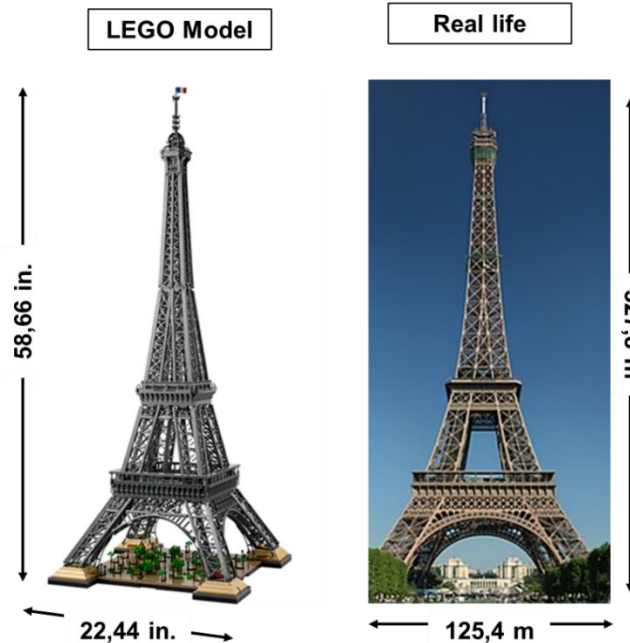
- 3.3.1 Identify the type of animal this food chart is for. (2)
- 3.3.2 Write down how many types of cooked vegetables will be served. (2)
- 3.3.3 This food chart indicates the recommended amount for one animal. How many times will the zookeeper need to prepare it in one day? (2)
- 3.3.4 Calculate how many kilograms of carrots the zoo must buy to feed all the animals on this food chart for a week. (5)

[44]

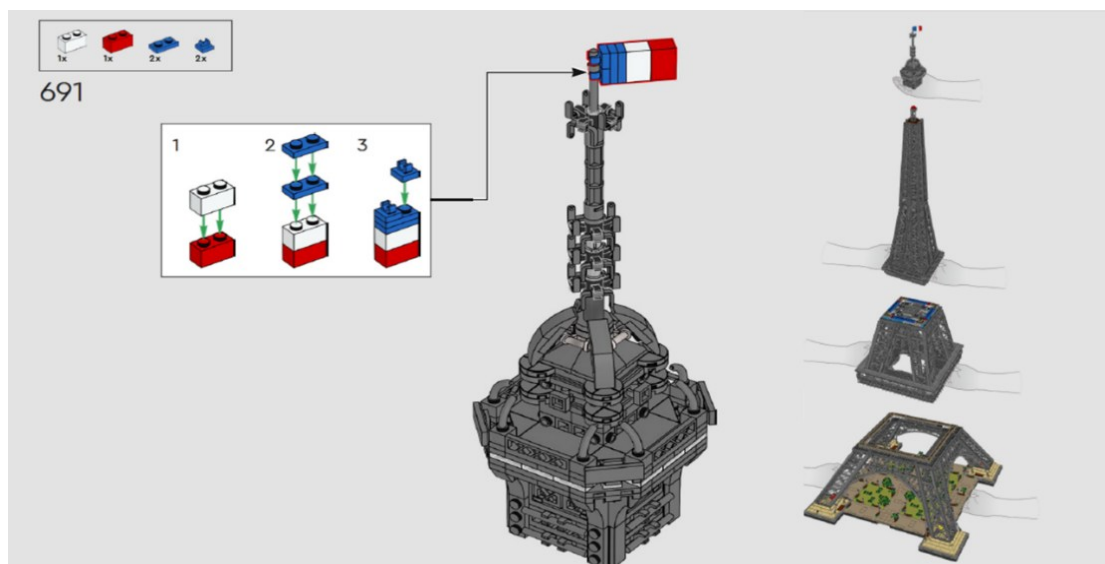


QUESTION 4

- 4.1 The LEGO® Eiffel Tower model set for adults consists of 74 packs with a total of 10 001 pieces. You'll assemble this Eiffel Tower model (Set 10307) in 4 parts reminiscent of the original monument's construction. The model measures over 58 inches high and 22 inches wide, making it one of the largest ever LEGO® model sets, with a model scale of 1:200.



