HILLCREST HIGH SCHOOL

Grade 12 Trials Exam Paper 1
September 2019

Examiner: Mrs Leuschke
MARKS: 150

Moderator: Mrs Jugmohan
TIME: 3 hours

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 5 questions. Answer ALL the questions.
2. Write your name and **your Mathematical Literacy teacher**'s name on your answer booklet.
3. Clearly show ALL calculations, diagrams, graphs, etc which you have used to determine your answers.
4. Answers only will NOT necessarily be awarded full marks.
5. An approved scientific calculator (non-programmable) may be used, unless otherwise stated.
6. If necessary, answers should be rounded off to TWO decimal places, unless otherwise stated.
7. Number the answers EXACTLY as the questions are numbered.
8. Diagrams are not necessarily drawn to scale.
9. It is in your own interest to write legibly and to present your work neatly.

QUESTION 1

1.1 Below is a statement from First Bank of Wiki. Study the bank statement and then answer the questions that follow.

FIRST BANK OF WIKI
1425 JAMES ST, PO BOX 4000
VICTORIA BC V8X 3X4 1-800-555-5555

CHEQUING ACCOUNT STATEMENT
Page : 1 of 1

JOHN JONES
1643 DUNDAS ST W APT 27
TORONTO ON M6K 1V2

Statement period	Account No.
2003-10-09 to 2003-11-08	00005-123-456-7

Date	Description	Ref.	Withdrawals	Deposits	Balance
2003-10-08	Previous balance				0.55
2003-10-14	Payroll Deposit - HOTEL			694.81	695.36
2003-10-14	Web Bill Payment - MASTERCARD	9685	200.00		495.36
2003-10-16	ATM Withdrawal - INTERAC	3990	21.25		474.11
2003-10-16	Fees - Interac		1.50		472.61
2003-10-20	Interac Purchase - ELECTRONICS	1975	2.99		469.62
2003-10-21	Web Bill Payment - AMEX	3314	300.00		169.62
2003-10-22	ATM Withdrawal - FIRST BANK	0064	100.00		69.62
2003-10-23	Interac Purchase - SUPERMARKET	1559	29.08		40.54
2003-10-24	Interac Refund - ELECTRONICS	1975		2.99	43.53
2003-10-27	Telephone Bill Payment - VISA	2475	6.77		36.76
2003-10-28	Payroll Deposit - HOTEL			694.81	731.57
2003-10-30	Web Funds Transfer - From SAVINGS	2620		50.00	781.57
2003-11-03	Pre-Auth. Payment - INSURANCE		33.55		748.02
2003-11-03	Cheque No. - 409		100.00		648.02
2003-11-06	Mortgage Payment		710.49		-62.47
2003-11-07	Fees - Overdraft		5.00		-67.47
2003-11-08	Fees - Monthly		5.00		-72.47
	*** Totals ***		1,515.63	1,442.61	

By Sergio Ortega, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=20208201

1.1.1 Determine the balance in the account on the 06/11/2003. (2)

1.1.2 Calculate the total value of ATM withdrawals. (2)

1.1.3 a)What was the value of cheque number 409? (2)
1.1.3 b) State whether it was a debit or a credit. (2)

1.1.4 Does John Jones have money left over at the end of the month? (2)

1.1.5 What does it mean to have a negative balance? (2)

1.2 The till slip below shows purchases from Sunshine Supermarket.

Sunshine Supermarket

61 11th Street, Wellville
Tel no. 061 711 2813

Tax invoice VAT No. 442 00010895

Ginger biscuits	R13.99
Cott/Cheese	R15,99
Cott/Cheese	R15.99
Tomatoes, pkt	R 6.99 *
Choc One 60G	R 5.49
Plastic bag 24L	R 0.39
Vege pie	R 9.99
Yoghurt s/berry 175ml	R 5.79
Yoghurt plain 175 ml	R 5.49
L/FAT yoghurt 175ml	R 5.49
Cheddar chs /kg	R22.93
Teabag R/Bos	R19.99
Ice cream vanilla	R19.99
Lemon shampoo	R15.99
Balance due	**R164.50**

