The impact of Interest Rates and Inflation

The Grade 12 Subject Statement for Mathematical Literacy expects that we deal with the impact of among other things the effects of taxation, inflation and changing interest rates (Assessment Standard 12.1.3) in the lives of individuals.

In this series of activities we hope to make sense of these concepts and, in particular, to assist participants in coming to a deeper understanding of how inflation and changing interest rates impact on their day to day lives.

The diagram below (although rather simplified) shows the relationship between inflation and interest rates.

In short the diagram suggests that a decrease in interest rates leads to an increase in disposable income or spending money because people will have to spend less money on (among other things) their monthly home loan repayments. Because many people experience an increase in spending capacity they start buying goods and services. This increase in the purchase of goods and services can lead to demand exceeding supply – in other words a shortage of good and services. Because there is a shortage of goods and service and at the same time a high demand there will typically be an increase in the prices of these goods and services. An increase in the price of goods and services leads to an increase in the Consumer Price Index (CPI) – see later – which in turn leads to an increase in inflation. Because an increase in inflation is undesirable, and because South Africa has adopted a policy of inflation targeting, the Governor of the Reserve Bank will increase interest rates. The increase in interest rates lead to people having less disposable income because they are paying more on (among other things) their monthly

home loan repayments. A decrease in disposable income results in s decline in spending and a surplus of goods and services. Because the people selling the goods and services would rather make less profit per item than to be stuck with the goods and services they will reduce the price. A reduction in price leads to a decrease in the CPI and hence inflation. To keep the economy stimulated the Governor may well lower interest rates again and the whole cycle starts again.

As already stated, this synopsis of the relationship between inflation and interest rates is a gross simplification. There are many other factors that influence inflation over which we have no control. For example a draught can lead to a shortage of maize which will push up the price of maize. An increase in the price of maize leads to an increase in the price of meat and dairy – because cows and chickens etc. eat maize as part of their diet and so we see an increase in the cost of living – and increase in inflation. For now it is enough that we have made the point that interest rates and inflation are related and in the remainder of this activity we will explore the effect of both on the lives of individuals.

Inflation

> **Definition**: Inflation is a measure of the general increase in the cost of goods and services, or a measure of the decline in the purchasing power of money

As the definition suggests inflation measures the change in the cost of goods and services over time – it measures the "cost of living".

Illustration: Say a particular basket of groceries cost R250 in June 2007. If we buy the *identical* basket of groceries a year later in June 2008 and it now costs R268 – R18 more. Then we can say one of two things – either we can say that the cost of the basket has increased or we can say that we can no longer buy in June 2008 the things that we could buy with R250 in June 2008 – the purchasing power of our money has declined. Inflation measures by how much the "basket" increases in value from one year to the next.

The calculation of inflation is a complex process. In South Africa this is done by Statistics South Africa (Stats SA). By completing the activities that follow you should develop a sense of how Stats SA determines what is known and the inflation rate. The purpose of these activities is only to give you a sense of the process.

To calculate inflation Stats SA monitors the price of a "basket" of goods and services from one month to the next. In simple terms they go out and buy these goods and services every single month. They buy some 1 500 items arranged into 40 different categories.

Having bought the goods and services they record their prices in a large data base. Because it is difficult to compare the trends in the prices of say cars that cost hundreds of thousands of Rand with bottles of peanut butter that cost less than R10,00, Stats SA introduces what is called an index for each item in their basket.

To determine the price index of an item in the basket, Stats SA randomly allocates an index of 100 to the items price in one month – this month is then called the base month (the base month for most of the items in the Stats SA basket was sometime in 2000). By using the simple calculations illustrated below Stats SA then calculate the price-index for each item in their basket for all of the other months in their data base.

Activity 1: Determining an index for a product

Worked example: Chicken food index

Let us assume that the price of a particular bag of chicken food is R45.95 in May. Rather than working with R45,95 let us say that the chicken food's price index is 100.

If the price in June of the same bag of food is now R48,65 we need to calculate the chicken food's index for June. We do this as follows:

$$\text{Chicken food index (June)} = \frac{48,65}{45,95} \times 100 = 105,87 \ldots 106$$

If the price in July is R47,45 the chicken food's index for July is 103. This can be calculated in two ways:

$$\text{Chicken food index (July)} = \frac{47,45}{45,95} \times 100 = 103,26 \ldots 103$$

$$\text{Chicken food index (July)} = \frac{47,45}{48,65} \times 106 = 103,38 \ldots 103$$

Notice how we decided to let the index for May be 100 – this could have been for any month – however, we cannot change this once we have made the decision. If we now want to calculate the index for a month earlier than May – say February (when the price of the meal was R38,99) we use the same method:

$$\text{Chicken food index (February)} = \frac{38,99}{45,95} \times 100 = 84,85 \ldots 85$$

Questions

1. Use the table of values below to determine the peanut butter index for each of the months in the table. Let the peanut butter index in February be 100.

January	February	March	April	May
R4,95	R4,65	R4,45	R4,78	R5,20

2. The table of values below shows the price of a particular basket of household cleaning products. Determine the household cleaning product index for each of the months in the table. Let the household cleaning product index in April be 100.

January	February	March	April	May
R43,95	R48,38	R52,62	R51,87	R54,65

Activity 2: Determining the price of a product knowing its price index

Worked example: Price of chicken food

Knowing the index and the price of a product in a given month allows us to calculate the cost of the product for another month if we know the index of the product for that month.

If the chicken food index for December is 111, use the information in the previous worked example to determine what you could expect to pay for the bag in December.

