

TEACHERS WITHOUT BORDERS PROGRAMME

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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

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Clifton School	Milnerton High	Rustenburg Girls' High	St Peter's
Durban Girls'	Northwood High	St Anne's DC	St Stithians
Fairmont High	Roedean	St John's DSG	Wynberg Boys' High
Herzlia High	Rondebosch Boys'	St Mary's DSG Kloof	Wynberg Secondary

**MATHEMATICAL LITERACY
GRADE 11
JUNE 2019**

Time: 2 hours

Total: 100 Marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This paper consists of:
 - A question paper of 11 pages with five questions.
 - Addendum A & B
 - Appendix A & B on Answer Sheet
2. Check that your question paper is complete.
3. Answer ALL the questions.
4. Number the answers exactly as the questions are numbered.
5. It is strongly suggested that all working details be shown.
6. Units of measurement must be included where applicable.
7. Where necessary, round off all answers to two decimal places, unless stated otherwise OR where the context requires rounding up or down.
8. Approved non-programmable calculators may be used.
9. It is in your own interest to write legibly and present your work neatly.

Question 1


- 1.1 Sipho is interested in the fast food industry and does some research regarding certain foods. Use the information given in **Addendum A** to answer the questions that follow:
- 1.1.1 Calculate the total number of kilojoules (kJ) consumed in a high kJ day? (2)
- 1.1.2 Using your answer in 1.1.1, calculate the percentage decrease from a high kJ day to an average kJ day. Give your answer to the nearest percent. (3)
- 1.1.3 If 1 calorie = 4,2 kJ, calculate how many calories are in one chocolate bar. Give your answer to the nearest calorie. (2)
- 1.2 Sipho and his friends decide to go to McDonald's for lunch. Below is their till slip. Study the till slip and answer the questions that follow.

2063		
<i>McDonald's South Africa</i>		
<i>Restaurant #1970376</i>		<i>Mall at Carnival</i>
<i>www.mcdonalds.co.za</i>		<i>Tel: 011 915 7639</i>
Crew ID 31 NTINTILLI Z.		
TAX INVOICE ORD #63		
REG #20 – 02/05/2018		
16:57:56		
QTY	ITEM	TOTAL
1	Cajun Chicken	30.00
1	Cheeseburger	49.50
1	Ketchup	0.00
1	Chicken Burger	32.00
<i>Subtotal</i>		<i>111.50</i>
<i>Take-out Total (incl VAT)</i>		<i>111.50</i>
<i>Cash Tendered</i>		<i>200.00</i>
<i>Change</i>		<i>88.50</i>
TOTAL INCLUDES VAT OF 14%		13.70

- 1.2.1 Show how the R13,70 for VAT was calculated? (3)
- 1.2.2 The order takes exactly 13 minutes and 30 seconds to complete. What time will the order be ready? (3)

[13]**Question 2**

- 2.1 McDonald's serves a mixed berry and almond polenta cake that is baked in espresso cups. They use the recipe below to make the cake.

<p>Mixed Berry and Almond Polenta Cake</p> <p>Makes 15 espresso cups</p> <p>Ingredients</p> <p>6 eggs separated (keep the yolks for mayonnaise or scrambled egg)</p> <p>140 g butter</p> <p>140 g castor sugar</p> <p>140 g ground almonds</p> <p>250 g fat-free cottage cheese</p> <p>75 g mixed frozen berries</p> <p>25 g polenta</p> <p>Bake at 356 °F until light brown, 30 to 40 minutes.</p>		
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- 2.1 Express the baking temperature of 356 °F in °C.

Use the formula: $^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \div 1,8$ (2)

- 2.2 Fat-free cottage cheese is sold in quantities of 125 g at R8,99. Calculate the cost of the fat-free cottage cheese required in the recipe. (2)
- 2.3 Give, in simplest form, the ratio of polenta : mixed frozen berries. (2)
- 2.4 An empty espresso cup weighs 116 g. McDonald's uses an espresso cup to weigh the correct amount of castor sugar required in the recipe.