Rate	**VAT**	**TOTAL**
14%	19.34	157.51
*0%	0.00	6.99

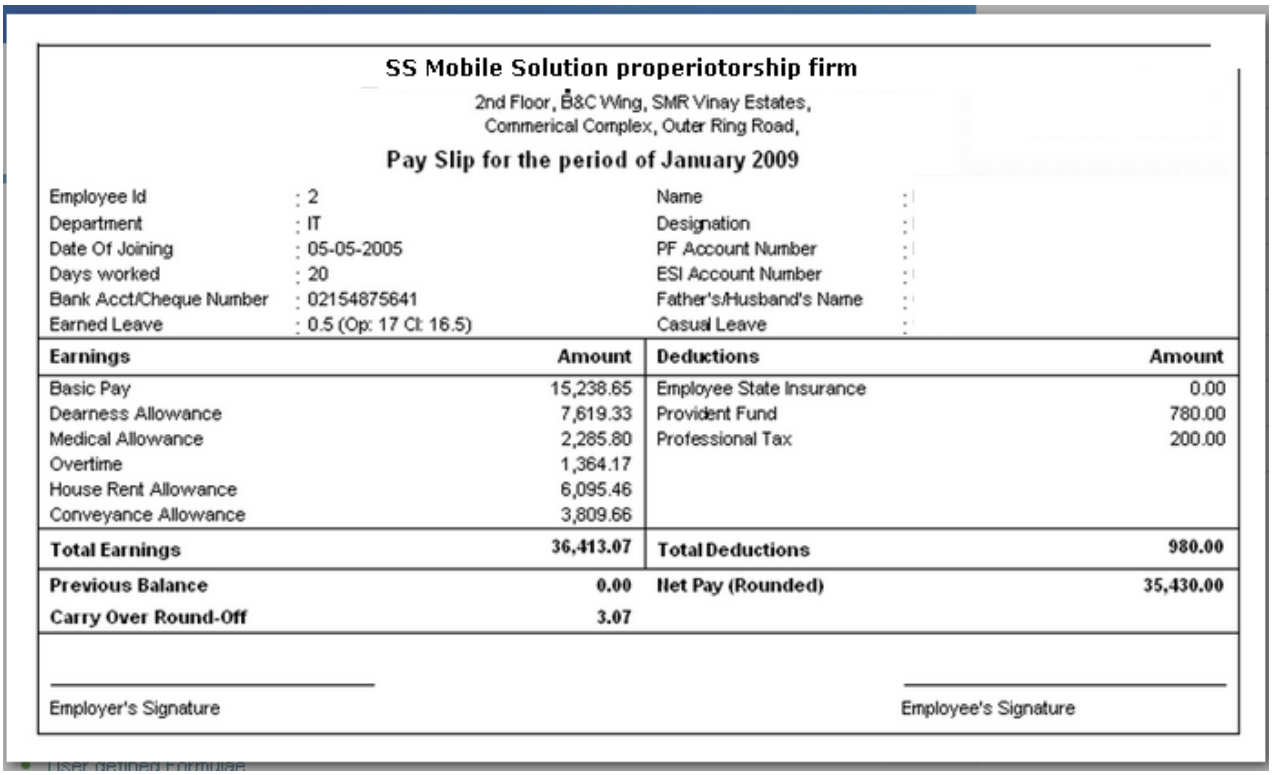
PLEASE RETAIN AS PROOF OF PURCHASE.

1.2.1 What does the * next to the tomatoes mean, and why? (3)

1.2.2 Show, by calculation, how the amount of R19,34 VAT was calculated. (2)

1.2.3 If this purchase was made after the 1 April 2018 when the VAT increased to 15%, how much would the VAT have been? (3)

1.3. Below is the pay slip for John Jones who works at SS Mobile Solution. Use the information to answer the questions that follow.



SS Mobile Solution properiotorship firm

2nd Floor, B&C Wing, SMR Vinay Estates,
Commerical Complex, Outer Ring Road,

Pay Slip for the period of January 2009

Employee Id	: 2	Name	:
Department	: IT	Designation	:
Date Of Joining	: 05-05-2005	PF Account Number	:
Days worked	: 20	ESI Account Number	:
Bank Acct/Cheque Number	: 02154875641	Father's/Husband's Name	:
Earned Leave	: 0.5 (Op: 17 Cl: 16.5)	Casual Leave	:

Earnings	Amount	Deductions	Amount
Basic Pay	15,238.65	Employee State Insurance	0.00
Dearness Allowance	7,619.33	Provident Fund	780.00
Medical Allowance	2,285.80	Professional Tax	200.00
Overtime	1,364.17		
House Rent Allowance	6,095.46		
Conveyance Allowance	3,809.66		
Total Earnings	**36,413.07**	**Total Deductions**	**980.00**
Previous Balance	**0.00**	**Net Pay (Rounded)**	**35,430.00**
Carry Over Round-Off	**3.07**		

Employer's Signature

Employee's Signature

1.3.1 Show by calculations how the total earnings are calculated. (2)

1.3.2 What percentage of his total income is his net income? (2)

1.3.3 His medical allowance is R2285,80. If this is 65% of the total medical allowance, calculate the total medical allowance. (3)

1.3.4 If John Jones worked 8 hours of overtime, what was his hourly rate for overtime? (2)

1.3. 5 For the next financial year, John Jones gets a 5% increase on his basic pay and a 3,8% increase on the house rent allowance as well as increasing his overtime hours to 11. Calculate what his new total earnings will be. (5)

1.4 John Jones moves to a new municipality. Below is a table that shows the different tariffs for his old municipality and the new municipality.

Old Municipality		New Municipality	
	Price per kWh (R)		Price per kWh (R)
0-50	R0,7891	0 - 45	R0,7781
>50 - 250	R0,9871	>45 - 230	R0,9672
>250 - 550	R1,1342	>230- 500	R1,1134
>550 - 700	R1,4511	>500 - 700	R1,4923
> 700	R1,6771	> 700	R1,7912

1.4.1 a) John and his family use 525kWh of electricity a month. Calculate the cost of this number of kWh for the Old Municipality. Show ALL working. (4)

1.4.1 b) John and his family use 525kWh of electricity a month. Calculate the cost of this number of kWh for the New Municipality. Show ALL working. (4)

1.4.2 Calculate the difference in cost between the two municipalities and state which municipality is cheaper and by how much. (3)

1.4.3 If John was charged R257 in a particular month, how many kWh did they use? Use the tariffs for the old municipality. (4)

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QUESTION 2

The London Marathon is held once a year in the city of London in the United Kingdom. Use the information on ANNEXURE A to answer the questions that follow.