We can calculate the price in a number of ways:

$$\text{Chicken food price (December)} = \frac{111}{100} \times 45{,}95 = 51{,}0045 \ldots \text{R}51{,}00$$

$$\text{Chicken food price (December)} = \frac{111}{103} \times 47{,}45 = 51{,}1354 \ldots \text{R}51{,}14$$

The slight discrepancy arises because of the rounding in the earlier answer

1. Refer back to the values you determined in question 1 of activity 1. If the peanut butter index for August is 108, calculate what the jar of peanut butter will cost in August. Calculate the value in two different ways to "check" you answer.

2. Refer back to the values you determined in question 2 of activity 1. If the household cleaning product index for November is 117, calculate what the basket of household cleaning products cost in November. Calculate the value in two different ways to "check" you answer.

Stats SA publishes the historical price indices for a wide range of products over the last 30 years on its website (www.statsa.gov.za). The table below is extracted from that database. Use this information in the table to answer the questions that follow.

	1977	1987	1997	2003	2004	2005	2006	2007
Food	5,4	22,4	80,9	131,8	135,4	137,1	143,1	155,4
Alcoholic beverages	6,6	20,1	76	118,2	133,4	146,4	154,4	167
Clothing and footwear	12,4	37,6	95,9	100,8	97,2	94,4	89,4	79,7
Housing	12,3	44,3	92,4	123,6	109,5	113	114,2	124,7
Medical care and health expenses	4,5	16,4	70,5	136,1	149,8	159,3	169,3	178,7
Transport	6,4	25	80	116,4	116,7	121,1	131,8	137,7
Vehicles	4,6	21,1	82,2	119,4	119,1	117	116,2	115,2
Running costs	6,8	24,5	72,5	117,6	118,1	128,3	151,3	164,2
Public and hired transport	12,1	38,3	92,7	106,6	108,3	111	111,6	112,8

3. If a brand new car costs R120 000,00 in 2007 – use the *vehicles* index to calculate what that same car would have cost in:
   2006; 2005; 2004; 2003 as well as
   1997; 1987; and 1977

4. If a house costs R1 000 000,00 in 2007 – use the *housing* index to calculate what that same house would have cost in:
   2006; 2005; 2004; 2003 as well as
   1997; 1987; and 1977

Activity 3: Comparing the cost of living for two different people over time

The 1997 monthly household budgets of two different people with the same disposable income are shown in the table below.

	1997		2003		2006		2007	
	A	B	A	B	A	B	A	B
Food	470	1022						
Alcoholic beverages	60	955						
Clothing and footwear	1550	489						
Housing	1660	1203						
Medical care and health expenses	35	400						
Transport	490	197						
TOTAL	4265	4265						

1. Assume that both A and B continue to spend their money on exactly the same goods and services over time. Use the product indices from the Stats SA table to complete the table of value above.

2. Use the formula for percentage change (below) to calculate by what percentage the household expenditure of both A and B has changed over the following periods:
   - 1997 to 2007
   - 2003 to 2007
   - 2006 to 2007

$$\text{percentage change (\%)} = \frac{\text{new - original}}{\text{original}}$$

3. In light of the above calculations determine whose “cost of living” has increased the most over the period.

Inflation continued

Rather than being concerned with the increase in the cost of living for each and every individual South African – which is quite clearly impossible – Stats SA uses the information that it collects on the costs of the 1500 goods and services every month to calculate the cost of the "typical South African's" basket of groceries.

Instead of publishing the price of the basket of groceries from month to month Stats SA once again calculates the index for the basket and publishes this instead – the index is called the consumer price index (CPI). You will hear this being reported from month to month in newspapers, on the radio and television.

Since inflation is defined as the a measure of the general increase in the cost of goods and services, or a measure of the decline in the purchasing power of money – Stats SA determines inflation by calculating the percentage change in the CPI. This percentage change – also referred to as the inflation rate – which is announced by Stats SA on a monthly basis measures the change in the CPI from a give month in one year to the corresponding month in the next year.

The table below lists the CPI for each month of the year over a 10 year period.

Year		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Ave.
1998	CPI	86,7	86,9	87,5	87,9	88,3	88,6	90,7	91,7	93,3	93,7	93,7	93,7	90,2
	%	5,7	5,3	5,4	5	5,1	5,2	6,6	7,6	9	9	9,3	9	6,9
1999	CPI	94,4	94,4	94,4	94,6	94,5	95	95,1	94,7	95,1	95,3	95,5	95,8	94,9
	%	8,9	8,6	7,9	7,6	7	7,2	4,9	3,3	1,9	1,7	1,9	2,2	5,2
2000	CPI	96,9	96,6	97,6	98,9	99,3	99,9	101	101	102	102	102	103	100
	%	2,6	2,3	3,4	4,5	5,1	5,2	6	6,9	6,9	7	7	7	5,4
2001	CPI	104	104	105	105	106	106	106	106	106	106	107	107	106
	%	7,1	7,8	7,4	6,5	6,4	6,3	5,3	4,6	4,4	4	4,3	4,6	5,7
2002	CPI	109	110	111	113	114	115	116	117	118	120	120	121	115
	%	5	5,9	6,2	7,4	7,8	8	9,6	10,4	11,2	13	12,9	12,4	9,2
2003	CPI	122	122	123	123	123	122	122	123	123	122	121	121	122
	%	11,6	10,3	10,2	8,8	7,8	6,7	5,2	5,1	3,7	1,5	0,4	0,3	5,8
2004	CPI	122	122	123	123	124	124	124	124	124	125	125	125	
	%													
2005	CPI	125	126	127	128	128	127	129	129	130	130	130	130	
	%													
2006	CPI	130	131	131	132	133	134	135	136	136	137	137	137	
	%													
2007	CPI	138	138	139	141	142	143	144	145	146	147	148	149	
	%													

Explanatory notes:

- The CPI in January 2002 was 109 and the CPI in January 2003 was 122 – using these values the year-on-year inflation from January 2002 to January 2003 has been calculated as follows:

  inflation (Jan_{2002} to Jan_{2003}) = $\frac{122 - 109}{109}$ = 11,9%

  Note that this has been recorded as 11,6 in the table (under January 2003). The difference between 11,9 and 11,6 can be attributed to the fact that Stats SA works with many decimal places but does not repost these.

