GRADE 11

NOVEMBER 2015

MATHEMATICAL LITERACY P1

MARKS: 100

TIME: 2 hours

INSTRUCTIONS AND INFORMATION

1.   This paper consists of FIVE questions. Answer ALL the questions.
        QUESTION 3.1.3 must be answered on the ANSWER SHEET.
        Use ANNEXURE A to answer QUESTION 2.2 and ANNEXURE B to
        answer QUESTION 4.

2.   Number your answers correctly according to the numbering system used
        in the question paper.

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

4.   ALL calculations and steps must be shown clearly.

5.   Units of measurement must be indicated where applicable.

6.   Start EACH question on a NEW page.

7.   Write neatly and legibly.

8.   All answers must be rounded up, down or according to the context used,
        unless stated otherwise.

QUESTION 1

1.1 Anita runs a business and she wants to buy the cellphone for her personal use. She visited two cellphone companies to compare the prices of the same phone. The findings are listed in the tables below as follows:

Nokia Lumia 630

Company A
R169 PM x 24
R100 airtime PM
Peak time SMS R0,50
Off peak SMS R0,50
Peak time calls R0,79
Off peak calls R0,79
Cash: R1 899
Optional insurance
@R55 per month

Company B
R169 PM x 24
50 anytime minutes
50 SMSes PM
100 MB data PM
Peak time SMS R0,80
Off peak SMS R0,35
Peak time calls R1,30
Off peak calls R1,12
Cash: R1 999
Optional insurance
@ R55 per month

Off peak: 20:00(06:59:59 (Monday to Friday)
Peak time: 07:00–19:59:59 (Monday to Friday)
Weekends: Friday 20:00–Monday 06:59:59 and Public holidays

1.1.1 Calculate the total cost of this cellphone from Company A for the duration of contract excluding calls and SMSes if she also took insurance. (4)

1.1.2 Calculate the total cost of an 8 minute cellphone call from Company A made at 20:25 on a Friday. (2)

1.1.3 Calculate how much will the cellphone following year from Company B cost in cash, if the inflation rate is 4,4% per year. (2)

1.2 Anita's personal calls were recorded as follows for the first week of March 2015.

Times	Peak	Off peak	SMSs
Duration of a call	18 calls at 2 minutes per call	15 calls at 3 minutes per call	25 SMSes off peak 10 SMSes peak hour

NOTE: All the calls and SMSes have been corrected to the nearest minute.

1.2.1 Calculate the total amount she will pay for the off peak SMSes for the first week if she uses Company B. (2)

1.2.2 Determine the ratio of the calls made during peak time, to that of the calls made during off peak time. (2)

1.2.3 Determine the probability that the SMSes made by Anita are at off peak time. Give your answer in its simplest form. (2)

1.3 Anita joined a stokvel group of 8 women and started paying contributions in January 2014 and each member has to contribute R400,00 a month. Each member had to raise an amount of R2 000,00 excluding monthly contributions. They will share the money amongst each other on the 10th of December 2014. The last month for contributions is November 2014. If you borrow any amount the interest charged is 20% of the amount loan debt per month. The loan increases by the interest amount if not paid. The interest raised by a member from a loan will belong to her.

1.3.1 Anita took a loan of R1 525, 00 for two months. She did not pay the interest in the first month. Calculate the total interest amount she will have to pay at the end of two months. (2)

1.3.2 Determine the total amount they will have as a group, including Anita's additional interest amount. (3)

1.3.3 Calculate the total amount Anita will receive on the day they share their money, including her own additional interest amount. (3)

1.4 | Anita saw a book from Ports SA advertising boat cruises. Hazel, her daughter got it from the Marine Expo at the Mdantsane Indoor Sports Centre. She chooses the inside cabin price of the cruise from Barcelona to Venice. It is for 9 nights and the cost is from $1,587 to $4,760.

    1.4.1   Calculate the maximum cost for cruising in an inside cabin of the ship in rands. (1$ = R11,82.) (2)

    1.4.2   There was a helicopter at the expo. It costs R1 571,05 for a 30 minute flight excluding VAT. Calculate the cost of the flight for an hour including VAT. (3)

[27]

QUESTION 2

2.1 | Mr Mambo won a 68 km marathon from Bisho to East London in 2014. He was a member of Maxed Elite Running Club. He received a cash prize. In 2013 the winner completed the race in 3 hours 50 minutes and 36 seconds.