2.1.1 All three diagrams show that there are three different start times. What time do the Wheelchairs start? . (2)

2.1.2 Diagram 3 gives the distance in both miles and kilometres. Using the information that 26,2 miles is equal to 42,2km, calculate how many miles 30km is equal to. (4)

2.1.3 Where is the finish of the race? (2)

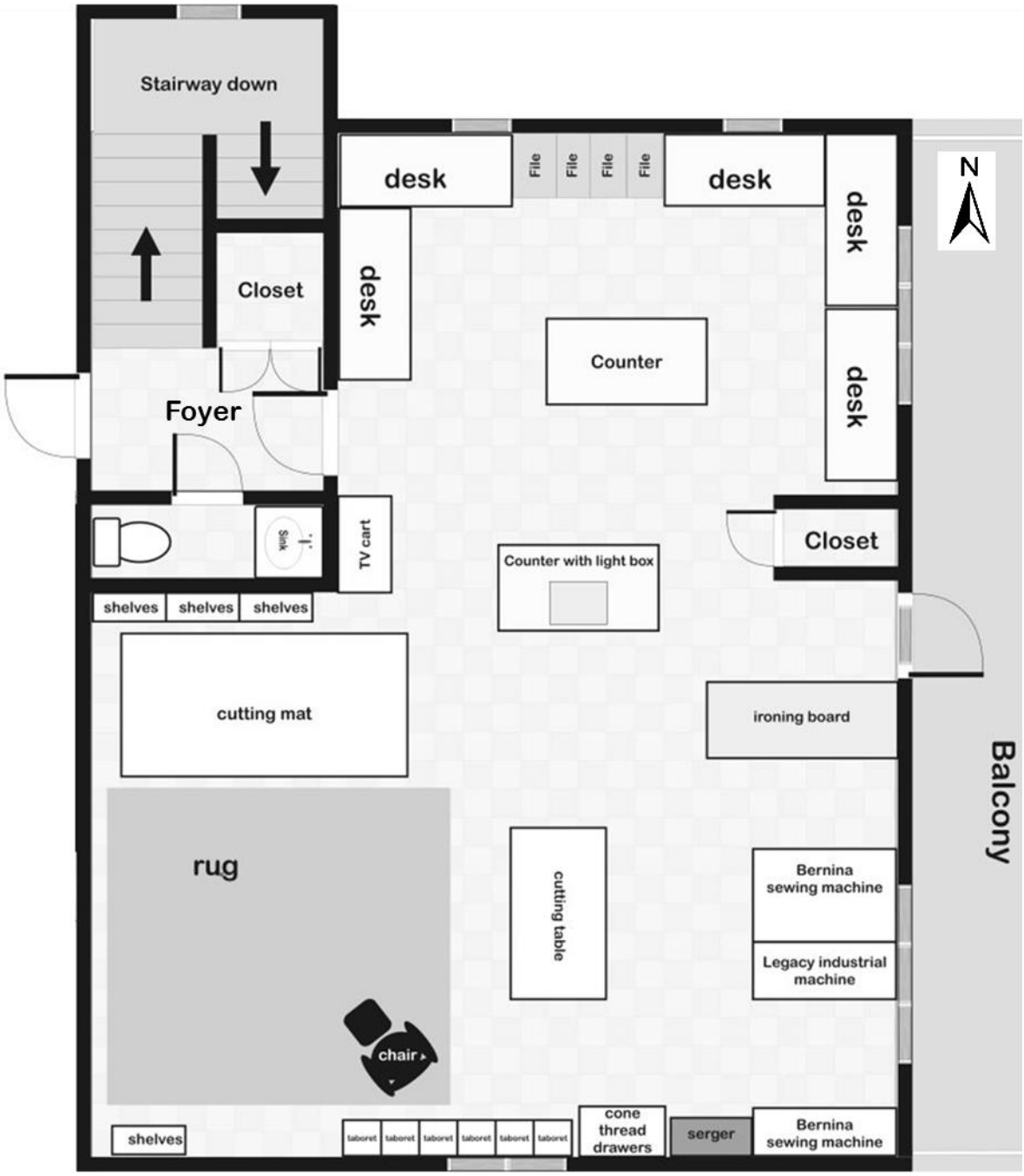
2.1.4 Using Diagram 3, identify which place is at the following points along the route:

a) 15 miles (2)
b) 30 km (2)
c) 20 km (2)

2.1.5 Using Diagram 2, give the general direction from Point marked B to the Point marked T. (2)

2.1.6 Using Diagram 2, what is the general direction of the finish of the race from the start of the race?(2)

2.2 Below is a plan of a work room used for making items of clothing from home.



2.2.1 How many bathrooms are there in the workroom (excluding the foyer area)? (2)

2.2.2 What detail on the plan tells you that the workroom is not the only room in the building? (2)

2.2.3 Measure the length of the southern wall of the workroom. Write your answer in centimetres (2)

2.2.4 If this plan is drawn to a scale of 1:60, calculate the length of the southern wall of the workroom. Write your answer in meters. (2)

2.2.5 If one had to draw the west elevation of the room, how many windows will be seen? (2)

2.3 The owner of the workshop above makes and sells hoodies. The hoodies come in two colours (navy and red) and three different styles:

* Normal style (N)
* Zip Pocket Style (Z)
* Hoodless Style (H)

2.3.1 Draw a 2-way tableshowing all the available combinations of colours and styles. (3)

2.3.2 Now state how many combinations colours and styles are available. (2)

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QUESTION 3

The 2019 Women's Soccer World Cup was held in France from 7 June – 7 July. There were a total of 24 teams that participated from all around the world. The table below shows the participating teams.