- The average of the CPI's for each of the twelve months in a year is recorded in the column average and is considered the representative CPI for the year – in other words the average CPI for 2003 was 122.

- The average inflation rate for the year is determined by calculating the percentage change in the average CPI from one year to the next.

By reading the information in the table you should realise that the year on year inflation can vary quite a bit from month to month and for this reason it is important to calculate an average for the year.

<u>Activity 4: Working with CPI data</u>

1. Calculate all of the missing values in the table.
2. Use the CPI data from the table to estimate the cost of a collection of goods and services in:
   a. Dec '06 if the identical collection of goods and services cost R4 750 in Dec '07
   b. Feb '06 if the identical collection of goods and services cost R4 750 in Feb '07
   c. 2006 if the identical collection of goods and services cost R4 750 in 2007
   d. Dec '02 if the identical collection of goods and services cost R4 750 in Dec '03
   e. Feb '02 if the identical collection of goods and services cost R4 750 in Feb '02
   f. 2002 if the identical collection of goods and services cost R4 750 in 2002
3. If a person earned R6 000 per month in 2000, calculate how much that person should earn in each of the years 2001 to 2007 so that the purchasing power of their salary remains unchanged.
4. If a person used to earn R5 000,00 per month in 1998 and in 2007 the same person earned R6 800 per month, calculate whether or not this person's salary has kept pace with the cost of living.
5. Calculate which of the following people's salary have:
   - not kept pace with inflation;
   - kept pace with inflation; and
   - increased by more than we would have expected in terms of inflation:

   a. A: earned R5 000,00 per month in 1998 and earns R6800 per month in 2007
   b. B: earned R6 000,00 per month in 2001 and earns R8750 per month in 2007
   c. C: earned R7 000,00 per month in 2004 and earns R8120 per month in 2007

Interest rates

The link between inflation and interest rates was described in the early part of this handout.

> **Definition**: Interest is the fee paid by a borrower to a lender for the use of borrowed money. The fee is usually expressed as an annual percentage of the amount borrowed and is known as the interest rate.

We now turn our attention to interest rates. When the Governor of the Reserve bank changes the interest rate – what really happens is that the Repo Rate (the rate at which the Reserve Bank loans money to commercial banks) is changed. In this relationship the commercial bank is the borrower and the Reserve Bank the lender. When the commercial bank loans money to an individual – the individual is the borrower and the commercial bank the lender. Because the commercial bank needs to make money as well it charges a greater interest rate to the individual than it is charged by the Reserve Bank.

In any loan arrangements there are four interrelated variables:

- The loan amount
- The interest rate
- The monthly repayment; and
- The period of the loan – the number of months it takes to repay the loan

Of interest to our discussion is how the interest rate and the monthly repayment are related. If we fix the loan amount and the period of the loan then we find that an increase in the interest rate will increase the monthly repayment while an decrease in the interest rate will lead to a decrease in the monthly repayment. This is well illustrated by referring to the table of bond repayment factors published by a commercial bank below:

Interest rate	Monthly repayment per R1000 borrowed					
	over 5 years	over 10 years	over 15 years	over 20 years	over 25 years	over 30 years
10%	21,25	13,22	10,75	9,65	9,09	8,78
11%	21,74	13,78	11,37	10,32	9,80	9,52
12%	22,24	14,35	12,00	11,01	10,53	10,29
13%	22,75	14,93	12,65	11,72	11,28	11,06
14%	23,27	15,53	13,32	12,44	12,04	11,85
15%	23,79	16,13	14,00	13,17	12,81	12,64

<u>Activity 5: Calculating the impact of a change in interest rate on a monthly loan repayment</u>

The table can be used to determine the monthly repayment on a loan as follows: For a home loan of R250 000 that is being paid of over a period of 20 years at an interest rate of 12% per annum, the monthly repayment is:

$$\text{monthly repayment} = \frac{\text{R250 000}}{1\ 000} \times 11{,}01 = \text{R } 2752{,}50$$

1. If a person is paying of a R250 000 loan over 20 years at an interest rate of 12% and the interest rate changes to 14%, calculate the change in their monthly repayment – i.e. the change in their monthly disposable income.
2. Calculate the change in monthly disposable income for each of the following people
   a. A is repaying a R500 000 loan over 30 years and the interest rate changes from 10% to 13%
   b. B is repaying a R500 000 loan over 15 years and the interest rate changes from 10% to 13%
   c. C is repaying a R500 000 loan over 5 years and the interest rate changes from 10% to 13%
   d. D is repaying a R1 000 000 loan over 10 years and the interest rate changes from 13% to 11%
   e. E is repaying a R1 000 000 loan over 20 years and the interest rate changes from 13% to 11%
   f. F is repaying a R1 000 000 loan over 25 years and the interest rate changes from 13% to 11%

What does it mean to be Mathematically Literate?

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  ≈ 500 pages of text
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  ≈ 1 000 000 thick books

We live in a
data and number drenched world

In a data and number drenched world we need citizens to be mathematically literate in order to be more effective:

- Self-managing individuals
- Contributing workers
- Critical citizens
- Life-long learners

The wall of ignorance between those who are mathematically and scientifically literate and those who are not can threaten democratic cultures. The scientifically and mathematically illiterate are outsiders in a society in which effective participation in public dialogue presumes a grasp of basic science and mathematics.

(Carnevale and Desrochers, 2003)

Government Gazette

NATIONAL CREDIT ACT

Vol. 489 Cape Town 15 March 2006 No. 28619

THE PRESIDENCY

No. 230 15 March 2006

It is hereby notified that the President has assented to the following Act, which is hereby published for general information:–

No. 34 of 2005: National Credit Act Act, 2005.

