

# TEACHERS WITHOUT BORDERS PROGRAMME

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basic education

Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA

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In Bill Gates words, at the Mandela Day 'Living Together' address: "Maintaining the quality of this country's higher education system while expanding access to more students will not be easy. But it's critical to South Africa's future" – working together, we can help achieve this."

## Contributing schools to date:

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 10  
JUNE 2019**

**Time: 2 hours**

**Total: 100 Marks**

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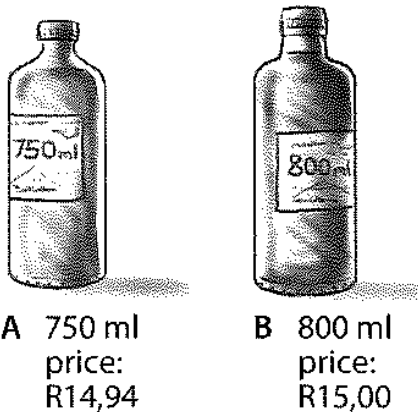
**PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY**

1. This paper consists of A question paper of 8 pages with six questions.
  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.
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**QUESTION ONE**

Mrs Rhodes and her daughter Casey go shopping at the Highlands Mall.

- 1.1 Casey wants to buy a pair of jeans that costs R299. How much will she pay for them if she gets a  $33\frac{1}{3}\%$  discount? (2)
- 1.2 Mrs Rhodes goes to Highlands Sport shop to buy an energy drink concentrate. The dilution instructions on an energy sports drink concentrate are:  
dilution ratio (concentrate : water) 1 : 4.
- 1.2.1 Explain what is meant by this instruction. (2)
- 1.2.2 How many ml of concentrate and how many ml of water will Mrs Rhodes need to make up 1litre of energy drink? (2)
- 1.3 Casey needs a new bag for school. According to health researchers, the unofficial rule for a handbag or school bag's mass is that it should not exceed 10% of your body mass. If you carry more than this on a regular basis, you could experience back pain.
- 1.3.1 What should the maximum mass of Casey's school bag be if she has a mass of 51 kg? (2)
- 1.3.2 The average mass of one school textbook is 750 g. If Casey needs to take seven textbooks to school will the mass of the bag adhere to the unofficial rule? (3)
- 1.4 Mrs Rhodes wants to buy shampoo from Highlands Pharmacy. She needs to decide between which two of the following different bottles to choose from:



Calculate which bottle gives the better value for money. (3)

[14]

**QUESTION TWO**

Casey makes her own porridge every morning before she leaves for school. She needs water, mealie meal, salt and margarine to make this porridge.

The table below shows conversions between millilitres (ml) and grams (g) for certain ingredients used in cooking.

**TABLE 1: Conversion table**

Ingredients	5 ml	12,5 ml	100 ml	250 ml
Flour	3 g	8 g	60 g	150 g
Margarine	5 g	12,5 g	100 g	250 g
Mealie meal	3 g	6 g	50 g	120 g
Sugar	4 g	10 g	80 g	200 g

1 cup = 250 ml; 1 tablespoon = 12,5 ml; 1 teaspoon = 5 ml

Use the information and the table above to answer the following questions:

- 2.1 The porridge has to simmer (cook slowly) on a low heat for  $\frac{1}{3}$  of an hour. Write this time in minutes. (2)
- 2.2 How many grams of sugar make up a 100 ml of sugar? (2)
- 2.3 Casey stirs  $1\frac{1}{2}$  tablespoons of margarine into the porridge. How many grams of margarine is this? (3)
- 2.4 Casey first boiled 4 cups of water. How many litres of water is this? (3)
- 2.5 Casey has a 2,5 kg bag of mealie meal to make the porridge with.
- 2.5.1 Convert 2,5 kg to grams. (2)
- 2.5.2 How many times can she make porridge from a full 2,5 kg bag if she uses 312,5 g of mealie meal each time she makes it? (2)
- 2.6 The picture below shows the control dial/knob of the stove plate on which Casey boils the water.



