Grade 12 Mathematical Literacy: Question Paper 1

MARKS: 150 **TIME: 3 hours**

QUESTION 1

1.1 On a given day, the bank advertises the Rand : Euro exchange rate as 1 : 0,0868.

How many Euros can you buy with R 5 000,00 on this day? (3)

1.2 A house plan is drawn using a 1 : 75 scale

1.2.1 The front door is 2,4 cm tall on the plan. How tall is the door in reality? (3)

1.2.2 The plot of land on which the house is being built is 14 m wide. What is the corresponding length on the plan? (3)

1.3 The conversion table below is used to convert between the shoe sizes of different systems. Refer to this table to answer the questions that follow.

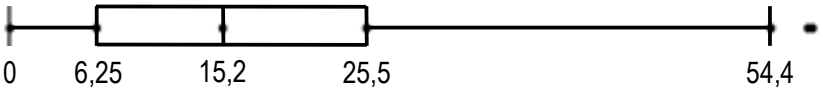
System		Sizes												
Europe		35	35½	36	37	37½	38	38½	39	40	41	42	43	44
Japan	M	21,5	22	22,5	23	23,5	24	24,5	25	25,5	26	26,5	27,5	28.5
	W	21	21,5	22	22,5	23	23,5	24	24,5	25	25,5	26	27	28
U.K.	M	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	10
	W	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	9½
Inches		9	9⅛	9¼	9⅜	9½	9⅝	9¾	9⅞	10	10⅛	10¼	10½	10¾
Centimeters		22,8	23,1	23,5	23,8	24,1	24,5	24,8	25,1	25,4	25,7	26	26,7	27,3

1.3.1 What is the European equivalent of a UK (W) size 5 shoe? (2)

1.3.2 What shoe size would a Japanese man with a size 24 foot ask for in the U.K. (2)

1.3.3 The standard inch : cm conversion rate is 1 : 2,54 cm. According to the table 9⅜ inches = 23,8 cm. Is this correct? Show your working (3)

1.4 The box and whisker plot below represents the batting averages of the 160 cricketers who have batted in T20 matches since 1 January 2009. Answer the questions that are based on the plot.



1.4.1 What is the name given to the two data points with value 57 and 57,33? (2)

1.4.2 How many players have a batting average that is less than 6,25? (2)

1.4.3 What must a batsman's batting average be for him to be in the top quartile? (2)

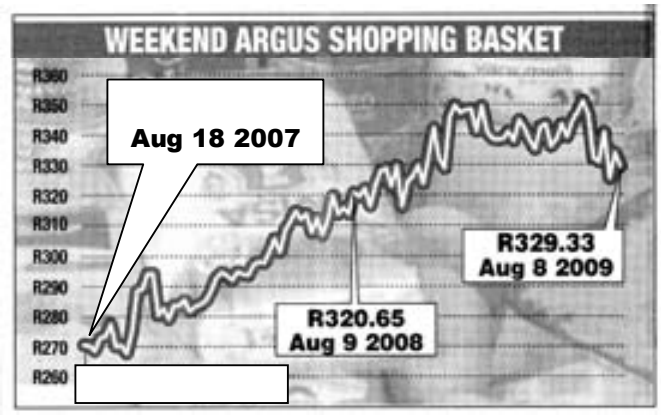
1.4.4 Jaques Kallis is the South African with the highest batting average. If his average is 48,4, how does he compare with the other batsmen? (2)

[24]

QUESTION 2

The graph alongside appeared in a weekend newspaper and describes the price of that newspaper's "shopping basket" over a period of two years.

Study the graph and answer the questions that follow.



2.1 Use the graph to estimate the following (to the nearest R5,00):

2.1.1 What is the **highest** price paid for the shopping basket over the period? (2)

2.1.2 What is the **lowest** price paid for the shopping basket over the period? (2)

2.2 Calculate the percentage change in the cost of the basket from 9 August 2008 to 8 August 2009 (4)

2.3 If the percentage change in the cost of the basket from 18 August 2007 to 9 August 2008 was 18,50, calculate to the nearest rand what the actual cost of the basket was on 18 August 2007. Show your working. (4)