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To be Mathematically Literate

- Means:
  - Being able to use “black box” calculators to solve problems
  - Understanding that the quality of the input will determine the quality of the output
    - The outcome depends on the decisions and/or assumptions made
  - Understanding the relationships between the variables of the problem

Microsoft Excel - Bank loans and savings simulator.xls

File Edit View Insert Format Tools Data Window Help Adobe PDF

B3 400

	A	B	C	D	E
1	Loan/initial deposit:	R-30 000,00			
2	Interest rate:	14,50%	per annum	1,21%	per month
3	Payment/installment:	R400,00			
4					
5	Total repayment:	R78 832,61			
6	Last payment in:	Month 199			
7					
8	STATEMENT				
9		Interest	Credit	Balance	
10	Opening balance			R-30 000,00	
11	Month 1	R-362,50	R400,00	R-29 962,50	
12	Month 2	R-362,05	R400,00	R-29 924,55	
13	Month 3	R-361,59	R400,00	R-29 886,14	
14	Month 4	R-361,12	R400,00	R-29 847,26	
15	Month 5	R-360,65	R400,00	R-29 807,91	
16	Month 6	R-360,18	R400,00	R-29 768,09	
17	Month 7	R-359,70	R400,00	R-29 727,79	
18	Month 8	R-359,21	R400,00	R-29 687,00	
19	Month 9	R-358,72	R400,00	R-29 645,72	
20	Month 10	R-358,22	R400,00	R-29 603,94	
21	Month 11	R-357,71	R400,00	R-29 561,65	
22	Month 12	R-357,20	R400,00	R-29 518,86	
23	Month 13	R-356,69	R400,00	R-29 475,54	
24	Month 14	R-356,16	R400,00	R-29 431,70	
	Month 15	R-355,63	R400,00	R-29 387,34	

Basic Statement | Statement with totals

Ready NUM

In-vitro slip-up may boomerang on doc

CANBERRA: An Australian woman who gave birth to twins after receiving in-vitro fertilisation has sued her doctor for the cost of bringing up the second child.

The woman, who may not be identified because of a court order, is seeking more than $A400 000 (R2.3 million) to cover the expense of raising one of the girls until she is 21, including private school fees.

Testifying in the Supreme Court of the Australian Capital Territory yesterday, the 40-year-old mother said she told her doctor that she only wanted one child. But an embryologist, under the doctor's supervision, implanted two embryos in her uterus, resulting in the birth of non-identical twin girls.

The woman said she and her partner were devastated when they learnt she was carrying twins, and had even considered putting one of the babies up for adoption.

She said that while she enjoyed some aspects of her pregnancy, others were distressing, including purchasing a pram: "It was like the last frontier of acceptance to spend hundreds of dollars on a pram." – Sapa-AP.

Preliminary National Summary: 2005 ART Report | CDC Reproductive Health Rates - Windows Internet Explorer

http://apps.nccd.cdc.gov/ART2005/nation05.asp

2005 PREGNANCY SUCCESS RATES

Type of Cycle	Age of Woman			
Fresh Embryos from Nondonor Eggs	**<35**	**35–37**	**38–40**	**41–42[c]**
Number of cycles	41,299	22,619	19,480	8,991
Percentage of				17.6
Percentage of				10.6
Percentage of				13.1
Percentage of				14.9
Percentage of				12.7
Percentage of				19.0
Average numbe				3.2
Percentage of				13.4
Percentage of				2.5
Percentage of				14.5
Frozen Embry				
Number of transfers	9,575	4,802	2,896	972
Percentage of transfers resulting in live births [b]	31.7	27.7	23.3	15.9
Average number of embryos transferred	2.4	2.4	2.5	2.7

Fresh Embryos from Nondonor Eggs	38–40
Number of cycles	19,480
Percentage of cycles resulting in pregnancies	26.8
Percentage of cycles resulting in live births [b]	19.7
Average number of embryos transferred	3.0
Percentage of pregnancies with twins	21.5
Percentage of pregnancies with triplets or more	4.4
Percentage of live births having multiple infants [b]	25.1

Percentage of cycles resulting in pregnancies	43.1	35.7	26.8	17.6
Percentage of cycles resulting in live births [b]	37.3	29.5	19.7	10.6
Percentage of retrievals resulting in live births [b]	40.6	33.4	23.2	13.1
Percentage of transfers resulting in live births [b]	43.4	35.9	25.4	14.9

To be Mathematically Literate

- Means:
  - Being able to make sense of expressions of likelihood
  - Understanding that such expressions cannot predict when the event will happen – only that it will
  - Understanding that the quality of the prediction is a function of the process that led to its development

Medium to Long term interventions

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All traffic lights and public lights will be converted to solar power with a battery backup. This is another extensive project that will cost approximately R400 million and will also be another opportunity for employment creation and skills development.

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2. SMS the word 'FRESH' and the account number to 31673 before 4 April 2008.
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+ **Open your current account and SMS the above details before 3 March 2008 and you will be included in a lucky draw to appear on the Nedbank Fresh Start Money in the Bank TV Show, starting 6 February 2008, where you could win fantastic prizes worth up to R100 000 per show.**

SMSs charged at standard rates.

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■ OFF THE HOOK: SA ESCAPE SANCTIONS FOR QUITTING SRI LANKA TOUR/PAGE 24

■ BIG BASH: KOUGA GRANNY CELEBRATES 106 YEARS/PAGE 3

PRICE: R3.90 (INCLUDING VAT)

Umpire strikes back in tamper tantrum

By JULIAN GUYER

THE fourth and final Test b[illegible] tween England and Pakist[illegible] at The Oval in London w[illegible] plunged into controversy y[illegible] terday in an ugly row ov[illegible] ball-tampering.

