



**Western Cape
Government**

Education

**Directorate Curriculum:
FET SCHOOLS**

**WESTERN CAPE EDUCATION
DEPARTMENT**

GRADE 12

MATHEMATICAL LITERACY

ASSIGNMENT 2

TERM 2

MARKS: 69

TIME: 1 ½ hours

QUESTION 1

- 1.1 Mr. and Mrs. Peterson and their two children live in Langebaan near Cape Town. They plan to go to London for a holiday in April 2014. All FOUR family members will go. They obtained the following list of flight ticket prices from Cape town to London from a travel agency.

AIRLINE:	Route	Depart from Cape Town	Round Trip
EMIRATES AIR	Via Dubai	09H35	ZAR 7624
BRITISH AIRWAYS	Direct night	13H30	ZAR 8453
SWIS SAIR	Direct night	14H55	ZAR 9221
IBERIA	Via Madrid	20H23	ZAR 9225
KLM	Direct night	00H35	ZAR 9281

Use the ticket price list to answer the following questions.

- 1.1.1 The family decided to make use of British Airways. Give a possible reason for this decision? (2)
- 1.1.2 How much more would they have to pay in total, if they chose KLM instead of British Airways? (3)
- 1.1.3 The family's home is 130 km from Cape Town International Airport, where they will catch their plane. They must be at the airport 2 hours before the departure time. If they must maintain an average speed of 110km/h from home to the airport, what is the latest time that they have to leave home in order to be on time? Round your answer to the nearest minute.

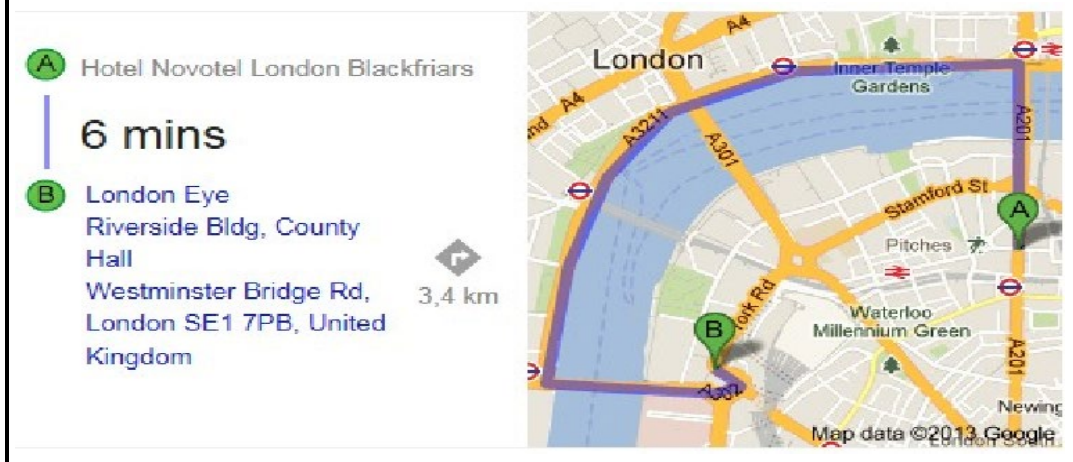
The formula:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \text{ may be used} \quad (5)$$

- 1.1.4 Would you advise the family to leave at the time calculated in 1.1.3? Give a reason for your answer. (2)
(12)

QUESTION 2

- 2.1 The Peterson family chose the Hotel Novotel in Central London as their place to stay for the 7-day holiday in London. Below is the map of the part of central London they lived in. They made use of the bus to travel around London. Additional information on distance between the Novel Hotel and the London Eye, a place they plan to visit, and the bus travelling time is supplied with map.




- 2.1.1 Give the general compass direction of the London Eye from the Hotel Novotel. (2)
- 2.1.2 The measured map distance between London Eye and Novel Hotel is 135mm. Determine the scale used to draw the map in the form 1: Round off your scale to the nearest 100 (4)
- 2.1.3 Determine the average speed, in km/h, of the bus throughout this trip.

Use: Speed = Distance / Time (3)
(9)

2.2 The 4-member family consists of two adults and two children. The ages of the children are 10 and 15 years. Below is a break-down of costs that will be incurred during their holiday in London.

Use the information in the table and the flight ticket price list in question 1 to answer the following questions.

