HILTON COLLEGE

TRIAL EXAMINATION
AUGUST 2008

MATHEMATICAL LITERACY: PAPER 1

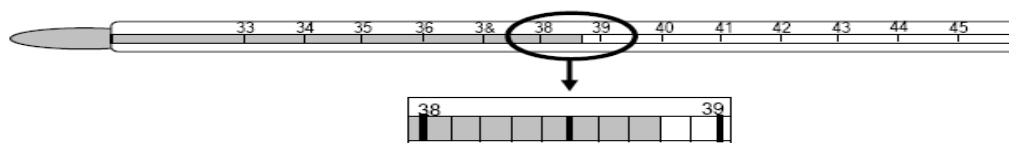Time: 3 Hours   150 marks

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INSTRUCTIONS:

1. This question paper consists of 9 pages. Check that your paper is complete.

2. All questions are to be attempted.

3. All necessary calculations and steps are to be shown.

4. Number the questions correctly according to the numbering system used in this question paper.

5. All final answers are to be rounded off to TWO decimal places.

6. Start each question on a new page.

7. Write neatly and legibly.

QUESTION 1

a) Calculate each of the following:
   (i) $540 - 23,4 \times 10$ (1)
   (ii) $\frac{3}{4}$ of 96 (1)
   (iii) 20% of R1 400 (1)
   (iv) $0,5(5,9 + 1,4) - 1,35$ (1)

b) Express:
   (i) 4 metres in millimetres (1)
   (ii) 5,34 million as a number (1)
   (iii) 500 millilitres in litres (1)

c) A shop sells muffins for R33,96 per dozen. What is the effective cost of one muffin? (2)

d) An economy pack of vitamin pills contains 100 tablets. The recommended dosage is two per day. How many weeks will the pack last? (3)

e) A packer at a local supermarket earns R15 per hour. In one month he works 12 shifts from 16:30 to 19:00 each time. How much will he earn? (2)

f) Chemical weed killer needs to be mixed with water before spraying. The instructions say that 2 parts of weed killer must be mixed with 5 parts of water. How many millilitres must be mixed with 10ml of weed killer? (2)

g) A rugby squad consists of 30 players. 40% of the players catch a stomach bug before a big game. How many players are left to play? (2)

h)

What is the temperature, in degrees Celsius, shown on the thermometer in the diagram? (2)
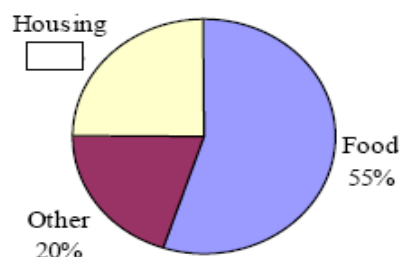
i) Cooking instructions for a Christmas turkey say that it should cook for 20 minutes per 500g, plus 15 minutes extra. How long should a 4kg turkey take to cook? Answer in hours and minutes. (3)

j) The number of pupils in a school has increased from 970 pupils in 2006 to 1150 pupils in 2007. What is the percentage increase in the enrolment at the school? (3)
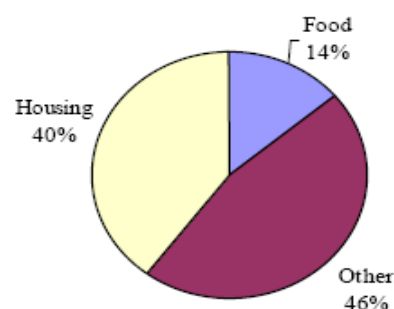
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QUESTION 2

a) A recent survey looked at households in two income groups. The study determined what percentage of monthly income was spent on food, housing and other requirements. The pie charts below represent the findings of the study:

Spending by a household in Group 1
Average monthly income: R3 000 per month

Spending by a household in Group 2
Average monthly income: R20 000 per month

(i) What were the monthly incomes of the groups considered? (2)
(ii) What percentage of Group 1's earnings was spent on housing? (2)
(iii) How much was spent on housing by a household in group 2? (2)
(iv) Which group spent the larger amount of money on food? Justify your answer using calculations. (5)

b) One family, earning R3 000 per month, spends approximately R1 650 per month on food.