	Male	**Running Club**	**Time**
1.	Marko Mambo	Maxed Elite	04:07:05
2.	Elias Mabane	Nedbank	04:10:16
3.	Peter Muthubi	Running	04:12:40

[Source: *Eastern Cape Today* (10 October–17 October 2014)]

2.1.1 Write down the number that appeared on Mr Mambo's running shirt. (2)

2.1.2 Convert Mr Mambo's running time to hours. Give your answer to the nearest hour. (3)

2.1.3 Calculate Mr Mambo's average speed in kilometres per hour.

You may use the formula:

Average speed = $\dfrac{\text{distance}}{\text{time}}$ (3)

2.2   Use ANNEXURE A to answer the following questions.

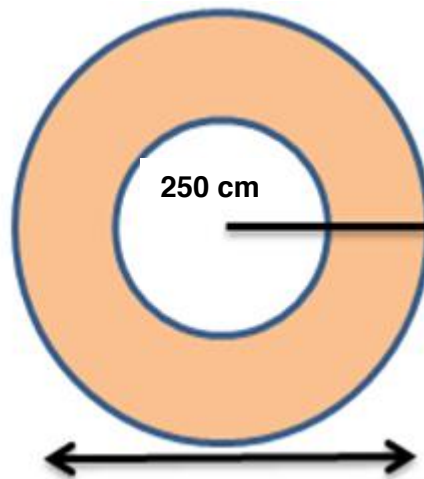2.2.1   Write down the 47014 train arrival and departure times at
Springfontein.   (2)

2.2.2   Identify the station where train 73014 arrives during the first hour
of the day.   (2)

2.2.3   Study the logo of the Passenger Rail Agency of South Africa as
displayed below and answer the questions that follow.

Sketch the logo of the Passenger Rail Agency of South Africa.

250 cm

Radius of a bigger circle   = 5 m
Radius of a smaller circle   = 250 cm
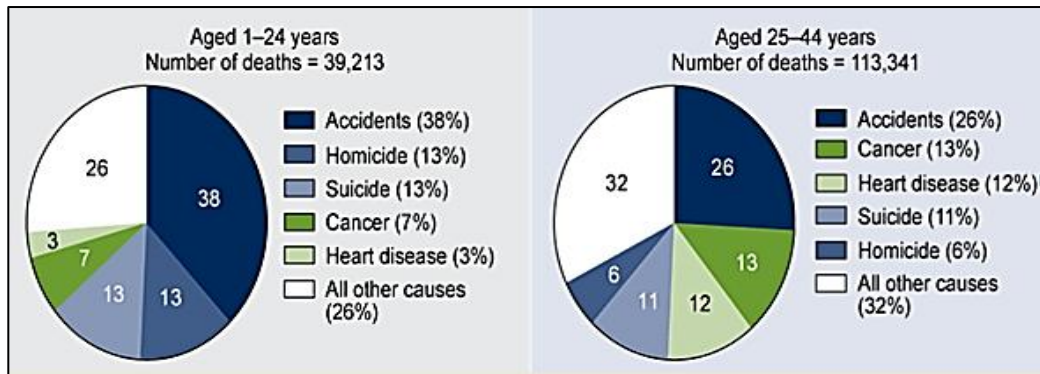
Calculate the area of the shaded part in m².

You may use the formula:

Area of a circle = πr^2, where π = 3,142   (5)
                                                                                            [17]

QUESTION 3

3.1 Study the pie charts below and answer the questions that follow.

FIGURE 1: **PERCENT DISTRIBUTION OF FIVE LEADING CAUSES OF DEATH, BY AGE GROUP: UNITED STATES, PRELIMINARY 2011**

[Source: National Vital Statistics System: Mortality]

3.1.1 Determine the total number of people aged 25–44 dying from accidents. (2)

3.1.2 Identify the causes of death amongst 1–24 year-old people that are less than 10%. (2)

3.1.3 Represent the percentages of causes of deaths for age group 25–44 years on a line graph. Use ANSWER SHEET 1 that is provided. (6)

3.1.4 Calculate the difference in the total number of deaths of the two age intervals. (2)

3.1.5 Identify the age interval that has high mortality percentage in heart disease. (2)

3.1.6 Give a reason why the accident percentage for the age group 1–24 is higher than 25–44 age group. (2)

3.2   The table below represents the 2014/15 National First Division results of the teams that play in it. Study the table below and answer the questions that follow.