Key: 0 is off

1 is the lowest setting

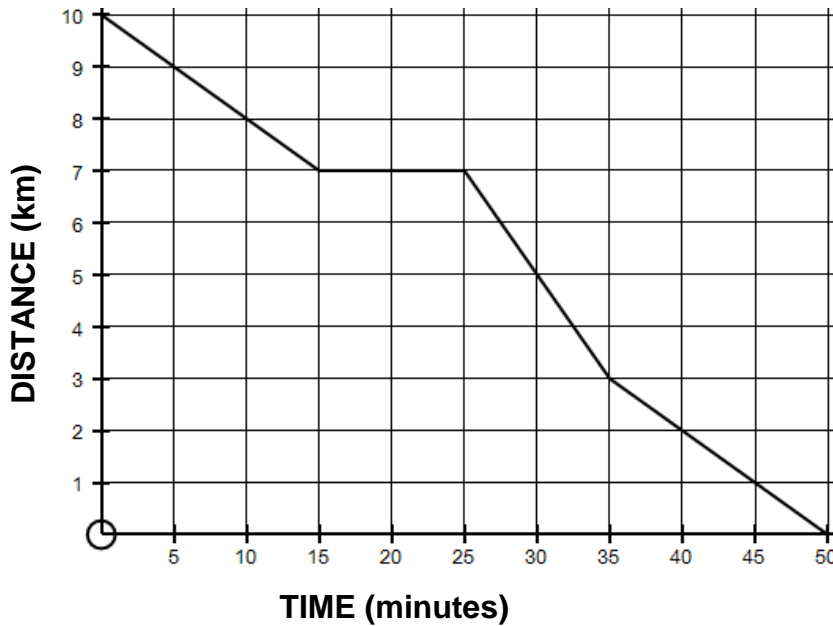
6 is the highest setting

Casey has to let the porridge simmer on a low heat. On which number should she set the dial/knob? (2)

[16]

### QUESTION THREE

Casey stops at the post office after school. The trip home from the post office has four parts, shown by four different line segments.



- 3.1 What is the distance between her home and the Post Office? (1)
- 3.2 How long did she take to cycle home from the Post Office? (1)
- 3.3 When did Casey cycle the fastest? (2)
- 3.4 How far did she cycle before she slowed down? (2)
- 3.5 When did Casey stop cycling? Give a reason for this. (2)
- 3.6 How far from home was Casey after 10 minutes? (1)
- 3.7 Calculate her average speed for the first 15 minutes of her ride. Give your answer in km/hour.

Use the formula:  $Speed = \frac{Distance}{Time (Hours)}$  (3)

- 3.8 Convert your answer in 3.7 above to m/s (metres per second). (3)
- 3.9 If Casey cycled in a race at a speed of 36km/h, calculate how long it would take her to cycle 90km. Give your answer in hours : minutes : seconds. (4)

[19]

**QUESTION FOUR**

- 4.1 Mrs Rhodes received a cash-sale slip after she bought some goods at Highlands Supermarket. Below is a copy of the cash-sale slip with some of the details omitted.

HIGHLANDS SUPERMARKET		
Tel: (+2721) 1234567		
VAT Reg# 461010565		
TAX INVOICE		
1705359 Reg 1 ID 41 14:54 01/11/11		
CHOCOLATE SLAB	3 @ 14,95	.....
BANGLES	.....@ 13,95	97,65
JOY MAGAZINE	1 @ 25,17	25,17
SUBTOTAL		167,67
TOTAL (EXCLUDING VAT)		.....
TOTAL (INCLUDING VAT)		167,67
CASH PAYMENT		.....
AMOUNT TENDERED		200,00
CHANGE		.....
<b>Receipt total includes 15% VAT</b>		
RETAIN AS PROOF OF PURCHASE		

- 4.1.1 How much did Mrs Rhodes pay in total for the THREE slabs of chocolate? (2)
- 4.1.2 How many bangles did Mrs Rhodes buy? (2)
- 4.1.3 A Joy magazine costs R21,89 excluding VAT. Calculate the amount of VAT paid on the Joy magazine. (2)
- 4.1.4 Determine the cash payment and the change given if the total including VAT is rounded down to the nearest 10 cent. (3)
- 4.1.5 Calculate the total (excluding VAT) for the goods bought. (3)