The tourists risked forfe[illegible] ing the Test after making [illegible] tea-time protest by refusing to come out after being docked five runs for allegedly altering the state of the ball.

But just as it had seemed the match was about to restart, Pakistan coach Bob Woolmer said a fresh delay was caused by the refusal of umpire Darrell Hair to continue standing in the match.

Play was eventually called off for the day at 6.13pm local time with England 298 for four in their second innings, a deficit of 33. Late last night the Test was called off, Sky Sports reported.

Earlier Woolmer said: "The team are upset that they have been accused of tampering with the ball and therefore 'cheating'. It is a no-win situation as now Darrell Hair has refused to umpire."

[illegible]tarted, State closes case

[illegible]rathon [illegible]secution

[illegible]NIEKERK

[illegible] years after the investigation [illegible] the Usapho Trust and [illegible] after the High Court case against Maureen Clifford and her co-accused started, the State has closed its marathon prosecution.

With almost 700 witnesses called, more than 50 000 pages of evidence and a court record of 12 000 pages, the case is being described as the largest and most expensive prosecution in the Eastern Cape.

Investors from all over the country, but mostly from the Southern and Eastern Cape, are estimated to have lost R150-million by investing in the now liquidated Usapho Trust.

When State Advocate Marius Stander closed his case on Friday he recalled the magnitude of the massive prosecution of Clifford, her daughter Delene de Wit, her sister Thelma van Rooyen and former Absa bank managers Niel Terblanche, Otto Swart and Gerhardt Visagie. They face charges of fraud and contravention of the

spector Peter Kitching had spent 30 weeks in one year out of town as part of his investigation.

Clifford and her five co-accused were arrested on May 29, 2003, the High Court case started on October 12, 2004, a total of 50 216 pages of evidence were presented to court, 674 witnesses were called to testify for the State and many were recalled later and the court record is 12 000 pages long.

Stander has no idea what the defence team will present to court when they start their defence on October 12. "Then I will take a back seat."

It is expected advocate Kobus Brisley will lead the defensive onslaught by calling Clifford to testify.

Stander said there had been many highlights and disappointments over the past six years.

The major disappointment was when the investigating officer had to resign in June, 2003, after he was transferred to Mthatha as part of the Resolution 7 restructuring in the police service.

The investigation came to a stand-

Jail for Miracle 2000 man as fine set aside

JOHANNESBURG – The full bench of the Johannesburg High Court yesterday set aside a fine imposed on Miracle 2002 pyramid scheme boss Sibusiso Radebe and sent him to jail for an effective two years.

Radebe immediately indicated he would appeal the sentence and added: "This is not about Miracle 2002, this is about politics."

On August 3 last year, Radebe was sentenced to a fine of R50 000 (or one year's imprisonment) and R150 000 (or two years), on charges of contravening the Banks Act and the Harmful Business Practices Act.

But the State appealed against this sentence and yesterday the High Court ruled that the fines were too lenient. The High Court found that the non-custodial sentence imposed by the trial court was

"Mr Radebe did not even keep accounting records of the money which he collected from the public." A total of R36-million in investments was collected by Miracle 2002 from at least 13 324 people, of which R29-million was seized when Radebe was charged. – Sapa

the court," the court said in the judgment.

The High Court found that the regional magistrate had under-emphasised the interests of society.

"Mr Radebe did not even keep accounting records of the money which he collected from the public." A total of R36-million in investments was collected by Miracle 2002 from at least 13 324 people, of which R29-million was seized when Radebe was charged. – Sapa

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APPLY NOW

To be Mathematically Literate

- Means:
  - Being appropriately cynical – having a healthy cynicism
  - Understanding that there are no “free-lunches”
  - Having the capacity to ask the questions that will reveal the “catches”

South African Airways - Microsoft Internet Explorer

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Total price for all passe	
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Taxes:	R317.00
TOTAL:	R777.00

The fare is not guarantee

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Airfare:	R460.00
Taxes:	R317.00
TOTAL:	R777.00

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Arriving:	DUR at 1:20PM, Sep 16		738

SA 554			
Departing:	DUR at 12:40PM, Sep 20	Economy(L)	Aircraft
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FRIDAY JUNE 13, 2003

CAPE TIMES

with BUSINESS REPORT

17°

MBOWENI CUTS REPO RATE, BANKS FOLLOW SUIT

We're all a bit richer

CAIPHUS KGOSANA

RESERVE Bank governor Tito Mboweni has spoken – and debt-ridden South Africans will be smiling all the way to the bank.

Hardly moments after Mboweni yesterday announced a 1.5% cut in the repo rate, the four major banks announced that they would be following suit by trimming their prime lending rates as well.

Standard Bank, Absa, First National Bank and Nedbank announced that

HOW A 1.5% RATE CUT WILL AFFECT YOU

BOND AMOUNT	CURRENT REPAYMENT	NEW	SAVING
R120 000	R1 760	R1 630	R130
R240 000	R3 520	R3 250	R270
R300 000	R4 400	R4 070	R330
R550 000	R8 067	R7 446	R621

CAR LOAN	CURRENT REPAYMENT	NEW	SAVING
R120 000	R3 200	R3 100	R 100
R220 000	R4 795	R4 660	R 135
R320 000	R8 520	R8 270	R 250
R518 500	R13 810	R13 400	R 410

Rates hike deals blow to homeowners

Householders will be under further repayment pressure after a 50 basis point rise to 10% in the rate at which the Reserve Bank lends to the private sector – a move which will push prime and mortgage rates to 13,5%

This means that borrowers will be paying three percentage points more on credit than they were when the interest rate hikes started in June last year

Monthly repayments on a R500 000 mortgage loan, over 20 years have risen more than R1 000 to R6 036 in the period.