Team	**Continent**	**Group**	**Points**	**Goals Scored**	**Goals Against**	**Games Played**
England	Europe	D	9	13	5	7
Cameroon	Africa	E	3	3	8	4
USA	North, Central America and Caribbean	F	9	26	3	7
New Zealand	Oceania	E	0	1	5	3
Canada	North, Central America and Caribbean	E	6	4	3	4
South Africa	Africa	B	0	1	8	3
Jamaica	North, Central America and Caribbean	C	0	1	12	3
Germany	Europe	B	9	10	2	5
Sweden	Europe	F	6	12	6	7
Netherlands	Europe	E	9	11	5	7
Australia	Asia	C	6	9	6	4
China PR	Asia	B	4	1	3	4
France	Europe	A	9	10	4	5
Italy	Europe	C	6	9	4	5
Norway	Europe	A	6	7	7	5
Thailand	Asia	F	0	1	20	3
Spain	Europe	B	4	4	4	4
Japan	Asia	D	4	3	5	4
Korea Republic	Asia	A	0	1	8	3
Brazil	South America	C	6	7	5	4
Argentina	South America	D	2	3	4	3
Scotland	Europe	D	1	5	7	3
Chile	South America	F	3	2	5	3
Nigeria	Africa	A	3	2	7	4

3.1 Determine the percentage of countries that are from Asia. (2)

3.2 Use the table to determine which four countries made it to the semi-finals. (2)

3.3 Calculate the average number of goals scored per country over the tournament. (3)

3.4 Determine the median of the goals scored against. (3)

3.5 What was the modal number of games played? (2)

3.6 Draw a bar graph on the sheet provided in your answer book to show the number of points for the following countries – England, Nigeria, Sweden, Japan, Scotland. (5)

3.7 Write the goals against Thailand and the goals against Australia as a ratio in its simplest form.(2)

3.8 Express the probability (as a decimal) of randomly selecting a country from Europe. (3)

3.9 The top three goal scorers over the tournament were Megan Rapinoe (USA), Alex Morgan (USA) and Ellen White (England). If each of these ladies was awarded €550, calculate how much Alex and Ellen each received in their own currency.

€1 = $1,122080 and €1 = £0,900008 (4)

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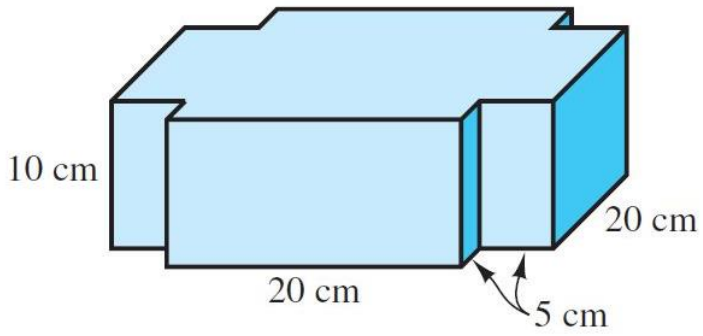
QUESTION 4

4.1.1 Below is a diagram of a gift box. Kathryn wants to make this gift box to pack chocolates in for her friends for Christmas. The height is the gift box is 10cm, the longer edges are 20cm long, and the short edges of the square corner cut outs are each 5cm long.

4.1.1 a) Determine the amount of cardboard needed to make the top and bottom of this gift box. (3)
4.1.1 b) Determine the amount f cardboard needed to make the sides of the gift box. (3)
4.1.1 c) Determine the total amount of cardboard needed to make this gift box. (2)

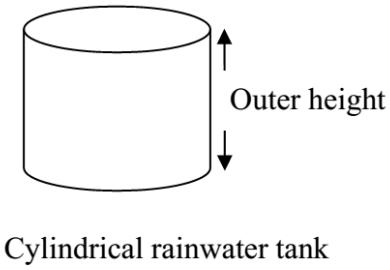
Area = length x breadth



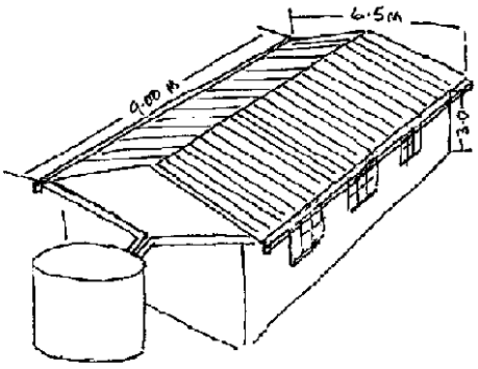
4.1.2 The sheet of cardboard is 1m², how many boxes can Kathryn cut out of one sheet of cardboard. (3)

4.1.3 If the sheet of cardboard that Kathryn wants to use costs R41,35 for the sheet, calculate the cost of making one box. (2)

4.2 The diagram below shows the cylindrical water tank that Mr Hopkins uses to collect rainwater from the roof of his house. The water is used for irrigating his garden.



Cylindrical rainwater tank



He wants to know how much rainwater the tank can hold. It has an inner radius of 0,98m and the inner height of the tank is 2,495m.

4.2.1 Calculate the total volume of the water tank, rounded off to THREE decimal places. Use the formula :

Volume = π x radius^2 x height

Use π = 3,142 (3)

4.2.2 Determine the height, rounded off to TWO decimal places, of the water in the tank when it is 75% full. (2)

4.2.3 The outside walls and roof of the rainwater tank need to be painted. The outer radius of the tank is 1 m and the outer height of the tank is 2,5 m.