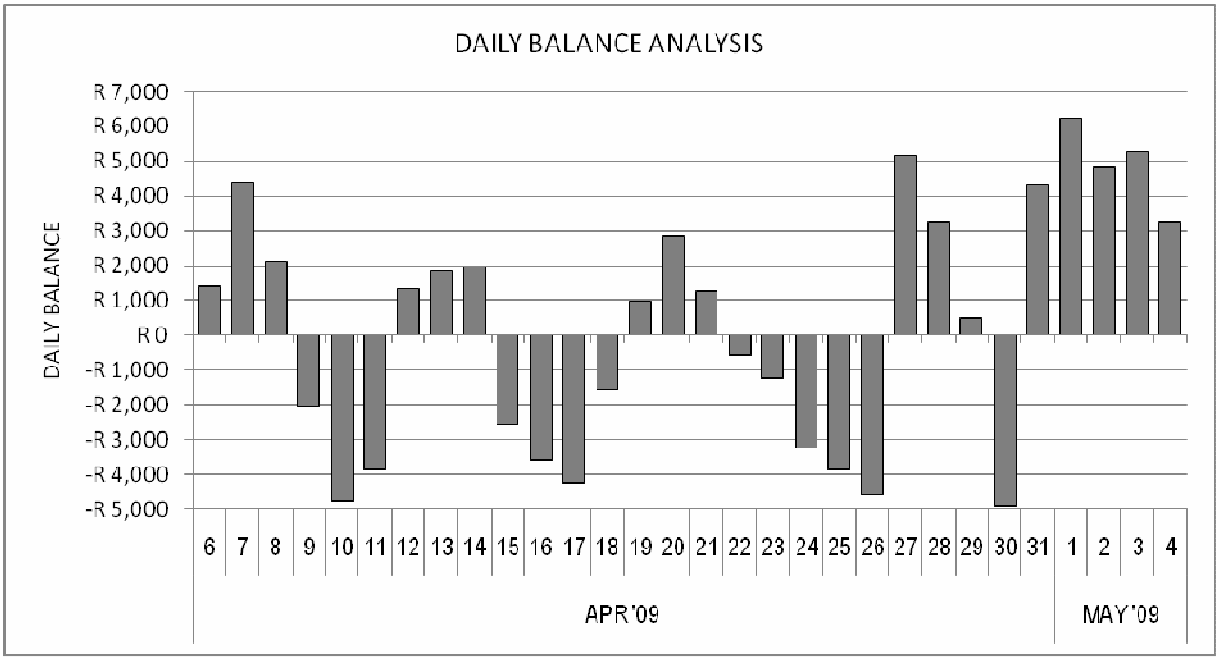
[12]

QUESTION 3

Athene runs a small catering business. Her bank provides a monthly bank statement that includes a graph depicting the daily balance in her account. One of these graphs is reproduced below.

Athene has negotiated an overdraft facility of R5 000,00.

Use the graph to answer the questions that follow.



3.1 Determine the following from the graph (all values can be estimated to the nearest R500)

3.1.1 For what period is the graph? (2)

3.1.2 What was the balance in the account on 14 April? (2)

3.1.3 What was the balance in the account on 30 April? (2)

3.1.4 On how many days in the period was the account in overdraft? (2)

3.2 Use the graph to calculate the following as accurately as possible.
You should:

- Estimate all the values that you read from the graph to the nearest R500
- Clearly show all your working

3.2.1 How much money could Athene still withdraw from her account on 18 April? (4)

3.2.2 Describe in overall terms what happened between the following pairs of dates to account for the change in the bank balance:

(a) 8 April to 9 April

(b) 26 April to 27 April (6)

[18]

QUESTION 4

The table alongside is an extract from a fuller table published in the newspaper by the National Bargaining Council for the Road and Freight Industry (NBCRFI) to advertise the weekly wages of a wide range of employees in the industry.

Parts of the text have been enlarged to make them easier to read.

Extracts from the SARS weekly (PAYE) tax deduction tables for the same period are reproduced below.

Refer to both of these documents to answer the questions that follow.

For the purpose of this question we will assume all workers to be "Under 65" years old.