TABLE 1: NATIONAL FIRST DIVISION TEAMS AND THEIR RESULTS

Teams		P	W	D	L	GD	Points
1.	Golden Arrows	29	15	12	2	20	57
2.	Jomo Cosmos	29	14	8	7	22	50
3.	Black Leopards	29	14	6	9	11	48
4.	Thanda Royal Zulu FC	29	13	8	8	14	47
5.	Cape Town All Stars	29	12	11	6	8	47
6.	Milano United	29	9	15	5	7	42
7.	Vasco da Gama	29	9	12	8	3	39
8.	FC Cape Town	29	9	12	8	0	39
9.	Baroka FC	29	9	10	10	5	37
10.	Royal Eagles	29	10	7	12	-12	37
11.	Highlands Park	29	10	6	13	0	36
12.	African Warriors	29	9	9	11	-9	36
13.	Santos	29	10	6	13	-11	36
14.	Witbank Spurs	29	7	10	12	-10	31
15.	Garankuwa United	29	5	7	17	-18	22
16.	Maluti FET College	29	5	5	19	-30	20

P = Played   **D = Drawn**   **GD = Goal Difference**
D = Drawn   **L = Lost**

[Source: www.kickoff.com/mobile]

3.2.1   Calculate the average points won by the listed teams.   (3)

3.2.2   Determine the mode total of the points earned by these teams.   (2)

3.2.3   Identify the team that has the least points on the table.   (2)

[23]

QUESTION 4

4.1 The learners enjoy the bus ride every morning when going to school provided by the Department of Transport (Scholar Transport). Study the diagram showing the seating arrangement inside the school bus.

FIGURE 2: SEATING PLAN INSIDE A SCHOOL BUS
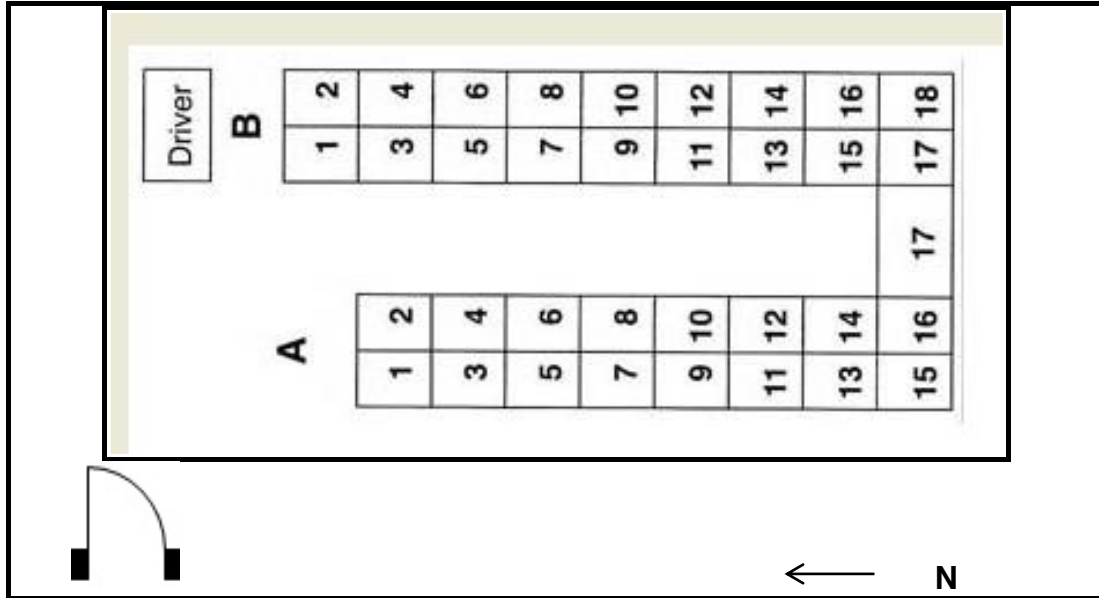
4.1.1 Calculate the number of passenger seats displayed inside the bus. (2)

4.1.2 On the first day the learners were given tickets in order to get to the bus. Nandi came late carrying a ticket B14. Give Nandi directions to get to her seat as she enters the door. (3)

