

## MATHEMATICS

# COMMON TASKS FOR ASSESSMENT

**GRADE 9** 

2007

### **LEARNER'S BOOK**

# PART 2

Time: 2 hrs	
Marks: 80	
No. Pages: 9	

### THE COMMON TASKS FOR ASSESSMENT (CTA)

#### FOCUS: TELECOMMUNICATIONS

#### THE CELL PHONE INDUSTRY

**Note to the learner:** This is PART 2 of your CTA.

# **PART 2:**

### What you should know:

PART 2 consists of five questions.

### What you need:

Pen Pencil Ruler Calculator

### **Duration:**

Two hours

### **Instructions:**

Follow the instructions for each question carefully. Answer all questions. You are encouraged to show all your calculations.



The ECONOMIST – Economist Intelligence Unit (July 2006) reports that between April 1999 and March 2006, subscriptions of domestic users recorded from a cell phone service provider had contributed R32 billion to new cell phone business.

Study the table provided below, which has some information missing, and answer the questions that follow:

#### Table 1:

#### Cell phone user subscriptions

	2004	2005	2006
Domestic subscribers	14,3m	17,8m	18,6m
African market		5,3m	9,3m
Total subscriptions	18m		28,5m

\* Adapted from Economist - Report 2006

1.1		Determine the subscribers in the African market in 2004 and the	
		total subscriptions of cell phones for 2005.	(2)
1.2		What percentage of the total subscriptions was in the African market	
		in 2006? (Give the answer correct to one decimal place.)	(2)
1.3		Determine the ratio of the domestic subscribers to the African market	
		in 2006	(2)
1.4		Calculate:	
	(a)	The increase in the African market from 2005 to 2006.	(2)
	(b)	The percentage increase in the African market from 2005 to 2006.	(2)
		(Give the answer correct to one decimal place.)	
1.5		Give two reasons to explain the percentage increase in the African	
		market for the period 2005 to 2006	(2)

1.6 Look at two pie charts below, which represent the yearly African market subscriptions. Which one will you use to show that the increase in African users of cell phones is of great importance to the cell phone industry?
Give a reason for your answer. (3)











A cell phone manufacturer, PORIA, manufactures a certain make of cell phones, RQ75. Phones are packaged in a box that measures 12cm by 10cm by 8cm. Each of these boxes contains the phone manual, other accessories such as the phone charger, earphones, battery and the starter pack. The boxes are transported in a large container measuring 36m<sup>3</sup>. The length of the container is 6m and the width is 2,4m.

2.1	Calculate the volume of the cell phone box	(2)
2.2	Calculate the height of the container.	(3)
2.3	What is the maximum number of boxes of cell phones can be	
	transported in this container?	(3)
2.4	If ten cell phone boxes at a time are packed in a crate of which	
	the area of the bottom is $2x^2 - 8$ , <b>calculate</b> the length	
	of this crate in terms of x if the breadth is (x-2)?	(4)
2.5	You must now ship these containers of cell phones from Durban	
	to Cape Town. Shipping costs can be based on the number of cubic	
	metres of goods shipped.	

The table shows shipping costs

Number of cubic metres	1	2	3	4	
Shipping cost	R315	R630	R945	R1260	

		[20]
	"shipping costs" and "number of cubic meters" for the first six cubic met	ers.(2)
2.5.3	Draw a graph, on the grid paper, showing the relationship between	
2.5.2	Calculate the shipping cost if a full container is used	(4)
	number (n) of cubic meters of goods.	(2)
2.5.1	Write an equation for the cost (c) of shipping based on the	



- 3.1 Jacob asked a friend, Tinky, to design the covers for the boxes of the cell phones. She decided to use a kaleidoscope of colours. If the background can be gold or silver and the colours for the design can be blue, red or yellow,
  - 3.1.1 Draw a tree diagram to list all possible combinations (2)
  - 3.1.2 Determine the probability of obtaining a silver-red combination (2)
- 3.2 Jacob designed a display tray made of Perspex for his cell phone boxes



3.2.1 Determine, stating a reason, the length of **a**. Show all calculations. (3)

3.2.2 You want to spray paint entire tray. Calculate the area to be spray painted. (4)

[11]



#### **QUESTION 4**

#### (Recommended time: 35 minutes)

Read the information provided below and answer the questions that follow:

When the Rand gains in value against the US Dollar, local sales of cell phones increase, but export sales of cell phones decrease. When the Rand loses value against the US Dollar, local sales of cell phones decrease but export sales of cell phones increase.

4.1 The formula I = 20a (40 - 1,75a) - 17 (10a + 70) is used to calculate *I*. *I* is the income produced from local and foreign sales of cell phones, in millions of rand; *a* is the exchange rate, that is, the number of rand required to purchase 1 dollar.

Simplify the above formula and show that  $I = -35a^{2} + 630a - 1190$ (2)

- 4.2 What will the income (I) be if  $a = \mathbb{R}7$ ? (2)
- 4.3 A consignment of cell phones is exported to Botswana at a cost price of R98 000. Transport and other costs are added at 16% in Rand value. (Transport cost and other costs make the product more expensive and is therefore added to the cost price)

In Botswana this price is converted to Pula and then a 23% import tax is added to this price. Countries add import tax to all products that are brought into their country to make sure that the imported product is not sold cheaper in their country than it could be produced. In this way they protect their own producers. If the exchange rate of Rand to Pula is R1.17 per Pula at this time, how much will the consignment cost in Botswana? (6) 4.4 Study the graph provided below and answers the questions that follow:



Table 2: Rand – Dollar exchange rate for 2006

4.4.1 Read off the exchange rate for July (1)4.4.2 Determine how many **Rands** were required to purchase \$50 in July. (3)4.4.3 Determine how many **Dollars** were required to purchase R50 in June. (3) 4.4.4 Did the value of the rand increase or decrease against the Dollar for (2) the period August to October? Give a reason for your answer. 4.4.5 A cell phone manufacturer wishes to trade in South Africa. He bought a consignment of cell phones from the USA to South Africa. The value of the consignment in South Africa was R840 000, whilst in the USA, it was valued at \$120 000. (a) Calculate the Rand – Dollar exchange rate. (Ignore customs duties, import/export trading costs) (2)(b) Use the Rand-Dollar exchange rate graph to determine a month during which he could have brought the consignment into the country (1)

[22]



You want to advertise your new cell phone company. A friend tells you about an advertisement on a roof next to the OR Tambo Airport that is attracting a lot of attention because it is so big. You ask an advertising company if there is a relationship between the area in square meters of advertisements and the number of customers they attract. They give you the following information based on earlier surveys.

Area (m <sup>2</sup> ) of advertising sign	0,4	0,6	0,8	1	1,2	1,4	1,6	1,8	2	2,2
Number of customers	60	120	100	180	160	200	260	220	280	260

Study the above table and answer the questions that follow:

	TOTAL	80
		[12]
	they attract?	(1)
	in square meters of advertisements and the number of customers	
5.5	What is your conclusion about the relationship between the area	
	gradient and hence the equation of the trend line.	(5)
5.4	Use the coordinates (0,4; 60) and (2; 280) to find the	
5.3	Write down the standard form of the equation of the trend-line.	(1)
5.2	Draw the line of best fit (trend line) on your graph.	(1)
	the different sizes of advertisements on the graph paper provided.	(4)
5.1	Construct a scatter plot of the number of customers attracted by	