4.2.3 a)Calculate the area of the circular surfaces of tank that will be painted using the formula:

Surface area of the tank = 2 (π × radius^2) and using π = 3,14 (2)

4.2.3 b) Hence, calculate the total surface area of the tank that needs to be painted using the formula :

Surface area of the tank = Circular areas +2(height x π x diameter), and using π = 3,14 (3)

4.2.4 Suppose the tank filled up at an average rate of 10 mm per minute.
Calculate how long it took (in hours) for the water in the tank to reach a height of 2 100 mm, if the tank was initially empty.

Use the formula:

$$\textbf{Time (in hours)} = \frac{\textbf{height(in mm)}}{\textbf{average rate(in mm per hour)}}$$

(3)

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QUESTION 5

5.1 Nikita would like to go visit Fabric Production Plant in India before she starts importing fabric from the company. Use the Railway Timetable below to answer the questions below:

EAST CENTRAL RAILWAY

KIND ATTENTION PASSENGER

Railway will run one **Summer special train** between Lokmanya Tilak (T) and Muzaffarpur for clearance of extra rush, details below: -

01057/01058 Lokmanya Tilak (T)-Muzaffarpur Special (Weekly)

	Date of Run :
01057 Ex-Lokmanya Tilak(T) (Wednesday)	03.04.13, 10.04.13, 17.04.13, 24.04.13, 01.05.13, 08.05.13, 15.05.13, 22.05.13, 29.05.13, 05.06.13, 12.06.13, 19.06.13 & 26.06.13 = **13 Trips**
01058 Ex-Muzaffarpur (Friday)	05.04.13, 12.04.13, 19.04.13, 26.04.13, 03.05.13, 10.05.13, 17.05.13, 24.05.13, 31.05.13, 07.06.13, 14.06.13, 21.06.13 & 28.06.13 = **13 Trips**

TIMINGS AND STOPPAGES

01057 Arr.	01057 Dep.	STATION	01058 Arr.	01058 Dep.
---	13.30 (WED)	Lokmanya Tilak (T)	06.05 (SUN)	---
14.48	14.50	Thane	05.18	05.20
15.10	15.13	Kalyan	04.55	05.00
16.55	17.00	Igatpuri	03.20	03.25
17.50	17.55	Nasik Road	02.10	02.15
18.45	18.48	Manmad	01.20	01.23
20.25	20.27	Jalgaon	23.28	23.30
20.50	21.00	Bhusawal	22.45	22.55
01.50	01.55	Khandwa	21.00	21.05
05.05	05.10	Itarsi	18.20	18.30
07.15	07.17	Pipariya	16.30	16.32
08.25	08.27	Narsinghpur	15.40	15.42
09.50	10.00	Jabalpur	14.05	14.15
11.15	11.17	Katni	12.35	12.40
12.30	12.32	Maihar	11.16	11.18
12.55	13.05	Satna	10.40	10.50
14.40	14.42	Manikpur	07.50	07.52
16.16	16.18	Chheoki	06.20	06.22
19.30	19.50	Varanasi	02.00	02.20
21.40	21.42	Ghazipur City	00.05	00.10
22.55	23.00	Balia	22.55	23.00
00.20	00.25	Chhapra	21.30	21.45
01.25	01.30	Sonpur	19.50	19.55
01.40	01.45	Hajipur	19.35	19.40
03.10 (FRI)	---	Muzaffapur	---	18.30 (FRI)

5.1.1 On what ***date*** does the Summer Special Train start, departing from Lokmanya Tilak Station? (2)

5.1.2 Give the number of the train that travels from Satna to Katni. (2)

5.1.3 If the train departs from Manmad at 18:48 and arrives at Varanasi at 14:42. How many hours and minutes is the trip? (3)

5.2 Eskom decided to implement load-shedding nationally on a regular basis as a measure of last resort to prevent the collapse of the power system country-wide. The schedules on ANNEXURE B are designed around the days of the month.

Load-shedding stages depend on the extent of the shortage of generation capacity to meet the country's electricity demand, with stage 1 being the least serious, and stage 3B being the most serious.

* Stage 1 allows for up to 1 000 MW of the national load to be shed

* Stage 2 allows for up to 2 000 MW of the national load to be shed

* Stage 3 allows for up to 4 000 MW of the national load to be shed

5.2.1 How long, in minutes, will one period of load-shedding last per area? (2)

5.2.2 On which date(s) can a person staying in Langa experience load- shedding between 16:00 and 18:30 if it is Stage 1? (2)

5.2.3 Provide the area numbers indicated with X on ANNEXURE B. (2)

5.2.4 If there is Stage 2 load-shedding in Philippi on 5 June 2015, at which time can the residents expect the power cut to commence? (2)

5.2.5 On how many days will residents of Mitchell's Plain not experience any power cuts during Stage 1 load-shedding? (2)