4.1.3 Soso left his books in the fourth row on the western side of the seat (next to the window). Identify the seat number where Soso's books are. (2)

4.2   Use the map in ANNEXURE B to answer the questions that follow.

      4.2.1   Identify the type of map displayed in ANNEXURE B.   (2)

      4.2.2   Calculate the distance between Polokwane and Hammanskraal.   (2)

      4.2.3   One road will let you pass through the most number of toll plazas symbols (T) between Johannesburg and Beitbridge. Name the road and the number of toll gates.   (2)

      4.2.4   Give the compass direction to Centurion from Devon.   (2)

[15]

QUESTION 5

5.1 Thabo sees an advertisement for a fridge at Bill's Furniture Shop and wants to buy it. He has R5 100, 45 in his bank account.

Cash Price: R4 799,00
Hire Purchase:
Deposit: R479,90 and pay the balance over 24 months.

5.1.1 Identify the capacity of the advertised fridge in milliliters. (3)

5.1.2 Write down the meaning of "*interest rate*". (2)

5.1.3 Calculate the amount Thabo owes the furniture shop after the deposit has been paid. (2)

5.1.4 Calculate the total interest Thabo will pay, if Bill's Furniture Shop charges simple interest at a rate of 21,75% per annum on the balance after the deposit has been paid. (3)

5.2 The following data was taken from 15 Grade 11 Mathematics Learners School Based Assessment (SBA) mark in percentages.

Learners	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
% obtained	32	35	36	37	42	46	49	46	46	58	62	64	66	67	38

5.2.1 Determine the SBA median percentage. (2)

5.2.2 Determine the interquartile range of the SBA percentages. (3)

5.2.3 Determine the probability that a learner randomly selected will have a percentage of more than 40%. Give your answer in a simplified fraction. (3)

[18]

TOTAL: 100

ANSWER SHEET 1

NAME AND SURNAME:

GRADE 11:

Types of death	Accidents	cancer	Heart disease	Suicide	Homicide	All other causes
% death						

Percentages of 5 leading causes of death

NAME AND SURNAME:

GRADE 11:

ANNEXURE A

File Ref:	**MAINLINE PASSENGER SERVICE - MLPS**		prasa
Date:	**2014**		PASSENGER RAIL AGENCY OF SOUTH AFRICA
Title:	**FARE INCREASE**		

East London-Bloemfontein-Johannesburg
Frequency: Sunday – WED – AND Friday

(A)ARRIVAL		Johannesburg-Bloemfontein-East London				(D) DEPARTURE	
STATIONS	FARES 3RD CLASS	FARES 1ST CLASS		TRAIN 47014	STATION		TRAIN 73014
East London			D	0 9:00			
Mount Ruth	R70	R90	A D	09:21 09:26	Johannesburg	D	17:30
Berlin	R70	R100	A D	09:40 09:45	GERMISTON	A D	17:53 17:58
STUTTERHEM	R80	R110	A D	10:42 10:47	VEREENIGING	A	19:00 19:20
CATHCART	R90	R120	A D	11:48 11:53	SASOLBURG	A D	19:43 19:48
QUEENSTOWN	R100	R140	A D	13:04 13:26	KOPPIES	A D	20:34 20:36
STEKSTROOM	R110	R160	A D	14:16 14:21	KROONSTAD	A D	21:42 21:50
MOLTENO	R110	R170	A D	15:03 15:18	HENNENMAN	A D	22:26 22:28
BURGERSDORP	R120	R190	A D	16:01 16:28	VIRGINIA	A D	22:44 22:46
BETHULI	R140	R210	A D	17:45 17:50	THEUNISSEN	A D	23:14 23:16
SPRINGFONTEIN	R150	230	A D	18:56 19:00	BRANDFORT	A D	23:48 23:50
BLOEMFONTEIN	R180	R280	A D	21:36 21:56	BLOEMFONTEIN	A D	00:32 00:55
BRANDFORT	R190	R300	A D	22:47 22:49	SPRINGFONTEIN	A D	03:49 04:15
THEUNISSEN	R200	R320	A D	23:23 23:25	BETHULI	A D	05:00 05:03
VIRGINIA	R210	R330	A D	23:52 23:54	BURGERSDORP	A D	06:17 06:34
HENNENMAN	R210	R340	A D	00:13 0:15	MOLTENO	A D	07:25 07:28
KROONSTAD	R220	R360	A D	00:51 01:10	STEKSTROOM	A D	08:04 08:07
KOPIES	R230	R380	A D	02:04 02:06	QUEENSTOWN	A D	08:58 09:12
SASOLBURG	R250	R400	A D	02:59 03:01	CATHCART	A D	10:21 10:24
VEREENIGING	R250	R410	A D	03:20 03:25	STUTTERHEM	A D	11:43 11:46
GERMISTON	R270	R440	A D	04:27 04:37	BERLIN	A D	12:39 12:42
JHANNESBURG	R270	R440	A	05:01	MOUNTRUTH	A D	12:57 13:00
					EAST LONDON	A	13:24