The following diagram is from the LEGO® booklet. It explains the final steps in completing the Eiffel Tower model.



Note: 1 inch = 2,54 cm

[Source adapted from: <https://greatyellowbrick.co.za/products/lego-icons-eiffel-tower/>]

Use the above information to answer the questions that follow on the next page.



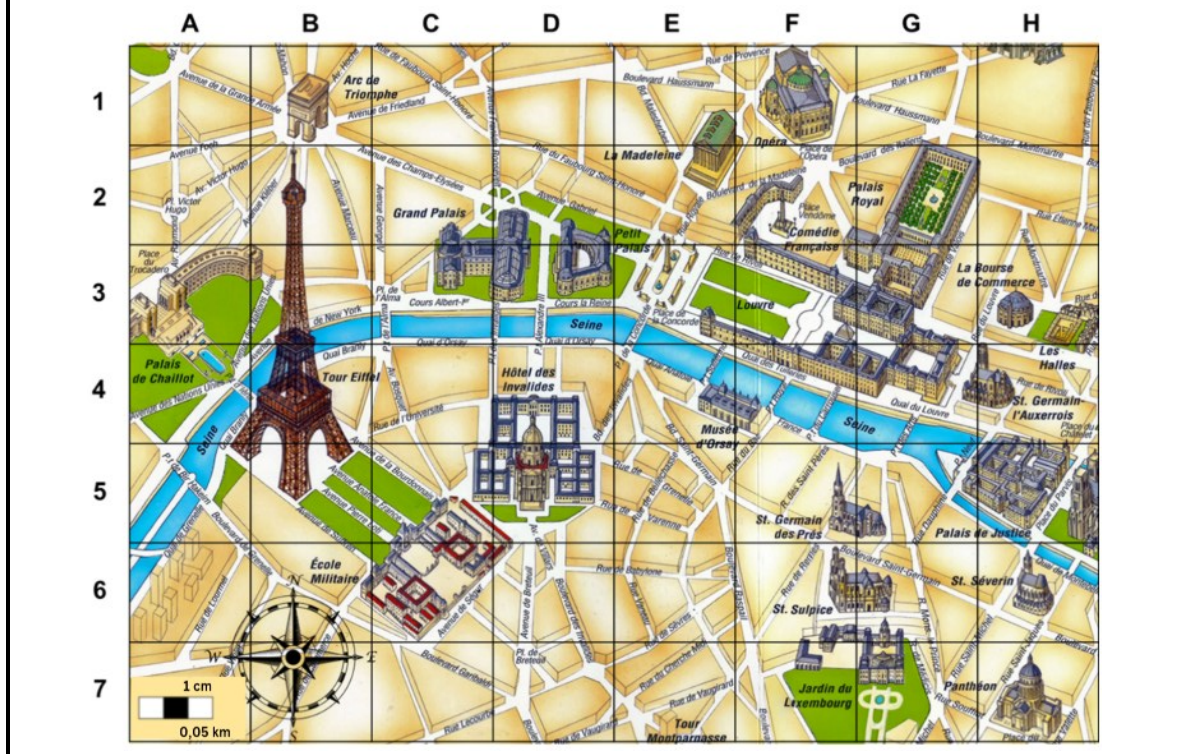
- 4.1.1 Name the type of scale used for this model. (2)
- 4.1.2 Convert the height and width of the model to the nearest centimetre. (3)
- 4.1.3 Validate, with calculations, that the scale of the model to the real-life Eiffel Tower is indeed 1:200. (7)
- 4.1.4 Choose the correct **WORD** inside the brackets, that will complete the sentence accurately. 'The LEGO® booklet illustration is an example of **(a floor/an assembly)** plan.' (2)
- 4.1.5 Calculate the probability, as a percentage, of selecting a blue piece out of all the pieces in step 691. (3)
- 4.1.6 Select the correct **LETTERS** from the following list to rearrange the following order of instructions to fit with the illustration of the LEGO® booklet. Write down **ONLY** the **LETTERS** in the correct order.