(i) The mother of the family goes shopping for food every Saturday. If she is to keep within budget, what is the maximum amount she can spend each week, to the nearest R100? (2)

(ii) She needs to buy the following basic items every week:
   9 litres of milk @ R4,98 per litre
   7 loaves of bread @ R4,70 per loaf
   2kg rice at R3,98 per kg
   What is the total for her basic purchases? (4)

(iii) She considers buying sugar and has four options:
   A. 500g for R5,90
   B. 2,5kg for R12,90
   C. 5kg for R27
   D. 10kg for R50
   Arrange these options in order, from most economical to least economical, giving reasons for your answer. (5)

(iv) Give a financial reason why she might not choose the most economical option. (2)

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QUESTION 3

a) A recent soccer coaching clinic drew 2 600 entrants for the first try out.
  (i) Half of the entrants were disqualified as they were not in the age group 13 – 15 years old. One in five of the remainder made it to the second day of the clinic. How many people were at the second day of the clinic? (3)
  (ii) Each person on the second day was given a 350ml bottle of juice. How many litres of juice was this in total? (2)
  (iii) The juice bottles were packed in crates with 12 bottles in each layer and two layers of bottles. How many crates were needed? (3)
  (iv) Finally, 10 people were chosen to go through for long-term coaching. What percentage of the original number of entrants does this represent? (2)

b) The table below shows the results from the Premier Soccer League for 2006.

	Played	Won	Drawn	Lost	Goals For	Goals Against	Goal Diff.	Points
Mamelodi Sundowns	30	16	9	5	45	19	+26	57
Orlando Pirates	30	A	12	4	39	24	+15	54
Kaizer Chiefs	30	12	14	4	39	26	+13	50
Moroka Swallows	30	12	10	8	39	33	B	46
Silver Stars	30	11	9	10	34	32	+2	42
Golden Arrows	30	9	13	8	32	C	+4	40
Supersport Utd	30	10	10	10	43	41	+2	40
Santos	30	7	17	6	35	32	+3	38
Jomo Cosmos	30	10	8	12	31	32	-1	38
Bloemfontein Celtic	30	9	10	11	35	37	-2	37
Ajax Cape Town	30	8	11	11	D	42	-2	35
Black Leopards	30	9	7	14	31	39	-8	34
Dynamos	30	7	10	13	24	38	-14	31
Tembisa Classic	30	7	9	14	23	37	-14	*
Bush Bucks	30	6	12	12	25	48	-23	30
Free State Stars	30	4	17	9	34	41	-7	29

Last Updated: 13 May 2006 (source www.psl.co.za)

  (i) How many matches did each team play in the season? (1)
  (ii) What is the significance of the + and – symbols in the Goal Diff column? (2)
  (iii) Some of the results have been replaced by the letters A, B, C and D. Determine the values of these letters. (4)
  (iv) The fans of the Free State Stars are disappointed that their team came last, because they lost only 9 games. The top team, Mamelodi Sundowns, lost 5 games. Explain why there is such a huge difference in points for the two teams. (2)
  (v) Calculate the final points for Thembisa Classic if a team earns 3 points for a win, 1 point for a draw and no points for a loss. (3)