Accommodation	Novotel Blackfriars Hotel – See prices below.(Sleep 7 nights/The price given is per person per night)
Meals:	Breakfast and supper included at hotel; Lunch £35 per person per day
Bus Ticket prices:	See below. They decided to make use of the Single Journey Fare Oyster Card option.
Itinerary for the week	They make use of the bus to travel through London.
Day 1	Thames River Cruise £17,00 per adult, £8,50 children
Day 2:	London Eye; \$80,80 for 4 persons
Day 3:	London Film Museum: £13,50 per adult, £9,50 children under 15
Day 4:	Walk through the streets of London only
Day 5:	Churchill War Rooms: £15,45 per adult
Day 6:	Shopping for presents. They go by bus from the hotel to a central point and back.
Day 7:	Rest

London Adult Bus Fares & Ticketing In 2013 (Children Fare see Below)
– Single Ticket Flat Fare Per Journey
Single Journey Fare £2.40
– Fare Available Paying By Oyster Card
Single Journey Fare £1.40 (Daily Oyster Fare Ca* £4.40) 7 Day Bus Pass £19.60 1 Month Pass £75.30 Annual Bus Pass £784.00
*Daily Oyster Cap – the maximum you pay in a calendar day no matter how many bus journey you make. e.g. 4 journey made in one day at £1.40 cost £4.40 (the daily cap) not £5.60
 <div style="display: inline-block; vertical-align: top;"> <p>Novotel London Blackfriars ★★★★★ Fabulous, 8.7 <small>Score from 393 reviews</small></p> <p>46 Blackfriars Road - London</p> <p>From ZAR 2,133.72</p> </div>

2.2.1 For how many days will the family need a bus to travel? (2)

2.2.2 Give a valid reason, supported by calculations, for the family to choose the Single Journey Fare by Oyster Card option for their bus trips and NOT the 7 Day Buss Pass option. (3)

2.2.3 Use the table on Annexure A to complete the holiday budget by calculating the values of A to E.

Use \$1 = R10,27 and £1 = R15,98

BUDGET		TOTAL AMOUNT IN ZAR
1.	FLIGHT TICKETS	A
2.	ACCOMMODATION	B
3.	MEALS	R 15 660,40
4.	BUS FARE	C
5.	ADMISSION FEES	D
6.	GIFTS	R 5 000, 00
TOTAL AMOUNT		E

(11)

2.2.4 The inflation rate for the United Kingdom, where London is located, is predicted at 2.0% for 2015. Calculate the total amount the family would pay if they decide to go for holiday in London in 2015 with the same itinerary.

(3)
(19)

QUESTION 3

3.1 The department of Human Settlements builds RDP houses for qualifying people every year. These houses are given for free to the majority of the working class population. Below is elevation and floor plan (ANNEXURE B) of an RDP house. Use the plans to answer the following questions.

An RDP house



Floor plan of an RDP house



Window Schedule
 W1 = 1511 x 949
 W2 = 1022 x 949

LIVING AREA
 51.8 sq m

External Walls = 150mm
 Internal Walls = 100mm
 Wall Height = 2,700mm
 Roof Pitch = 18 Degrees Gable

3.1.1 How many windows does the house have? (1)

3.1.2 How many outside doors does the house have? (1)

3.1.3 Which elevation view (front, back or side) of the house is shown in the picture? Justify (2)

3.1.4 Calculate the perimeter (in metres) of an RDP house.


The formula: $P = 2(L + W)$ may be used (3)

3.1.5 Calculate the ratio, in simplest form, of the area of the lounge to the area of the bigger bedroom.

The formula $A = L \times W$ may be used (5)
(12)

3.2

Concrete blocks are used to build RDP houses. An example of a concrete block used to build the outside walls of an RDP house is shown below. Use the given information about the concrete block and the RDP plans in 3.1 above to answer the following questions.