Typically the bank require that monthly repayments must not be more than 30% of monthly income, so each rate hike reduces the price an aspiring homeowner can afford to pay

Demand for goods exceeds supply

shortage

Price increases (CPI increases)

Increase in inflation rate

Increase in interest rate

Decrease in spending money

Supply of goods exceeds demand

surplus

Price decreases (CPI decreases)

Decrease in inflation rate

Decrease in interest rate

Increase in spending money

To be Mathematically Literate

- Means:
  - Recognising that the world is “a set of related systems”
  - Understanding cause and effect
    - Small numbers can sometimes have a big impact, and
    - Large numbers can sometimes have no impact at all
  - Understanding one’s role in the cycle and/or how the cycle impacts on one

Interest rate	Monthly repayment per R1000,00 borrowed					
	over 5 years	over 10 years	over 15 years	over 20 years	over 25 years	over 30 years
10%	21,25	13,22	10,75	9,65	9,09	8,78
11%	21,74	13,78	11,37	10,32	9,80	9,52
12%	22,24	14,35	12,00	11,01	10,53	10,29
13%	22,75	14,93	12,65	11,72	11,28	11,06
14%	23,27	15,53	13,32	12,44	12,04	11,85
15%	23,79	16,13	14,00	13,17	12,81	12,64

5% DEXTROSE Inj. USP / DEXTROSE À 5% Inj. USP
500 mL
EXP - SE

Road to Health Chart

IMPORTANT: always bring this chart when you visit any health clinic, doctor or hospital and present the chart on school entry.

Department of Health

FOR WELL-CHILD VISITS

Child's name:

Child's ID number:

Date of birth:

Birth weight: kg / g

Birth length: cm

Place of birth:

Sex: M / F

Problems during pregnancy / birth / neonatally

APGAR 1 min: / 5 min:

Multiple: Yes / No / Unknown

Birth head circumference:

Gestational age (wks):

Antenatal / Delivery

RHC information given by:

Mother's name:

Father's name:

Mother's Guardian:

Who does the child live with?

How many children has the mother had?

Number born:

Number alive now:

Reason(s) for death(s):

Date / Initials / Week

Visual screening

Pencil test (>6 weeks)

Result: L: YES / NO R: YES / NO

Snellen Chart test: conduct with E-chart (5 > years)

Result: L: / R: /

Date / Initials / Week

Hearing screening

Does baby appear to listen when someone is talking or singing? (at 3 months)

Result: YES / NO

Date / Initials / Week

Does baby turn to a loud noise? (at 6 months)

Result: L: YES / NO R: YES / NO

Date / Initials / Week

Voice test: Hearing impairment (> 12 months)

Result: Hearing impairment / Suspected hearing impairment / Normal hearing

Date / Initials / Week

11
10,5
10kg
9,5
9
8,5
8
7,5
7
6,5
6
5,5
5kg
4,5
4
3,5
3
2,5kg
2
1,5
Birth weight
1
2
3
4
5
6
7
8
9
age in months
Birth to 1 Year
Growth Monitoring Chart
1 to 2 Years
2 to 3 Years
50th centile
6
7
8
9
birth month
Watch the direction of the curve showing the child's growth
GOOD
DANGER SIGN
VERY DANGEROUS

To be Mathematically Literate

- Means:
  - Being able to perform a range of basic mathematical calculations and procedures
  - Recognising the importance of performing these well and/or understanding the consequences of not doing so
  - Understanding what you are doing

Why teach Mathematical Literacy?

Its about democracy – providing people with the knowledge, skills, attitudes and values that will enable them to participate in and contribute to the world in which they live…

A world that is defined by number

What does it mean to be Mathematically Literate?

It means being able to engage with and make sense of the data and numbers that characterise the various dimensions of our life:

- Self-managing individuals
- Contributing workers
- Critical citizens
- Life-long learners

When does 6” make a difference?

Aarnout Brombacher

aarnout@brombacher.co.za

www.brombacher.co.za

2:09:30
NEW YORK ROAD RUNNERS
ON
ING NEW YORK CITY MARATHON
City of New York
Parks & Recreation
THE RUDIN
FAMILY
Continental
Airlines
ING
Foot Locker
ING
asics
Continental
Airlines
Foot Locker
THE RUDIN FAMILY
Left
Lane

adidas
adidas
adidas
SOUTH

2004 Athens 4 $\times$ 100m Freestyle

- 1st South Africa 3:13:17
- 2nd Netherlands 3:14:36
- 3rd US 3:14:62

- World record: 3:12:46

2004 Athens 4 $\times$ 100m Freestyle

- 3:13:17 = 193,17sec $\rightarrow$ 2,0707m/s
- 3:14:36 = 194,36sec $\rightarrow$ 2,0580m/s
- 3:14:62 = 194,62sec $\rightarrow$ 2,0553m/s

2004 Athens 4 × 100m Freestyle

When SA had finished:

- Netherlands:

  193,17s × 2,0580m/s = 397,55m

  i.e. 2,45m back

- US:

  193,17s × 2,0553m/s = 397,02m

  a further 53cm back

2004 Athens 4 × 100m Freestyle

BUT:

- At the time that the world record time had elapsed
- South Africa:

  192,46s × 2,0707m/s = 398,53m

  i.e. 1,47m back

All answers must be provided correct to two decimal places.