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QUESTION 4

The following receipt was issued when pre-paid electricity was purchased.

```
----------City of Cape T o w n - - - - -


RECEIPT     :13473
VAT INVOICD689/06694868131/0
VAT Reg No.;4180101877
Name: Anne Adams
Meter: 06694868131
Date:Fri Jun 29 2007, Time:17:56:00

    ## 470.8 units @ [        ] c/unit


 ELEC  R     143.60       470.8 units

 VAT   R      24.56
 AUJX5 R      31.84

 TOTAL R     200.00

 Tender R   200.00 CASH
 Change R     0.00


 5340 2338 7875
    1689 2064

 **NAME WRONG OR QUERIES**

  CALL.: 0800220440

 P08689: CALEDONIAN KWIKSPAR
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a)   What is the name of the business that sold the electricity?   (1)
b)   The time of the purchase is given as 17:56:00. Write this as a time using am /
     pm notation.   (2)
c)   How much did the client pay for the electricity itself?   (2)
d)   Show by calculation that the VAT (14%) is based on both the electricity and
     the AUJX5 amounts.   (3)
e)   Refer to the line marked ##. The number of units purchased has been shown
     but the cost per unit has been omitted. Determine the cost per unit in cents.
                                                                         (3)
f)   The household that purchased this electricity uses about 35 units per day
     during winter. For how many days would the amount purchased on the slip
     last?   (3)
g)   Determine the total amount that the family can expect to pay for electricity for
     the month of August, including VAT and AUJX5 charge.   (6)

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QUESTION 5

The table below is an extract from a letter from Sanlam to Mr Moloke. It shows the amounts that are available on instant loan from Sanlam and the repayment involved.

Dear Mr Moloke, As a valued Sanlam customer, we are pleased to be able to offer you a personal loan at the following rates.				
Loan Amount	**24 months**	**36 months**	**48 months**	**60 months**
R4 000	R229	R174	R147	R131
R8 000	R448	R338	R285	R253
R16 000	R864	R643	R534	R470
R25 000	R1 344	R1 000	R830	R730
FIXED REPAYMENTS!!!!!!				
These loan repayments conveniently **include** a monthly premium of R3,95 per R1000 of the loan and a monthly administration fee of R9,50 for your optional personal protection plan.				

a) If Mr Moloke chooses to borrow R16 000 from Sanlam, calculate how much he will finally repay if he takes the loan over:
   (i)   24 months   (2)
   (ii) 60 months   (2)
   (iii) Would you advise him to borrow over a longer or a shorter period of time? Give a reason for your answer.   (2)

b) If he chooses the 60 month option. Calculate the interest that he will pay over the period.   (3)

c) The loan repayments include insurance premium and administrations fees. If Mr Moloke borrows R16 000, how much of each month's payment is the premium and how much is the administration fee?   (4)

d) Mr Moloke has two other options for borrowing the money.
   (i)   An uncle has offered to lend him the R16 000 for five years at 18% per annum, simple interest. What would the total cost for this option be at the end of the 5 years?   (4)
   (ii) The Standard Bank will lend him the R16 000 for five years at 16% per annum compounded interest. Determine the cost of this option.   (5)

e) Hence recommend to Mr Moloke which of the three options would be best.   (1)

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QUESTION 6

Tuberculosis (TB) is a lung disease which is found all over the world. The table below is an extract from the World Health Organisation (WHO) report of 2004.

World Health Organisation Statistics 2004 Estimated incidences of Tuberculosis Infection worldwide		
Region	**Numbers measured in thousands**	**Per 100 000 of the population**
Africa	2573	356
The Americas	363	41
Eastern Mediterranean	645	122
Europe	445	50
South-East Asia	2967	182
Western Pacific	1925	111
Global	**8918**	**140**

a) How many people were estimated to have TB in Europe in 2004? (1)

b) Which region had the highest number of cases in total? (2)

c) What is the range of infection incidence per 100 000 of the population? (2)

d) Which region had the highest proportion of its people infected with TB? Explain how you know this from the table. (2)

e) Complete the sentence: 1 in every _____ people were infected with TB in 2004. Show your working. (3)

f) The infection rate in the Americas was 41 per 100 000. How many cases would you estimate for a single South American country which had a population of 2 250 000 people? (3)

g) If there was a global reduction of 10% in the number of cases of TB by the end of 2005, how many cases would there have been that year? (3)

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QUESTION 7

A family of four (father, mother and two children) are planning a trip from Cape Town to Plettenberg Bay. The questions that follow refer to their calculations around this trip and to a one way journey only.

They are using the map and scale below to estimate distances for their journey.

a)   Estimate, in kilometres, how far they will have to drive if they travel on the N2.   (2)

b)   They expect to travel at an average speed of 90km/h. It is important to stop driving approximately every 2 hours to avoid driver fatigue. How often and where should they plan to break their journey?   (3)

c)   If they leave at 08:00, are able to maintain their average speed and take 45 minutes at their stop(s), at what time could they expect to arrive in Plettenberg Bay?   (5)

d) The family decide to investigate the option of hiring a car for the holiday and find the following offer for a Toyota Corolla on the internet.

Manual 1.4 or 1.6, Radio Tape, Aircon, Power Steering, Airbags

- 4 adults, 1 children
- Luggage: 2 large 3 small
- 60L fuel tank (650km range)

Mileage & Insurance Options (select an option below to book)	Car Rental Rate (per day)				
	1-6	7-13	14-30	31+	Excess
STANDARD: Unlmtd kms + Std Insurance	252	252	245	233	4500
SUPER: Unlmtd kms + Super Insurance	297	297	289	275	0
MAX: SUPER + tank of fuel, extra driver, young driver, extra damage cover	-	407	367	349	0

(source:www.drivesouthafrica.co.za)

(i) In the MAX package a free tank of fuel is included.
If petrol costs R10, 54, what is the value of this tank of petrol? (2)

(ii) How far, on average, does the Toyota Corolla travel on one litre of petrol? (3)

(iii) The family wants to hire the car for 8 days. Determine the cost of the MAX and STANDARD packages for hiring this vehicle. (3)

(iv) Give at least two reasons why the family might choose the more expensive option. (2)

[20]