Wage Schedule for year 1:
01 June 2009 to 28 February 2010

NBCRFI
Your Road Freight Partner

■ **Weekly Wages**

Category Code	Class	New Minimum Wage
1	General worker	R642.87
42	General worker, repair shop	
3	Packer/loader, grade I	
27	Security guard	
5	Motorcycle/motor tricycle driver	R711.48
6	Light motor vehicle driver	
2	Checker, grade I	
22	Loader operator, grade II	
24	Mobile hoist operator, grade II	
46	Packer/loader, grade II	
7	Medium motor vehicle driver (articulated)	R876.91
8	Medium motor vehicle driver (rigid)	
44	Artisan assistant	
19	Gantry crane operator, grade I	
23	Mobile hoist operator, grade I	
47	Checker, grade II	
21	Loader operator, grade I	
20	Gantry crane operator, grade II	
26	Storeman (workshop)	
15	Team leader	
50	Vehicle Guard	R1153.94
10	Heavy motor vehicle driver (articulated)	R985.53
11	Heavy motor vehicle driver (rigid)	
12	Extra-heavy motor vehicle driver (articulated)	
13	Extra-heavy motor vehicle driver (rigid)	
18	Dispatch clerk	
14	Ultra-heavy motor vehicle driver	R1131.85
45	Semi-skilled artisan	R1131.85
49	Storeman (warehouse)	
51	Custodian	R1615.51
41	Security officer III	
40	Security officer II	R1384.72
39	Security officer I	R1384.72

■ **Provident Fund**

Employee's Deductions
10% of ordinary weekly wages

Contribution
kly wage contribution

WEEKLY DEDUCTION TABLES (2010 TAX YEAR)

Remuneration			Annual Equivalent	Tax	
				Under 65	Over 65
R 0	-	R 1,042	R 54,132	R 0	R 0
R 1,043	-	R 1,044	R 54,262	R 0	R 0
R 1,045	-	R 1,046	R 54,366	R 1	R 0
R 1,149	-	R 1,150	R 59,774	R 19	R 0
R 1,151	-	R 1,152	R 59,878	R 20	R 0
R 1,153	-	R 1,154	R 59,982	R 20	R 0
R 1,155	-	R 1,156	R 60,086	R 20	R 0
R 1,157	-	R 1,158	R 60,190	R 21	R 0
R 1,601	-	R 1,604	R 83,330	R 101	R 0
R 1,605	-	R 1,608	R 83,538	R 102	R 0
R 1,609	-	R 1,612	R 83,746	R 102	R 0
R 1,613	-	R 1,616	R 83,954	R 103	R 0
R 1,617	-	R 1,620	R 84,162	R 104	R 0
R 1,621	-	R 1,624	R 84,370	R 104	R 1
R 1,625	-	R 1,628	R 84,578	R 105	R 1

4.1 Determine the following from the information provided

4.1.1 For what period are the wages in the table valid? (2)

4.1.2 What, according to SARS, is the annual equivalent remuneration of somebody who earns R 1 155 per week? (2)

4.1.3 How much is the weekly deduction from the ordinary wages of employees for the Provident Fund? (2)

4.2 Use the weekly wage and tax tables to determine the following:

4.2.1 What is the weekly PAYE deduction for a general worker? (2)

4.2.2 What is the weekly PAYE deduction for a custodian? (2)

4.2.3 What is the weekly Provident Fund deduction for a custodian? (2)

4.2.4 Hence, or otherwise show that a custodian "takes home" R1 350,96 after deductions. (4)

4.3 The "New Minimum Wage" value in the table is the wage after an 11% increase. Hence determine:

4.3.1 What did a custodian "take home" before the increase if:

- the weekly PAYE deduction for the original wage (in the previous tax year) was R27,87?
- the provident fund deduction was the same (10% of weekly wages)? (5)

4.3.2 What is the percentage increase in "take home" pay between the original wage and the new wage? (4)

4.3.3 Is the percentage increase in "take home" wages:

- the same as,
- greater than, or
- or less than the

increase of 11% in wages? Give a reason for the observation(s) you have made (4)

[29]

QUESTION 5

A strip map of the road joining Bloemfontein to Port Elizabeth is reproduced alongside.

Us the map to answer the questions that follow.

5.1 Use the strip map to determine the following distances:

5.1.1 Port Elizabeth to Bloemfontein

5.1.2 Cradock to Colesburg

5.2 A family living in Trompsburg travels to Port Elizabeth (a distance of 568 km). If:

- they travel at an average speed of 80 km/h; and
- their car has an average petrol consumption of 12 litres per 100 km,

calculate the following.