Postage problem

- I recently had to post two journals to the United States.
- The various dimensions of the envelope with the two journals was:
  - Envelope: 231mm $\times$ 329mm $\times$ 8mm
  - Weight: 465 grams

Rates Brochure

valid from April 2005 to March 2006

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Post Office

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Category	Air mail		Surface mail		Maximum size	Maximum thickness	Minimum mass	Maximum mass
	Southern Africa#	Rest of the World	Southern Africa#	Rest of the World				
Aerograms (per item)	2,75	2,75			120 x 235 mm	No enclosures permitted		10 g
Postcards (per item)	3,65	3,65	2,20	2,20	120 x 235 mm	Must not be enveloped		10 g
Small letters (per item)	3.15	4,25	2,75	3,55	120 x 235 mm	5 mm		50 g
Medium letters (per item)	11.80	14.15	9.45	10,70	176 x 250 mm	10 mm		250 g
Large letters (per item)	18.35	24.05	14,95	16.05	250 x 353 mm	30 mm		300 g
Small parcels (per 100 grams)	10.30	18.25	8.05	9.20	Length, width and depth combined not to exceed 900 mm, nor the greatest dimension to exceed 600 mm ••			2 kg
Direct publishers bags (per kg)	39.30	112.35	19.65	23.55	Length + girth not to exceed 2 m, max length not to exceed 1,05 m		5 kg •••	20 kg
Registration fee (per item)	16.85	16.85	16.85	16.85				
Express fee (per item)	19.10	19.10	19.10	19.10				
International reply coupon	14.05	14.05	14.05	14.05				

Note: International letter post products have no insurance option and may only be registered.

* Enquire at your local post office for details of any service suspensions.

\# Angola, Botswana, Burundi, Comoros, Congo (Dem Rep), Congo (Peoples Rep), Gabon, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Réunion, Rwanda, Seychelles, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe

** If in roll form, length plus twice the diameter not to exceed 1 040 mm, nor the greatest dimension to exceed 900 mm.

*** A minimum price for 5 kg applies.

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Medium letters (per item)	11.80	14.15	9.45	10,70	176 x 250 mm	10 mm		250 g
Large letters (per item)	18.35	24.05	14,95	16.05	250 x 353 mm	30 mm		300 g
Small parcels (per 100 grams)	10.30	18.25	8.05	9.20	Length, width and depth combined not to exceed 900 mm, nor the greatest dimension to exceed 600 mm ••			2 kg
Direct publishers bags (per kg)	39.30	112.35	19.65	23.55	Length + girth not to exceed 2 m, max length 5 kg ••• not to exceed 1,05 m			20 kg
Registration fee (per item)	16.85	16.85	16.85	16.85				
Express fee (per item)	19.10	19.10	19.10	19.10				
International reply coupon	14.05	14.05	14.05	14.05				

Note: International letter post products have no insurance option and may only be registered.

* Enquire at your local post office for details of any service suspensions.

\# Angola, Botswana, Burundi, Comoros, Congo (Dem Rep), Congo (Peoples Rep), Gabon, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Réunion, Rwanda, Seychelles, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe

** If in roll form, length plus twice the diameter not to exceed 1 040 mm, nor the greatest dimension to exceed 900 mm.

*** A minimum price for 5 kg applies.

WHATEVER IT TAKES

Post Office

Rates Brochure

valid from A

Letter post rates * (all prices shown in Rand)

Category	Air mail		Surface mail		Maximum size	Maximum thickness	Minimum mass	Maximum mass
	Southern Africa#	Rest of the World	Southern Africa#	Rest of the World				
Aerograms (per item)	2,75	2,75			120 x 235 mm	No enclosures permitted		10 g
Postcards (per item)	3,65	3,65	2,20	2,20	120 x 235 mm	Must not be enveloped		10 g
Small letters (per item)	3.15	4,25	2,75	3,55	120 x 235 mm	5 mm		50 g
Medium letters (per item)	11.80	14.15	9.45	10,70	176 x 250 mm	10 mm		250 g
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Express fee (per item)	19.10	19.10	19.10	19.10				
International reply coupon	14.05	14.05	14.05	14.05				

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** If in roll form, length plus twice the diameter not to exceed 1 040 mm, nor the greatest dimension to exceed 900 mm.

*** A minimum price for 5 kg applies.

WHATEVER IT TAKES

Post Office

5% DEXTROSE Inj. USP / DEXTROSE À 5% Inj. USP
500 mL
EXP - SE

Birth to 1 Year
1 to 2 Years
2 to 3 Years
Growth Monitoring Chart
write birth month and year
write birth month
Watch the direction of the curve showing the child's growth
GOOD
DANGER SIGN
VERY DANGEROUS

NC3
NC3
BED 2
BED 1
PORCH
BATH
LOUNGE
NE1
NC2
KITCHEN
NC4

PLAN
SCALE 1:100

BED 2

BED 2
BED 1
LOUNGE
BATH
KITCHEN

NC3
NC3
BED 2
BED 1
BATH
NE1
NC2
KITCHEN
© PRIMEDIA BROADCASTING

NC3
NC3
BED 2
BED 1
PORCH
LOUNGE
NC4
© PRIMEDIA BROADCASTING

© PRIMEDIA
BROADCASTING

NC3
BED 1
BATH
NE1
NC2
KITCHEN
NC4

NC3
NC3
Bed
Bed
Bed
Dresser
Ch
BED 2
BED 1
PORCH
Wardrobe
Wardrobe
Wardrobe
Wardrobe
BATH
NE1
LOUNGE
NC2
NC4
KITCHEN

Setting out a conference room

Our Conference Rooms

The Birchwood Hotel and Conference Centre has 23 meeting rooms and has become renowned for its expertise in delivering outstanding service be it for a meeting, conference, banquet or social event.

Our dedicated conference co-ordinating team has received extensive training in order to assure you of effective and efficient service throughout the duration of your "out of the office" corporate requirement. This, combined with our flexible approach, will ensure that you continue coming back time and time again.

All our conference and training rooms have been designed and built to meet the highest expectations of today's conference organiser.