Shosholoza Meyl
A pleasant experience

PREMIER CLASSE

FOR MORE INFOR CONTACT: 086 000 8888

ANNEXURE B

[Source: www.aa.co.za]
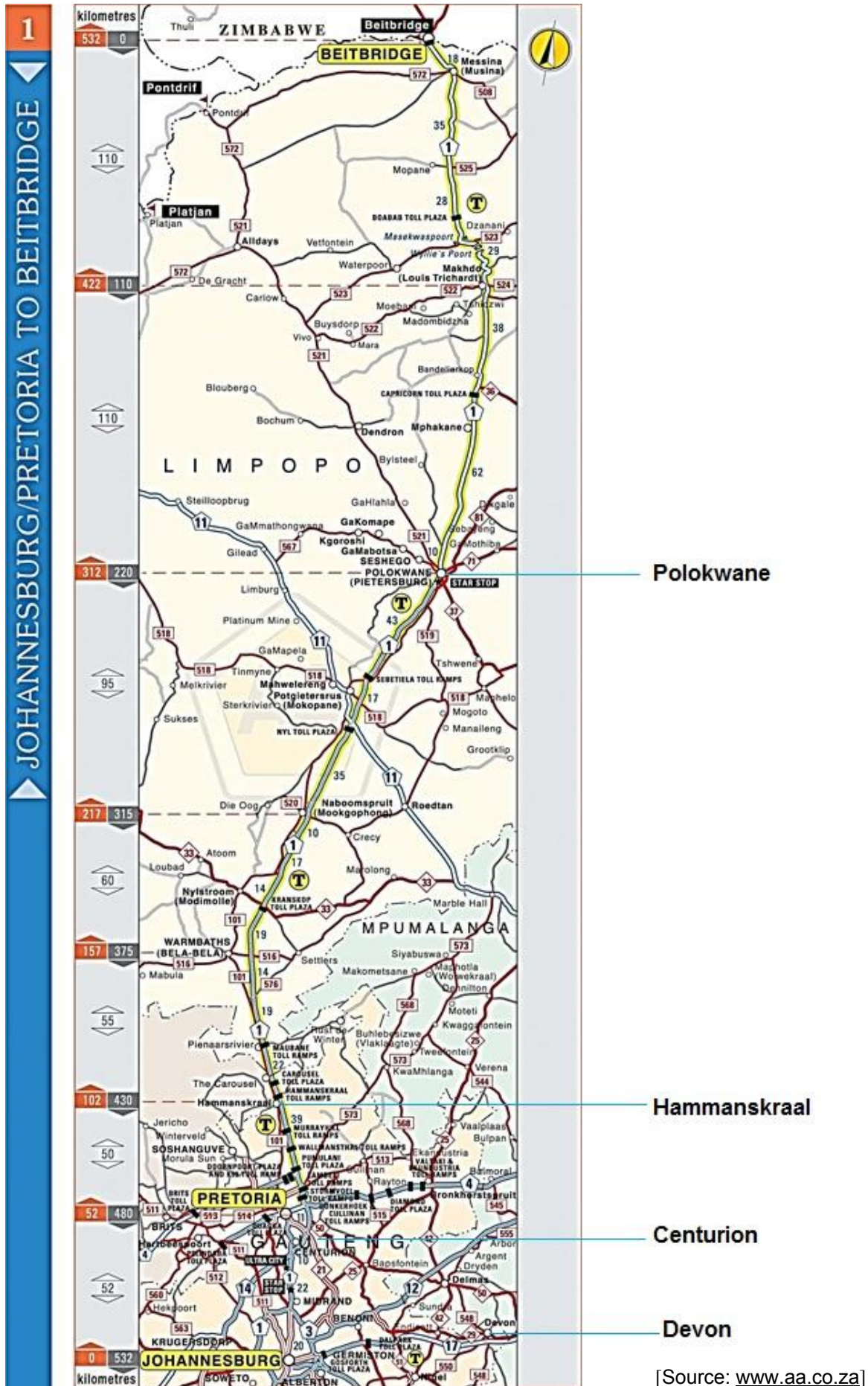
GRADE 11

NOVEMBER 2015

MATHEMATICAL LITERACY P1
MEMORANDUM

MARKS: 100

Symbol	Explanation
M	Method
A	Accuracy
CA	Consistent accuracy
RT/RG/RM	Reading from a table/Reading from a graph/Read from map
RP	Reading from the plan
SF	Substitution in a formula
S	Simplications
P	Penalty (no units, incorrect rounding off etc.)
O	Opinion
J	Justification
RO	Rounding Off

This memorandum consists of 7 pages.

QUESTION 1

Question		Solution	Explanation	Mark
1.1	1.1.1	R169 x 24 ✓+ R55 x 24 ✓ R4 056 + R1 320 ✓ = R5 376 ✓	2M 1S 1A	(4)
	1.1.2	R0,79 x 8 ✓ R6,32 ✓	1M 1S	(2)
	1.1.3	R1 999 + R1 999 x 4,4% ✓ **OR** R1 999 x 1,044 = R1 999 + R87,96　　　　　= R2 086,96 = R2 086,96 ✓ **OR** R1,999 x 0,144 R2 086,86	1M 1S	(2)
1.2	1.2.1	R0,35 x 25 ✓ = R8,75 ✓	1M 1A	(2)
	1.2.2	18:15 ✓ = 6:5 ✓	1M 1A	(2)
	1.2.3	$\underline{25}$ ✓= $\underline{5}$ ✓ 35　　7 = 0,71 or 71% (Answer only – full marks)	1M 1A	(2)
1.3	1.3.1	Month 1: R1 525 x 20% 　　　　　= R305,00　　　✓ Month 2: R1 830,00 x 20% 　　　　　 = R366,00 Interest　　= R366 + R305 = R671,00 ✓	1M 1S	(2)
	1.3.2	R400 x 11 x 8 ✓ + R2 000 x 8 + R671 ✓ = R35 200 + 16 000 + R671 = R51 871,00 ✓	2M 1CA Multiplication by different number not 11	(3)