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ANNEXURE B

MONTHLY LOADSHEDDING SCHEDULE
STAGE 1

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
00:00 – 02:30	1	13	9	5	2	14	10	6	3	15	11	7	4	16	12	8
02:00 – 04:30	2	14	10	6	3	15	11	7	4	16	12	8	5	1	13	9
04:00 – 06:30	3	15	11	7	4	16	12	8	5	1	13	9	6	2	14	10
06:00 – 08:30	4	16	12	8	5	1	13	9	6	2	14	10	7	3	15	11
08:00 – 10:30	5	1	13	9	6	2	14	10	7	3	15	11	8	4	16	12
10:00 – 12:30	6	2	14	10	7	3	15	11	8	4	16	12	9	5	1	13
12:00 – 14:30	7	3	15	11	8	4	16	12	9	5	1	13	10	6	2	14
14:00 – 16:30	8	4	16	12	9	5	1	13	10	6	2	14	11	7	3	15
16:00 – 18:30	9	5	1	13	10	6	2	14	11	7	3	15	12	8	4	16
18:00 – 20:30	10	6	2	14	11	7	3	15	12	8	4	16	13	9	5	1
20:00 – 22:30	11	7	3	15	12	8	4	16	13	9	5	1	14	10	6	2
22:00 – 00:30	12	8	4	16	13	9	5	1	14	10	6	2	15	11	7	3

STAGE 2

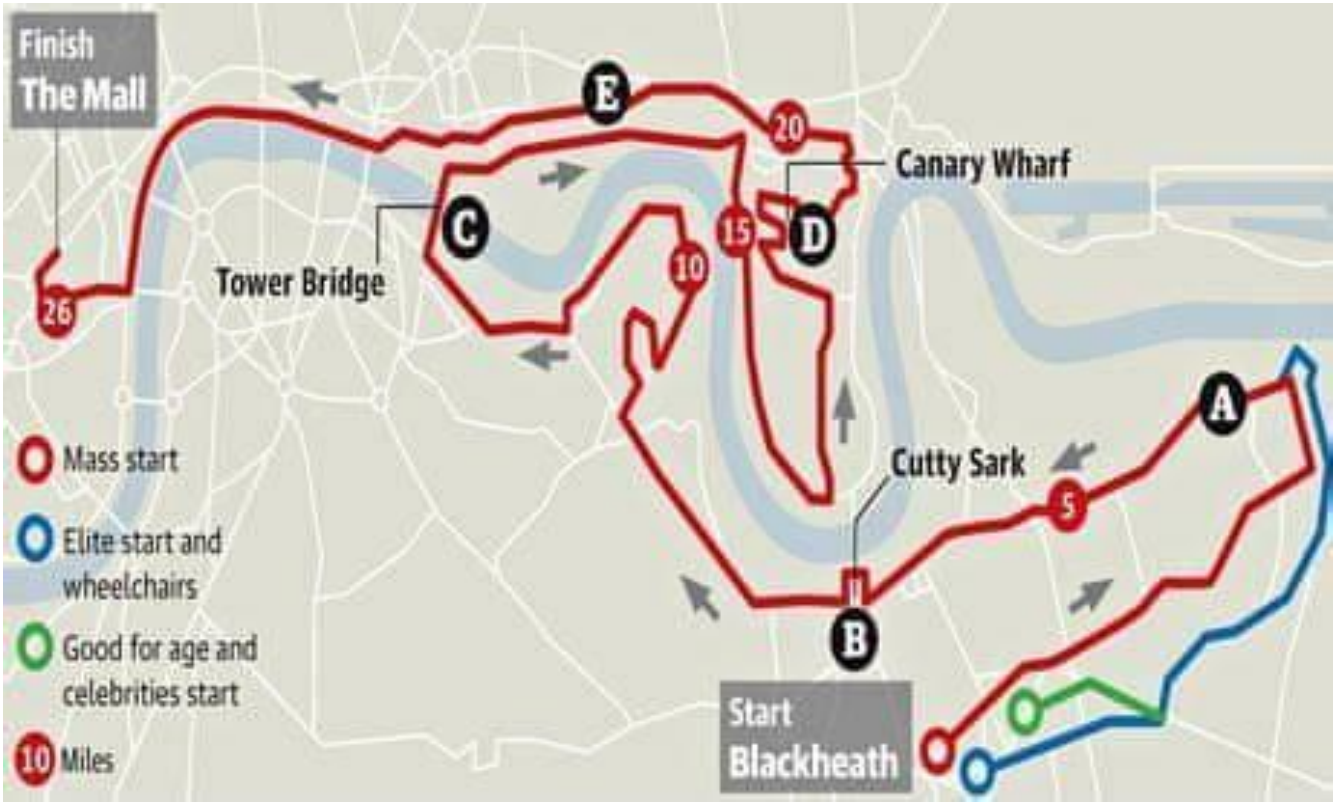
DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
00:00 – 02:30	1 9	13 5	9 1	5 13	2 10	14 6	10 2	6 14	3 11	15 7	11 3	7 15	4 12	16 8	12 4	8 16
02:00 – 04:30	2 10	14 6	10 2	6 14	3 11	15 7	11 3	7 15	4 12	16 8	12 4	8 16	5 13	1 9	13 5	9 1
04:00 – 06:30	3 11	15 7	11 3	7 15	4 12	16 8	12 4	8 16	5 13	1 9	13 5	9 1	6 14	2 10	14 6	10 2
06:00 – 08:30	4 12	16 8	12 4	X	5 13	1 9	13 5	9 1	6 14	2 10	14 6	10 2	7 15	3 11	15 7	11 3
08:00 – 10:30	5 13	1 9	13 5	9 1	6 14	2 10	14 6	10 2	7 15	3 11	15 7	11 3	8 16	4 12	16 8	12 4
10:00 – 12:30	6 14	2 10	14 6	10 2	7 15	3 11	15 7	11 3	8 16	4 12	16 8	12 4	9 1	5 13	1 9	13 5
12:00 – 14:30	7 15	3 11	15 7	11 3	8 16	4 12	16 8	12 4	9 1	5 13	1 9	13 5	10 2	6 14	2 10	14 6
14:00 – 16:30	8 16	4 12	16 8	12 4	9 1	5 13	1 9	13 5	10 2	6 14	2 10	14 6	11 3	7 15	3 11	15 7
16:00 – 18:30	9 1	5 13	1 9	13 5	10 2	6 14	2 10	14 6	11 3	7 15	3 11	15 7	12 4	8 16	4 12	16 8
18:00 – 20:30	10 2	6 14	2 10	14 6	11 3	7 15	3 11	15 7	12 4	8 16	4 12	16 8	13 5	9 1	5 13	1 9
20:00 – 22:30	11 3	7 15	3 11	15 7	12 4	8 16	4 12	16 8	13 5	9 1	5 13	1 9	14 6	10 2	6 14	2 10
22:00 – 00:30	12 4	8 16	4 12	16 8	13 5	9 1	5 13	1 9	14 6	10 2	6 14	2 10	15 7	11 3	7 15	3 11