Concrete brock information

Dimensions
(L × W × H):
(390mm × 190mm × 190mm)

Number in Pellet = 90

Mass = 16.00 kg

3.2.1 Calculate the surface area of the concrete block in centimetres

The following formula may be used:

$SA = 2 \times W^2 + 4(L \times H)$ (3)

3.2.2 Calculate the volume of the concrete block, in cubic centimetres.

The formula: $V = L \times W \times H$ may be used (2)

3.2.3 Use the floor plan to calculate the number of pallets of concrete blocks required to build, excluding the gable (triangular part of the wall) the external walls of an RDP house. The area of the outside door opening is 1.658m². (10)

3.2.4 Give a reason why the number of concrete blocks calculated in 3.2.3 is just estimation and NOT the actual number of blocks needed. (2)
(17)

GRAND TOTAL: 69

ANNEXURE A:

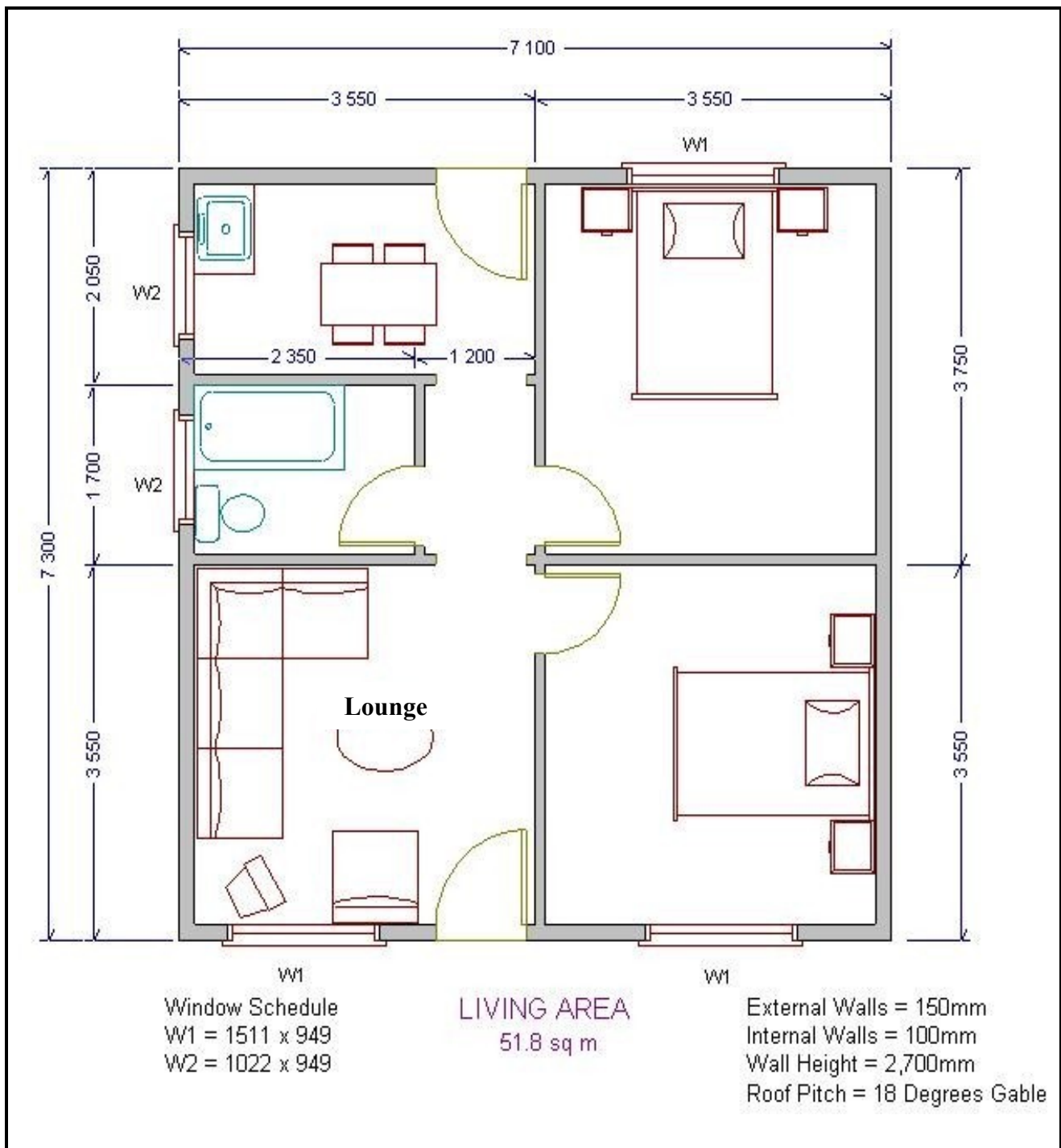
Name of learner:

GRADE 12

QUESTION 2.2.3

BUDGET FOR THE PETERSONS' HOLIDAY TO LONDON		
CALCULATIONS		TOTAL AMOUNT IN ZAR
1.	FLIGHT TICKETS	A =
2.	ACCOMMODATION	B =
3.	MEALS $£35 \times 4 \times 7 = £980$ $£980 \times 15.98 =$	R 15 660,40
4.	BUS FARE	C =
5.	ADMISSION FEES	D =
6.	GIFTS	R 5 000, 00
	TOTAL AMOUNT	E =

ANNEXURE B







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MEMORANDUM

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QUESTION 1 [12]

Question		Solution	Explanation	Marks
1.1	1.1.1	Cheapest of the direct flights ✓✓	2 Any logical reason	(2)
	1.1.2	$(R9281 \times 4) - (R8453 \times 4)$ ✓ $= R3\ 313.00$ ✓	1 subtract 1 both amounts times 4 1 answer	(3)
	1.1.3	$T = \frac{D}{S}$ $= 130 \frac{\text{km}}{110\text{km/h}}$ ✓ $= 1,18\dots\text{h}$ ✓ $\approx 1,11 \text{ min}$ ✓ To arrive at airport at 11h30 Therefore to leave home at $11\text{h}30 - 1\text{h}11\text{min}$ ✓ $= 10\text{h}19\text{min}$ ✓ or (10:19 etc.)	1 substitution 1 simplification 1 rounding to the nearest minute 1 CA subtract from 11H30 1 CA answer	(5)
	1.1.4	No, will most probably leave earlier to make provision for traffic delays, etc. ✓✓	1 opinion 1 justification/reason	(2)

QUESTION 2 [28]

Question		Solution	Explanation	Marks
2.1	2.1.1	South West or West of South ✓✓	2 answer	(2)
	2.1.2	135 mm:3400000 mm ✓ = 1:25 185.18... ✓✓ = 1:25 200 ✓	1 C convert km to mm 2 M divide both sides by 135 1 R rounding up	(4)
	2.1.3	$S = \frac{D}{T}$ $3.4 \frac{\text{km}}{6 \text{ min}} \checkmark$ $= \frac{6}{60} \text{ h} \checkmark$ $= 34 \text{ km/h} \checkmark$	1 substitution 1 for $6 \div 60$ 1 simplification	(3)
2.2	2.2.1	5 days	1 answer	(1)
	2.2.2	Oyster card payment = $2 \times 4 \times 5 \times \text{£}4.40 = \text{£}56 \checkmark$ or R894.88 7-day bus concession = $4 \times \text{£}19.60 = \text{£}78 \checkmark$ or R1 252.83 Therefore Oyster card option is cheaper OR The cost return per trip = $\text{£}2.80$ or R44.74 ✓ for both options. Since they will need bus transport for only 5 days the Single Ticket Fare Per Journey ✓ option is the cheaper one.	1 single journey costs 1 7-day card costs 1 reason	(3)
	2.2.3	BUDGET	TOTAL AMOUNT IN ZAR	
		1. FLIGHT TICKETS	$A = 4 \times \text{R}8453 \checkmark$ $= \text{R}33\ 812$	
		2. ACCOMMODATION	$2133.72 \times 4 \times 7 \checkmark$ $B = \text{R}59\ 744.16 \checkmark \checkmark$	
		3. MEALS	R15 660,40	
		4. BUS FARE	$1.4 \times 2 \times 4 \times 5 \checkmark = \text{£}56$ $\text{£}56 \times \text{R}15.98/\text{£}1 = \text{R}894.88 = C \checkmark$	