	1.3.3	R400 x 11+ R2000 + R671 ✓= 400 000 R4 400 + R2 000 + R671 ✓ = R7 071,00 ✓ **OR** $\frac{R51\ 200}{8}$ + R671 = R7 071,00	1M 1S 1S	(3)

Question		Solution	Explanation	Mark
1.4	1.4.1	R4 760 x 11,82 ✓ **OR** 4,760 x 11,82 = R56 263,20 ✓ = 56,26	1M 1A	(2)
	1.4.2	R1 571,05 x 114% ✓ **OF** R1 571,05 x 14% R1 790,997 R219,95 ✓ R1 790,997 x 2 ✓ R1 571,05 + R219,95 ✓ = R3 581,99 ✓ R1 571,05 + R219,95 ✓ **OR** R1 571,05 x 14% = R 219,95 ✓ = R1 571,05 + R219,947 ✓ = R1 790,997 x 2 = R3 581,99 ✓ **OR** R1 571,05 x 2 ✓ = R3 142,10 x 114% ✓ = R3 581,99 ✓	1M 1S 1A	(3)
				[28]

QUESTION 2

Question		Solution	Explanation	Marks
2.1	2.1.1	227 ✓✓	RD	(2)
	2.1.2	7 ÷ 60✓ = 0,1166666667 h 5 ÷ (60 x 60) = 0,00138888888 h ✓ 4 h + 0,1166666667 h + 0,00138888888 h = 4,118055556 hours = 4 hours ✓	2M 1S	(3)
	2.1.3	Average speed = $\dfrac{68 \text{ km}}{4,118 \text{ hours}}$ ✓ = 16,5 ✓ km/hour✓	1S 2S Penalise for unit	(3)
2.2	2.2.1	Arrival time – 18:56 ✓ Departure time – 19:00 ✓	2RT	(2)
	2.2.2	Bloemfontein ✓✓	2RT	(2)
	2.2.3	Area of a bigger circle – Area of a smaller circle ✓ 3,142 x (5 m)^2 – 3,142 x (2,5 m)^2 ✓ = 78,55 m^2 – 19,6375 m^2 ✓ = 58,91 m^2 ✓ **(Accept 58,91 m^2)** ✓	1F 2SF 1S 1A	(5)
				[17]