Write down the reading on the kitchen scale when the correct amount of castor sugar is placed in the espresso cup. (2)

- 2.5 They place the cakes in the oven at 14:40 and take the cakes out of the oven after 35 minutes. Determine the time at which they took the cakes out of the oven. (2)
- 2.6 Given that 1 kg = 2,2 lb (pounds), express the amount of ground almonds required in the recipe in pounds. (2)
- 2.7 How many grams of mixed frozen berries are required to make 20 espresso cups of mixed berry and almond polenta cake. (2)

[14]

Question 3

Sipho wants to buy a food franchise.

A franchise is an arrangement made with a specific company to sell that company's products in a particular area using that company's name. Sipho finds an interesting article on www.businessstech.co.za that provides him with valuable information.

This article was written on 26 May 2015.

Franchising costs range from R500 000 for a brand like Chesa Nyama, to as much as R6 million for a global giant like McDonald's (all excluding VAT). Franchise set-up fees often include location, renovation and facility costs, with franchisees then paying an additional "joining fee" and monthly payments to the brand owner.

Franchise fees can hit as high as R185 000 for a Nando's franchise or even R540 000 (\$45 000) for McDonald's, while monthly royalty and marketing payments range between a combined 4% and 12% of net income.

South Africa's biggest food chain, KFC, with 771 stores across the country, carries the second highest start-up costs at R5,5 million.

- 3.1 Calculate how much more money Sipho would need to open a McDonald's store rather than a Chesa Nyama. (3)
- 3.2 A McDonald's franchise costs R6 million excluding VAT. Determine the price of a McDonald's franchise including 14% VAT. (2)
- 3.3 If the cost of a McDonald's franchise increases by 4,6% every year due to inflation, calculate what a franchise would cost in 2018. Complete **Appendix A** in the Answer Sheet. (4)
- 3.4 If each KFC store made a profitable income of R136 400 per month, determine what the total profitable income for 2015 was throughout South Africa. (3)
- 3.5 If McDonald's charges the minimum franchise fee for royalty and marketing, what percentage will they charge the franchisee? (2)
- 3.6 Using your answer in 3.5, calculate how much that franchisee have to pay the franchiser if its net income was R8 000 000? (2)

- 3.7 Sipho finds an income statement for a McDonald's franchise in the United States of America.

<i>INCOME STATEMENT</i>	
<i>Profit and Loss account for McDonald's Franchise</i>	
<i>Owner: Pete McIntosh</i>	
<i>Sales</i>	<i>\$89,000</i>
<i>Cost of Goods Sold</i>	<i>\$10,600</i>
<i>NET INCOME</i>	<i>\$78,400</i>
<i>Less expenses</i>	
<i>Wages</i>	<i>\$10,000</i>
<i>Rent</i>	<i>\$12,000</i>
<i>Insurance</i>	<i>\$1,000</i>
<i>Vehicles</i>	<i>\$5,000</i>
<i>Telephones</i>	<i>\$3,000</i>
<i>Utilities</i>	<i>\$5,000</i>
	<i>\$36,000</i>
<i>NET PROFIT</i>	<i>A</i>

- 3.7.1 Who is the owner of this store? (2)
- 3.7.2 State which expenses total to five thousand dollars. (2)
- 3.7.3 Calculate the value of A. (2)
- 3.7.4 Calculate the profit margin.

$$\text{Profit margin} = \text{percentage profit} = \frac{\text{Profit}}{\text{Income}} \times 100 \quad (3)$$

[25]

Question 4

4.1 Siphó's brother has started a small business manufacturing teapots. He has opened up a small factory with two employees and some machinery.

- Each teapot costs R12 to manufacture.
- Fixed costs for running the teapot factory are R6 256 per month.
- He plans to sell each teapot for R80.