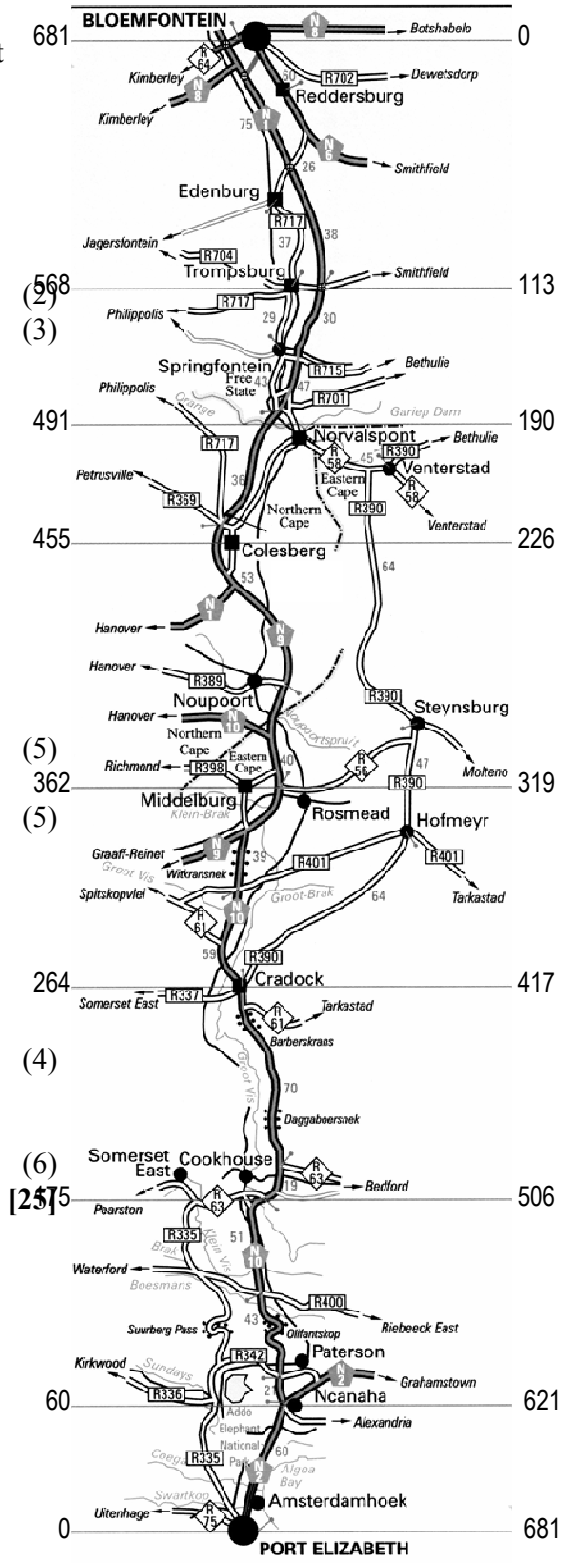
5.2.1 The time that it will take them to complete the journey, correct to the nearest 15 minutes.

5.2.2 The amount that they will spend on petrol if petrol costs R7,25 per litre.

5.3 If the family wants to stop twice along the journey to stretch and buy cold drinks, determine the following:

5.3.1 Two towns shown on the map that would break the journey in three roughly equal parts.

5.3.2 The approximate times that they would arrive at each town if they depart at 07:00.



QUESTION 6

Part of one page from a Metrorail timetable is reproduced alongside.

Use this timetable to answer the questions that follow.