QUESTION 3

Question		Solution	Explanation	
3.1	3.1.1	113 341 x 26% ✓ = 113 341 x 0,26 = 29 468,66 = 29 469 ✓		(2)
	3.1.2	(i) Cancer ✓ (ii) Heart disease ✓		(2)
	3.1.3	<table><tr><td>Types of death</td><td>Accidents</td><td>Cancer</td><td>Heart disease</td><td>Suicide</td><td>Homicide</td><td>All other causes</td></tr><tr><td>% death</td><td>26</td><td>13</td><td>12</td><td>11</td><td>6</td><td>32 232</td></tr></table> 1 mark for completing the table = 1 mark 1mark for joining points with a straight line = 1 mark 1 mark per three correctly plotted points = 2 marks 2 marks for correctly labelling x-axis and y-axis = 2 marks		(6)
	3.1.4	113 341 – 39 213 ✓ = 74 128 ✓	1M 1A	(2)
	3.1.5	25–44 years ✓✓	2RG	(2)
	3.1.6	They drive recklessly trying to impress those people of their age about their driving skills. They do not concentrate on the road trying to greet their friends walking on the street. 25–44 are mature enough and they are careful when driving. ✓✓ **(Accept any acceptable reasons.)**	 2A	(2)

3.2	3.2.1	$\dfrac{15+14 \times 2 + 13 +12 + 9 \times 5 + 10 \times 3+7 + 5 \times 2}{16}$ ✓	1M	
		$= \dfrac{160}{16}$ ✓	1S	
		$= 10$ ✓	1S	(3)
	3.2.2	Mode = 36 ✓✓	2A	(2)
	3.2.3	Maluti FET College ✓✓	2A	(2)
				[23]

QUESTION 4

Question		Solution	Explanation	Marks
4.1	4.1.1	35 passengers ✓✓	2A	(2)
	4.1.2	Get in and turn right. ✓ Walk straight or southwards and at the third row from the back ✓ next to the window will be your seat. **Accept any relevant explanation.**	3	(3)
	4.1.3	A7 ✓✓	2A	(2)
4.2	4.2.1	Strip Map ✓✓	2A	(2)
	4.2.2	430 – 220 ✓ OR 22 + 19 x 2 + 14 x 2 +17 x 2 + 10 + 35 + 43 = 210 km ✓ = 210 km	1M 1S	(2)
	4.2.3	N1 or Road 1✓ and 4 toll gates ✓	2RM	(2)
	4.2.4	North west ✓✓	2RM	(2)
				[15]

QUESTION 5

Question		Solution	Explanation	Marks
5.1	5.1.1	323 litres ✓ 323 x 1 000 ✓ = 323 000 mℓ ✓	1RD 1C	(3)
	5.1.2	Interest rate is the rate ✓ at which interest is paid or charged for the use of money. ✓ **OR** It is percentage of the total amount paid over a period of time.	2A	(2)
	5.1.3	R4 799,00 – R479,90 ✓ = R4 319,10 ✓	1M 1S	(2)
	5.1.4	R4 319,10 x (21,75 ÷ 100 ÷ 12) ✓ = R4 319,10 x 0,018125 ✓ = R78,2836875 x 24 = R1 878,81 ✓ **OR** R4 319,10 x (21,75 ÷ 100) = R939,40425 x 2 = R1 878,81 **OR** R4 319,10 x (21,71 ÷ 100) x 2 = R1 878,81	1M 1S 1S	(3)
	5.2.1	32;35,36;37;38;42;46;46;46;49;58;62;64;66;67 Median = 46 ✓✓	2A	(2)
	5.2.2	IQR = 62✓ – 37 ✓ = 25 ✓	2CV 1A	(3)
	5.2.3	$\frac{10✓}{15✓}$ = $\frac{2}{3}$ ✓	2M 1A	(3)
				[18]
			TOTAAL:	**100**