KEY

1	Parow Bellville	**5**	Newlands Hanover Park	**9**	Pinelands, **Langa,** Epping,	**13**	Goodwood Plattekloof
2	Milnerton Maitland	**6**	Durbanville, Kenridge, Welgemoed, Tyger Valley	**10**	Kraaifontein Brackenfell Kuilsriver	**14**	Atlantis Mamre
3	Somerset West Strand Gordon's Bay	**7**	Camps Bay, Sea Point, Green Point, Cape Town	**11**	Hout Bay, Constantia, Wynberg, Plumstead	**15**	Rondebosch Observatory
4	**Mitchell's Plain**	**8**	Muizenberg, Kalk Bay, Simon's Town, Noordhoek	**12**	Athlone Manenberg	**16**	Ottery **Philippi**

ANNEXURE A

Diagram 1 :The route of the London Marathon.



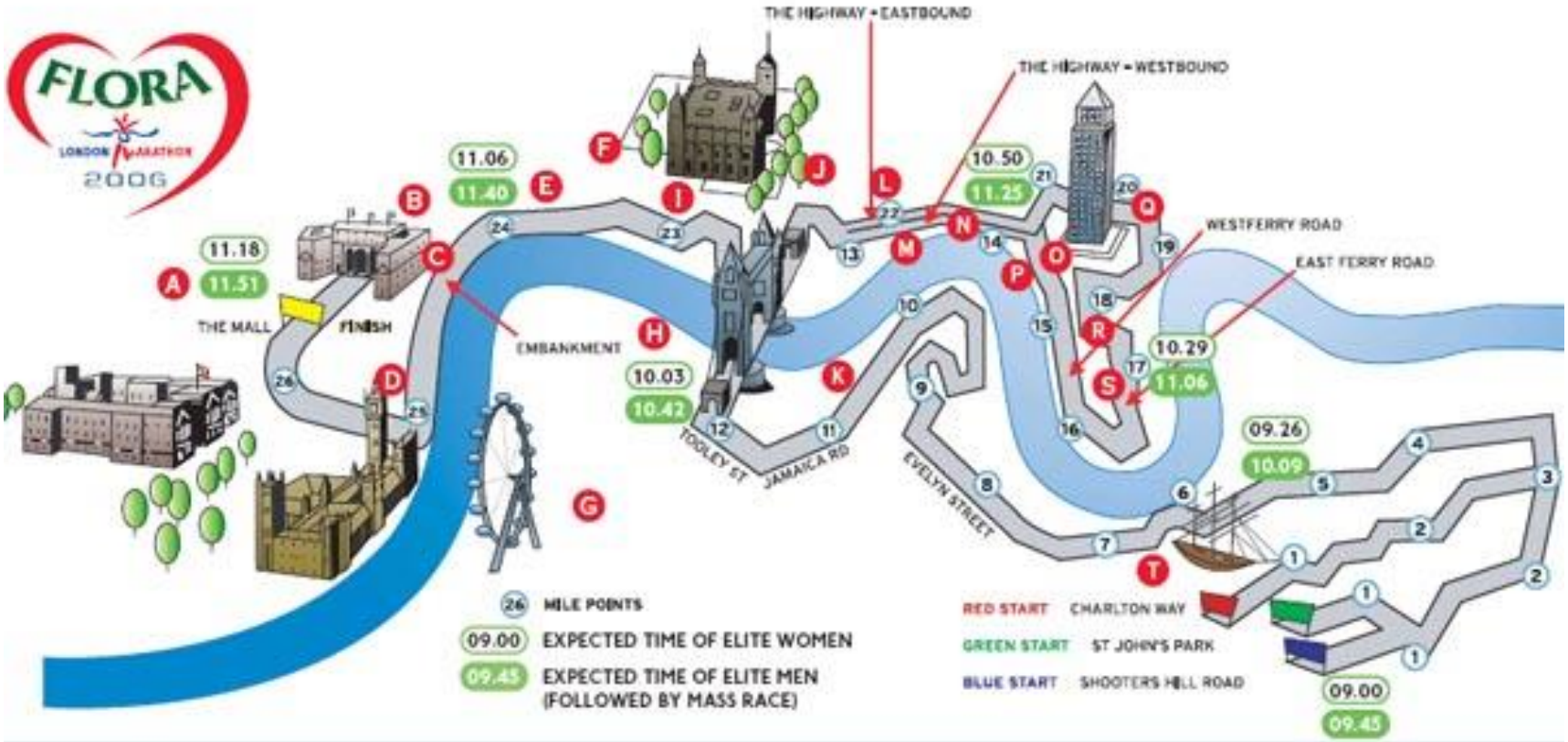

FLORA
LONDON MARATHON
2006
THE HIGHWAY - EASTBOUND
THE HIGHWAY - WESTBOUND