A	Take the smaller two blue pieces and press them onto the bigger blue piece.
B	Click the smaller two blue pieced onto the flagpole.
C	Take the two larger blue pieces and press them onto the white piece.
D	Assemble the entire piece starting with the base, middle, tower and then the flag post.
E	Take the white piece and press it onto the red piece.

(5)



- 4.2 Paris is the capital of France, and it is one of the largest cities in Europe, with a large historical centre, so you can't do without a detailed tourist map of Paris.



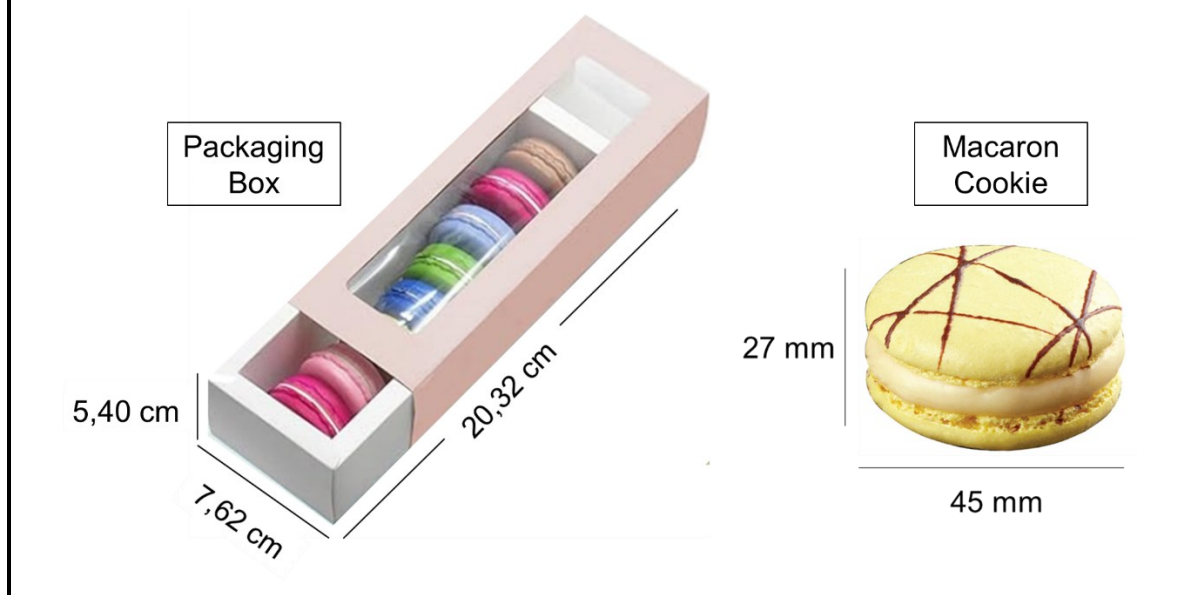
[Source: <https://mashapasha.com/europe/paris/paris-map/>]

Study the enlarged map of tourist attractions in Paris on **ANNEXURE B** to answer the questions that follow.

- 4.2.1 Identify the type of scale used on this map. (2)
- 4.2.2 Identify the tourist attraction that lies directly south of the Arc de Triomphe. (2)
- 4.2.3 Write down the grid reference for the tourist attraction, Arc de Triomphe. (2)
- 4.2.4 Name the tourist attraction that lies in the grid reference H7. (2)
- 4.2.5 The height measurement of the Eiffel Tower on the map is 6 cm. Calculate the real height, in metres, of the Eiffel Tower using the map scale. (3)



- 4.3 French macarons are delicate sandwich cookies with a crisp exterior. Macarons are typically small, round cookies and is packaged in small rectangular boxes, as illustrated below.



[Source adapted from: <https://sallysbakingaddiction.com/french-macarons/>]

- 4.3.1 The baker states that you can fit more macarons into the box when you lay them flat instead of upright. Validate, showing ALL calculations, whether this statement is VALID.

(9)

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GRAND TOTAL: [150]