P.T.O...4.2/

- 4.2 Mr Rhodes earns a net salary of R18 350 per month after deductions. He budgets every month as follows:

TABLE 2: Mr Rhodes's budget for December

MONTHLY INCOME		MONTHLY EXPENDITURE	
Salary after deductions	R17 800	Bond repayment	R4 100
Housing subsidy	R 550	Municipal rates	R 475
		Water and refuse account	R 325
		Electricity	R 580
		Food	R2 750
		Car instalment	R1 650
		Petrol	R1 800
		Entertainment	R1 300
		School fees	R 940
		Clothes and cellphones (12% of the total monthly income)	(A)
<b>TOTAL</b>	<b>R18 350</b>	<b>TOTAL</b>	<b>(B)</b>

4.2.1 Name ONE fixed expense. (1)

4.2.2 Mr Rhodes calculated that the value of A is R2 202.

Show how Mr Rhodes calculated A, the amount of money he anticipates spending on clothes and cellphones in December. (2)

4.2.3 Calculate the total expenditure (B). (2)

4.2.4 How much money does Mr Rhodes have left after paying all his expenses? (2)

4.3 Mr Rhodes is getting a 5,5% increase in salary and Mrs Rhodes is getting an increase in salary of R992,50 more per month. Mr Rhodes earns R20 000 per month and Mrs Rhodes earns R17 500 per month.

4.3.1 Determine Mr Rhodes' new salary per month. (2)

4.3.2 Who received the greater increase in terms of actual money? (1)

4.3.3 Who received the greater percentage increase? Show your working. (2)

[24]

## QUESTION FIVE

A local cellular provider charges the following for a standard contract:

- Monthly subscription: R 100
- Mandatory itemised billing: R 22

This monthly contract includes R 140 worth of airtime and R 40 worth of free, local SMS's.

Calls and SMS's are charged for using the tariffs given below. This service provider uses per second billing, so the tariff is Rands per 60 seconds of call time, even if those 60 seconds are split over two or more calls. Assume that these tariffs, or rates, and the monthly subscription are VAT inclusive. (An SMS is a text message, and an MMS is a text and data message, that may include a photo, for example).

<b>Rate per minute for the first 5 minutes of the day</b>	<b>R 1,95</b>
<b>Rate per minute (60 seconds) thereafter</b>	<b>R 1,55</b>
<b>Calls to same network</b>	<b>R 0,99 per 60 seconds</b>
<b>International SMS</b>	<b>R 1,20 per SMS</b>
<b>SMS</b>	<b>R 0,60 per SMS</b>
<b>MMS</b>	<b>R 0,75 per MMS</b>

- 5.1 Casey has a contract like the one above. Assuming she does not use more than R 140 airtime in a month and R 40 worth of SMS's, what will her monthly cell phone bill cost? (2)
- 5.2 On the first day of the month, the first call Casey makes is to her father (on a different network) and they talk for 2 minutes. How much will this call cost Casey? (2)
- 5.3 On the same day, Casey then calls her friend, Sarah. They talk for 4 minutes. How much will this second call cost her? (3)
- 5.4 Two weeks later, Casey has made R 70,45 worth of calls, sent 25 local SMS's, 5 international SMS's and 2 MMS's. Calculate how much airtime she has left. (4)
- 5.5 Casey calls her sister for a big chat, and accidentally uses all of her R 140 airtime in one day (assume this happened at the beginning of the month and she did not send any SMS's). If her sister is on a different network, how long did they talk for? Round your answer to the nearest minute, and write it in hours and minutes (5)
- [16]

## QUESTION SIX

Mr and Mrs Rhodes decide to tour the Midlands Meander. Study the map of the Midlands below and answer the questions that follow:



- 6.1 List two dams that are visible on the map. (2)
- 6.2 Determine as the crow flies, the approximate distance between:
- 6.2.1 Pietermaritzburg and Durban (2)
- 6.2.2 Pinetown to Nottingham road (4)
- 6.3 Mr and Mrs Rhodes will drive from Pietermaritzburg to Mooi River. Describe a route that they could take which will allow them to visit as many places during their journey but not visiting a place more than once. (3)

[11]