WESTFERRY ROAD
EAST FERRY ROAD
THE MALL
FINISH
EMBANKMENT
TOOLEY ST
JAMAICA RD
EVELYN STREET
11.18
11.51
11.06
11.40
10.03
10.42
10.50
11.25
10.29
11.06
09.26
10.09
09.00
09.45
26 MILE POINTS
09.00 EXPECTED TIME OF ELITE WOMEN
09.45 EXPECTED TIME OF ELITE MEN (FOLLOWED BY MASS RACE)
RED START CHARLTON WAY
GREEN START ST JOHN'S PARK
BLUE START SHOOTERS HILL ROAD

Diagram 3 :The route showing the elevation map below.

GRADE 12 MATHS LITERACY TRIALS EXAMINATION PAPER 1 2019					
NAME:				**CLASS:**	
TEACHER:				**DATE:**	
Q1	**Q2**	**Q3**	**Q4**	**Q5**	**TOTAL**
49	**33**	**26**	**25**	**17**	**150**

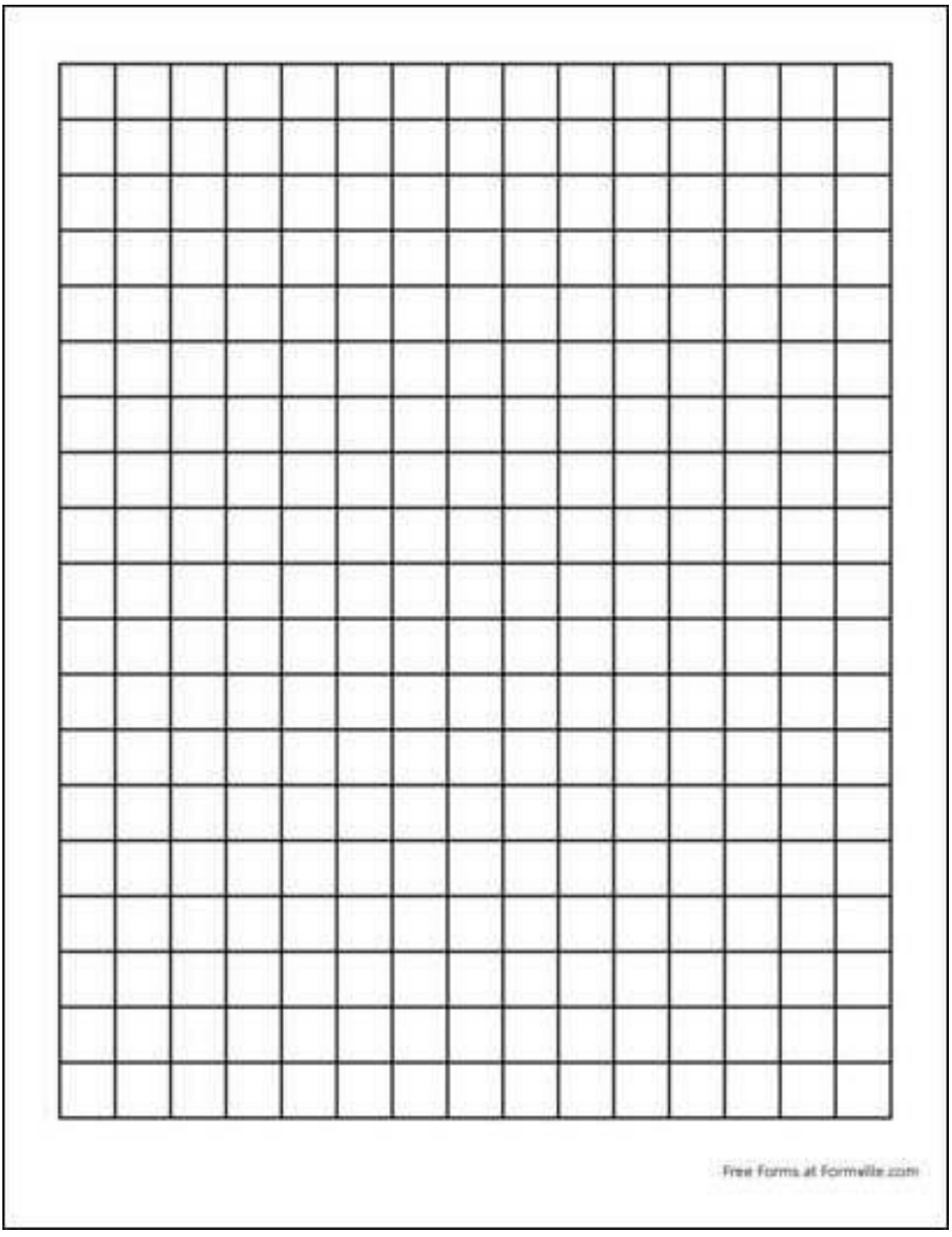


Diagram 2:The route of the marathon showing some of the attractions.