4.1.1 Write an expression for the total revenue that will come from producing x teapots. (2)

4.1.2 Write an expression for the total monthly costs for the factory if x teapots are produced. (2)

4.2 Use the table below to answer the questions:

Teapots produced	20	40	60	80	100	120	140
Cost	(a)	(b)	R6 976	R7 216	R7 456	R7 696	R7 936
Revenue	R1 600	R3 200	R4 800	R6 400	R8 000	R9 600	R11 200

4.2.1 Solve for (a) and (b) in the table above. (2)

4.2.2 What is the profit per teapot? (ignore fixed costs) (2)

4.2.3 Approximately how many teapots would have to be produced in order to break even? (3)

4.2.4 Use the table above, and **Appendix B** on the Answer Sheet, to draw a graph on of cost and revenue for the month against the number of teapots produced. Label the break-even point. (4)

- 4.3 Below is the electricity tariffs schedule for 2018–2019 that Siphon will need to consider. Study the table given below and answer the questions that follow.

The following charges will be payable:

Fixed charge (rand/month)	
<i>NOTE: A fixed amount is charged to all customers once a month per point of supply, whether electricity is consumed or not.</i>	
<i>Credit metering VAT exclusive</i>	<i>Prepayment metering VAT exclusive</i>
<i>R34,64</i>	<i>R10,00</i>
Energy charge (R/kWh)	
<i>VAT exclusive: R1,82</i>	<i>VAT exclusive: R1,82</i>

- 4.3.1 Calculate the electricity bill including VAT (15%), if his business uses an average of 12 425 kWh per month on the credit-metering basis. (5)

4.3.2

<i>If the electricity consumption is displayed on the internet, on request of the customer, an additional monthly amount is charged:</i>
<i>VAT inclusive R174,23</i>

Determine his total monthly electricity bill if he has requested to receive his electricity consumption displayed on the internet. Round off to the nearest rand. (2)

[22]

Question 5

- 5.1 Siphon is flying from the United Kingdom (UK) to Las Vegas, USA, to do some market research for McDonald's. He will travel by air from London Heathrow Airport (LHR) to

The flight distance between the two airports is 5 222,086 miles. Siphon's flight departed from LHR to LAS at 17:14. When he arrived at LAS the next day, the time in LHR was 04:11.

McCarran International Airport (LAS).

Conversion table: 1 Mile = 1,609 km

1 knot = 1,852 km/h

Calculate the average speed, in knots, at which the aircraft travelled. The conversion table and the following formula may be used:

$$\text{Speed(km/h)} = \frac{\text{Distance(km)}}{\text{time(hrs)}} \quad (6)$$

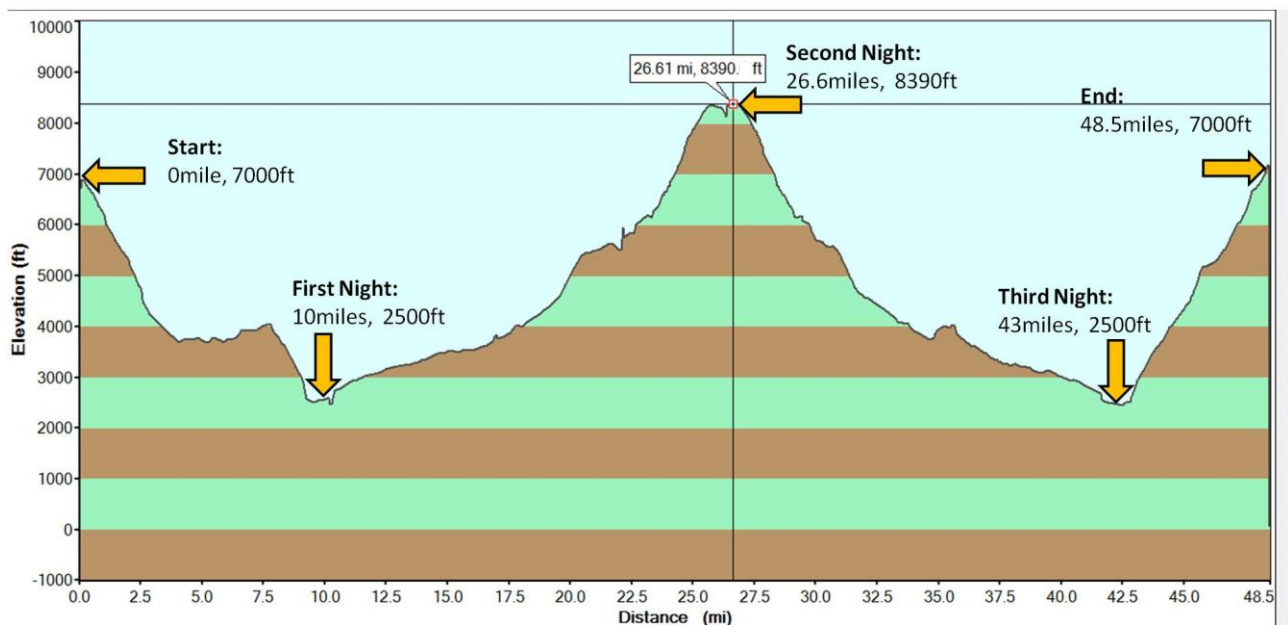
5.2 Once in Las Vegas, Sipho decided to do some site seeing. Use the map in **Addendum B** to answer the questions that follow:

5.2.1 In which general direction would Sipho be walking if he goes from Firefighters Memorial park to Rainbow family park? (2)

5.2.2 Use the red dots on the map to give directions that Sipho can use to walk from Firefighters Memorial park, to Rainbow family park. Indicate your route on the map. (5)

5.2.3 Use the scale given on the map to calculate the perimeter of Rainbow family park. Give your answer to the nearest meter. (5)

5.3 Sipho is considering hiking through the Grand Canyon. Use the elevation map below to answer the questions.






5.3.1 If 1 foot = 30,48 cm, calculate the height above sea level where he would spend the second night. Give your answer in km to 2 decimal places. (2)