TRAIN NO.	9516	9438	9218	9440	9442	9522	9444	9446	9526
KHAYELITSHA		06:48		07:00	07:10		07:22	07:35	
NONKQUBELA		06:51		07:03	07:13		07:25	07:38	
NOLUNGILE		06:54		07:06	07:16		07:28	07:41	
MANDALAY		06:58		07:10	07:20		07:32	07:45	
		06:59		07:11	07:21		07:33	07:46	
STOCK ROAD		07:01		07:13	07:23		07:35	07:48	
KAPTEINSKLIP	06:47	..	07:00	..	..	07:18	..	..	07:40
MITCHELLS PL.	06:50	..	07:03	..	..	07:21	..	..	07:43
LENTEGEUR	06:53	..	07:06	..	..	07:24	..	..	07:46
	06:54	..	07:07	..	..	07:25	..	..	07:47
PHILIPPI	06:58	07:04	07:11	07:16	07:26	07:29	07:38	07:51	07:51
NYANGA	07:03	07:09	..	..	07:31	07:34	07:43	07:56	07:56
HEIDEVELD	07:07	07:13	07:17	07:24	07:35	07:38	07:47	08:00	08:00
NETREG	07:11	07:17	07:20	..	07:39	07:42	07:51	08:04	08:04
BONTHEUWEL	07:14	07:20	07:23	07:29	07:42	07:45	07:54	08:07	08:07
	07:15	07:21	07:24	07:30	07:43	07:46	07:55	08:08	08:08
LANGA	07:18	07:24	07:27	07:33	07:46	07:49	07:58	08:11	08:11
YSTERPLAAT	..	07:34	07:37	07:43	07:56	..	08:08	08:21	..
ESPLANADE	..	07:39	07:42	07:48	08:01	..	08:13	08:26	..
PINELANDS	07:23	..	..	..	..	07:54	..	..	08:16
NDABENI	07:25	..	..	..	..	07:56	..	..	08:18
MAITLAND	07:28	..	..	..	..	07:59	..	..	08:21
SALT RIVER	07:33	..	..	..	..	08:04	..	..	08:26
CAPE TOWN	07:40	07:44	07:47	07:53	08:06	08:11	08:18	08:31	08:33

6.1 Use the time table to answer the following questions

6.1.1 At what time does train number 9516 pass through Nyanga? (2)

6.1.2 Does train number 9218 stop in Nyanga? (2)

6.1.3 At how many stations does train number 9440 stop when travelling between Kapteinsklip and Cape Town? (2)

6.1.4 How long does the train number 9438 take to travel from Nolungile to Ysterplaat? Show your working. (4)

6.2 Themba takes the train from Lentegeur to Cape Town. He needs to arrive at Cape Town station before 07:50 in order to be at work on time.

6.2.1 List the numbers of all the trains that he can use. (4)

6.2.2 One morning Themba is running very late and misses train number 9522. If he catches the next possible train from Lentegeur, at what time will he arrive at Cape Town station? (4)

[18]

QUESTION 7

The Metropolitan Premier Cup is a soccer tournament hosted by Bay United FC.

In the first round groups of 4 teams play a round robin tournament with the top two teams in each group going through to the second round.

The fixtures and results of the first three games for the teams in Group A are shown alongside.

Group A				
WP United	4	-	0	Junction Rovers
Bay United	1	-	1	WP United
Ajax Cape Town	5	-	0	Junction Rovers
Ajax Cape Town	Still to be played			Bay United
Ajax Cape Town	Still to be played			WP United
Bay United	Still to be played			Junction Rovers

7.1 Teams are awarded:

- 3 points for a win;
- 2 points for a draw; and
- 0 points for a loss

Complete the missing information after the first three games in the log table below (you need only write down the values of (a) to (f) in your script):

Team name	Games played	Games won	Games drawn	Games lost	Goals for	Goals against	Points
WP United	2	1	1	0	5	1	(a)
Ajax Cape Town	1	1	0	0	(b)	0	3
Bay United	(c)	(d)	(e)	(f)	1	1	2
Junction Rovers	2	0	0	2	0	9	0

(7)

7.2 By considering the remaining games in the Group answer the following questions:

7.2.1 How many games must Ajax Cape Town still play? (2)

7.2.2 What is the maximum number of points that Junction Rovers can end the group competition with? Explain your answer. (3)

7.3 Consider the game between Ajax Cape Town and Bay United

7.3.1 What are the three possible outcomes of the game? Answer this question by completing the statements below (write done the statements in your script):

(a) Ajax Cape Town **wins** and Bay United ____

(b) Ajax Cape Town **draws** and Bay United ____

(c) Ajax Cape Town _____ and Bay United ____ (4)

7.3.2 For each of the three outcomes above state how many points each team will have on the log after the game. (6)

7.4 In light of your answers in 1.2 and 1.3 discuss the likelihood (probability) of Junction Rovers ending the group tournament in positions 1 or 2. Give reasons for your answer. (4)

[26]