	5.	ADMISSION FEES	$[(17 \times 2) + (8.5 \times 2)] \checkmark$ $+ 80.8 + [(13.50 \times 3 \checkmark) + 9.50]$ $+ [15.45 \times 2] \checkmark = \text{£}212.7$ $212.7 \times 15.98 = \text{R}3\,398.95 \checkmark$ $(\text{R}3431.36) = \text{D}$	
	6.	GIFTS	R5 000,00	
		TOTAL AMOUNT	$\text{E} = \text{R}33\,812 + \text{R}59\,744.16 +$ $\text{R}15660.40 + \text{R}894.88 + \text{R}3398.95$ $+ \text{R}5\,000$ $= \text{R}118\,510.39 \checkmark$	(11)
2.2.4		<p>In 2015 the 2014 budget will increase by 2%.</p> <p>That is, $\text{R}118\,510,39 \times \checkmark 1.02 \checkmark$</p> <p>$= \text{R}120\,880,50 \checkmark$</p> <p style="text-align: center;">OR</p> <p>$\text{R}118\,510,39 + 2\% \text{ of } \text{R}118\,510,30 \checkmark$</p> <p>$= \text{R}118\,510,39 + \text{R}2370.21 \checkmark$</p> <p>$= \text{R}120\,880,50 \checkmark$</p>	<p>1 for 1.02</p> <p>1 multiplication</p> <p>1 answer</p>	(3)



QUESTION 3 [29]

Question		Solution	Explanation	Marks
3.1	3.1.1	5 windows ✓	1 answer	(1)
	3.1.2	2 outside doors ✓	1 answer	(1)
	3.1.3	Back view. ✓ There is one window on the same side as the outside door. ✓	1 elevation view 1 justification	(2)
	3.1.4	Back view. ✓ There is one window on the same side as the outside door. ✓	1 elevation view 1 justification	(2)
	3.1.5	Perimeter = $2(L+W) = 2(7300 + 7100)\text{mm}$ ✓ $= 28800\text{mm}$ ✓ $= 28.8\text{m}$ ✓	1 substitution 1 simplification 1 conversion	(3)
	3.1.6	Ratio = $\frac{\text{area (lounge)}}{\text{area bedroom}} = \frac{3550 \times 3550}{3550 \times 3750}$ ✓ ✓ $= 3550/3750$ ✓ ✓ $= 71/75$ ✓	1 ratio expression 1 for 3750 1 substitution 1 simplification 1 simplest form	(5)
3.2	3.2.1	SA = $2 \times (190\text{mm})^2 + 4(390\text{mm} \times 190\text{mm})$ ✓ $= 72\,200\text{mm}^2 + 296\,400\text{mm}^2$ $= 368\,600\text{mm}^2$ ✓ $= 3686\text{cm}^2$ ✓	1 substitution 1 simplification 1 conversion	(3)
	3.2.2	Volume = $390\text{mm} \times 190\text{mm} \times 190\text{mm}$ ✓ $= 14\,079\,000\text{mm}^3$ $= 14\,079\text{cm}^3$ ✓	1 substitution 1 answer	(2)

	<p>3.2.3</p>	<p>There are 2 outside doors, their total area</p> $= 2 \times 1.658\text{m}^2 = 3.316\text{m}^2 \checkmark$ <p>Total area of the windows</p> $= 3 \times \text{area of W1} + 2 \times \text{area of W2} \checkmark$ $= 3 \times (1.511\text{m} \times 0.949\text{m}) + 2 \times (1.022\text{m} \times 0.949) \checkmark$ $= 4.302 + 1.940$ $= 6.242\text{m}^2 \checkmark$ <p>Area of the external wall = perimeter x height \checkmark</p> $= 28.8\text{m} \times 2.700\text{m}$ $= 77.76\text{m}^2 \checkmark$ <p>Area to be built = $77.76\text{m}^2 - 3.316\text{m}^2 - 6.242\text{m}^2$</p> $= 68.202\text{m}^2 \checkmark$ <p>Area of a single concrete block = $0.39\text{m} \times 0.19\text{m}$</p> $= 0.0741\text{m}^2 \checkmark$ <p>Therefore, number of concrete blocks required</p> $= \frac{68.202}{0.0741} = 920.404 = 921 \text{ blocks} \checkmark$ <p>Number of pallets = $921/90 = 10 \checkmark$</p>	<p>1 total door area</p> <p>1 correct number of windows</p> <p>1 calculating total area</p> <p>1 area</p> <p>1 calculating wall area</p> <p>1 area of the external wall</p> <p>1 subtracting door and window areas</p> <p>1 area of a concrete block</p> <p>1 number of blocks</p> <p>1 number of pallet</p>	<p>(10)</p>
	<p>3.2.4</p>	<p>Some of the blocks may break during transportation and the building process. So additional blocks will be needed to cover for the loss. $\checkmark \checkmark$</p>	<p>2 any valid reason</p>	<p>(2)</p>
GRAND TOTAL:				<p>69</p>