All rooms are equipped with the following:

- Individually controlled air conditioning
- Ceiling mounted screens
- Adjustable lighting
- Large windows allowing for natural light
- Lined curtaining for black out purposes
- ISDN facilities by prior arrangement
- Secretarial Services
- Technical equipment with backup support

Birchwood
EXECUTIVE HOTEL & CONFERENCE CENTRE
O R TAMBO INTERNATIONAL AIRPORT

View larger images

View Seating Capacities

The Birchwood Conference Centre is capable of seating anything from 6 – 800 delegates.
Click here to view table that outlines the various conference rooms available with recommended comfortable seating.

View Floor Plans

Equipment and Pricing

All technical equipment, staging, lighting, draping & theme décor is

Holiday Inn Pretoria

Conference Facilities
Conference Room Information
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Maps & Directions

Holiday Inn Pretoria is a modern, contemporary hotel located in the capital city of Pretoria. The Holiday Inn Pretoria also enjoys an excellent reputation for hosting well-run functions and conventions, and offers a variety of packages to suit your needs and requirements, from Day Conference to Accommodation Packages, themed functions and special menus.

Group and Conference facilities at the Holiday Inn Pretoria

ROOM NAME	RECEPTION	THEATRE	CLASSROOM	BANQUET	U-SHAPE	BOARDROOM	DOOR HEIGHT & WIDTH	DIMENSIONS	LOCATION (FLOOR)
Cullinan A and B	600	520	350	-	400	-	2.35mx1.4m	27.5mx18m	g
Culinan A or B	280	240	150	60	150	-	2.35mx1.4m	8mx18m	g
Lynnwood	30	36	26	18	26	22	2.02mx0.88m	8mx18m	g
Hazelwood	20	24	24	14	20	20	1.97mx1.4m	11.5mx18m	g
Brooklyn (executive boardroom)	-	-	-	-	14	14	1.96mx1.33m	24mx14m	g
Terrace	200	-	-	-	100	-	-	8mx14m	g
La Bib	100	40	30	-	80	-	2.21mx1.35m	8mx14m	g

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Minaz Abji Named 2008 Chair Of AH&LEF Fund Development Committee

Minaz Abji, executive vice president of Host Hotels & Resorts, Inc., has been named chair of the American Hotel & Lodging Educational Foundation (AH&LEF) Fund Development Committee, responsible for overseeing the group's primary fundraising vehicle — the Annual Giving Campaign. AH&LEF is the not-for-profit affiliate of the American Hotel & Lodging Association (AH&LA).
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- Choice Hotels Continues Successful Recruiting of Minority and Non-Traditional Franchisees
- Could New Rule Swamp Cruise Industry?
- InterContinental Tampa selected as 2009 Super Bowl host

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Hooking Up: By co-marketing their destinations, second-tier cities are stretching their dollars and their reach in what one CVB exec calls "one big dating game."

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Apr.2.08

Foundation Dinner and Silent Auction

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PCMA Conv. Center Auction ends Jun.30.08

EVENTSLISTING ›

HAWAI'I CONVENTION CENTER

Internet 100%

Classroom-style setup

Step 1: Determine the number of rows that can be accommodated (NOTE: For the tables we are using, the ideal gap between the tables is 90cm)

- Take the clear room length (provided in the table at the start of the activity) and subtract the space between the screen and the front row (the minimum distance should be the height of the room, though more is desirable) and the space between the back wall and back row (minimum of 90cm).
- Divide by the distance allocated to each row measured from the front of the table to the front of the next table.
- Round the resulting number down to the nearest row.

EXAMPLE: 9m (length of room 3) – 2,4m (room height) – 0,9m (distance from back wall = 5,7m (usable room length); 5,7 ÷ 1,35m = 4,22; rounded down = 4 rows

Step 2: Determine the number of chairs that can be placed in each row

- Take the clear room width (provided in the table at the start of the activity) and subtract space for aisles (normally about 15%)
- Divide by the length of the tables being used.
- Round the resulting number down to the nearest number of tables
- Multiply by the number of chairs that can be placed at each table.

EXAMPLE: 4,5m (width of room 3) – 70cm (15% of 4,5) = 3,8m (usable room width); 3,8 ÷ 1,8 = 2,11; rounded down = 2 tables → 6 chairs per row

Step 3: Determine the number of chairs in the room:

- Multiply the number of rows by the number of chairs in each row.

EXAMPLE: 4 rows × 6 chairs per row = 24 chairs.

Room width = 10,5m

- 15% for aisle: 15% $\times$ 10,5m = 1,575m
- Remaining width

  = 10,5m – 1,575m = 8,925m
- Number of tables

  = 8,925m ÷ 1,8m/table = 4,96 tables

  i.e. 4 tables

Room width = 10,5m

- What if we did not round down?
- extra 0,96 of a table $\times$ 1,8m/table
  = 1,728m
- 1,8m – 1,728m ≈ 7cm

i.e. reducing the aisle from

1,575m to 1,505m

How many decimal places?

To be Mathematically Literate

- Means:
  - Being comfortable with ambiguity!

To be a teacher of Mathematical Literacy

- Means:
  - Being comfortable with ambiguity!

- I know:
  - We want to know if it will be examined and how it will be examined
  - We want to know if it’s in the syllabus or not
  - We want to know whether or not students will be admitted to degree programmes or not
  - That we believe that some of the students in our class will never pass

But…

Why teach Mathematical Literacy?

Its about democracy – providing people with the knowledge, skills, attitudes and values that will enable them to participate in and contribute to the world in which they live…

A world that is defined by number

What does it mean to be Mathematically Literate?

It means being able to engage with and make sense of the data and numbers that characterise the various dimensions of our life:

- Self-managing individuals
- Contributing workers
- Critical citizens
- Life-long learners

You are the only hope your students have!

To be a teacher of Mathematical Literacy

- Means:
  - Being comfortable with ambiguity!

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