5.3.2 How far does Siphon still need to travel after the second night? (2)

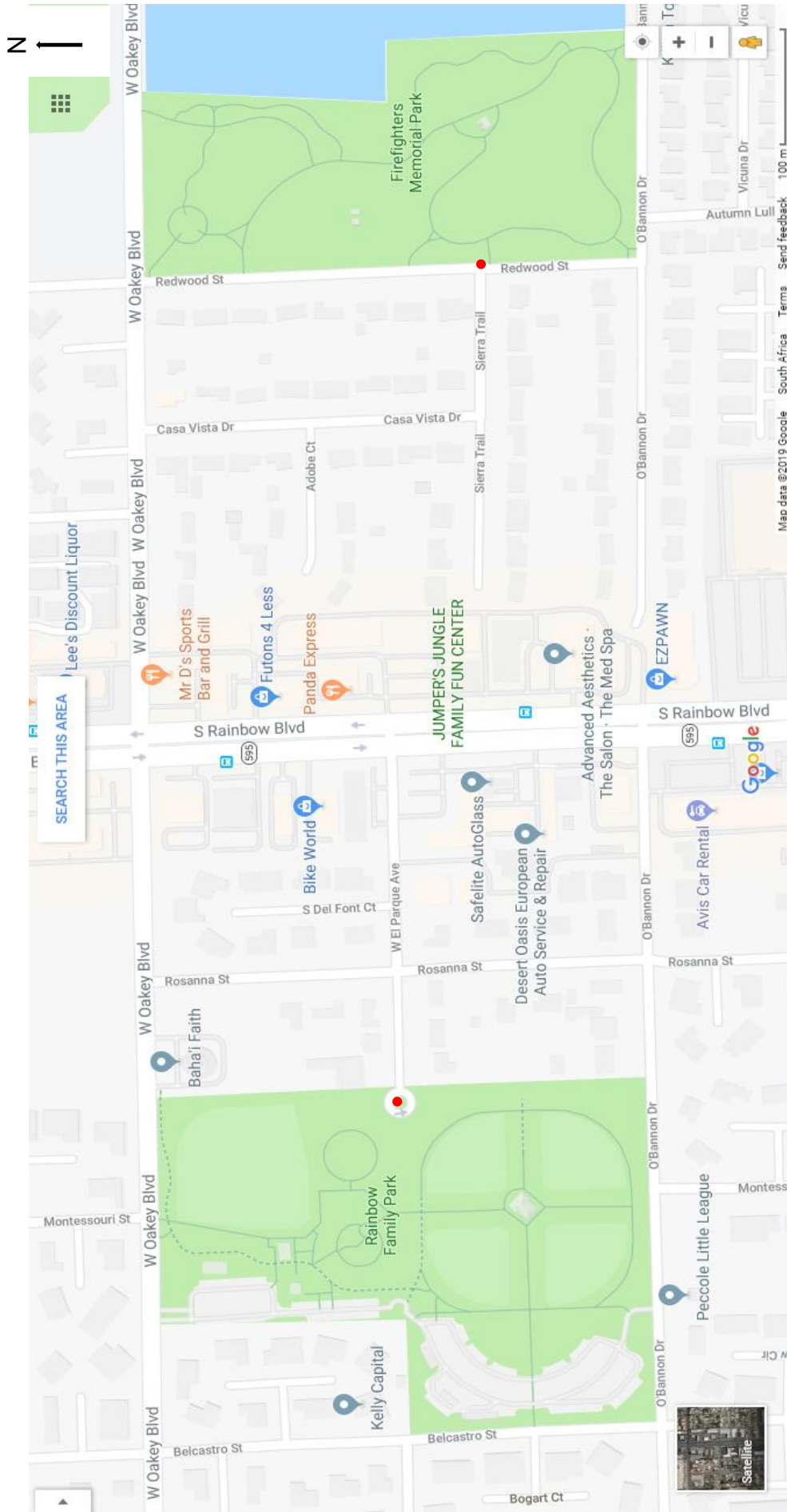
5.3.3 Describe, using feet and miles, Siphon's journey over the 4 days. (4)

Addendum A

	High kJ day	kJ		kJ	Average kJ day – healthier choices
	Egg and bacon muffin	1500	BREAKFAST	750	High-fibre breakfast cereal (2/3 cup) with low fat milk
	Iced coffee reduced fat (600ml)	1500		250	topped with tinned fruit (1/2 cup)
				500	1 piece of raisin toast with a light spread of margarine
				100	Coffee with low fat milk
	Muffin	2000	SNACK	350	1 piece of fresh fruit
	Large latte	900		700	Small handful of unsalted raw nuts (30g)
				350	Small latte with low fat milk
	Burger	2800	LUNCH	1350	Wholemeal sandwich with lean meat and 1/2 cup salad, light spread of margarine
	Medium fries	1900		400	1 cup minestrone soup
	Regular soft drink	900		0	Water
	Chocolate bar	1200	SNACK	950	Crackers (2 rectangle sized) with tomato & reduced fat cheese (40g)
	Half a medium pizza	2300	DINNER	1900	Chicken (80-100g) and vegie (1 cup cooked) stir fry with 1 cup noodles
	Ice cream (2 scoops)	800		650	Frozen yoghurt cup (100g) and strawberries
	Beer (375ml)	600		450	Small juice (300ml)
			A	TOTAL KJ FOR THE DAY	8700

* 1 Calorie = 4.2kJ

Addendum B



Answer Sheet**Name:**

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Appendix A

2015	2016	2017	2018
6 000 000			

Appendix B

Line graph showing cost and revenue for teapots produced

