Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2010

MATHEMATICAL LITERACY – PAPER 1

MARKS: 150

TIME: 3 hours

MLITE1

This question paper consists of 17 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of **SEVEN** questions. Answer **ALL** the questions.

2. **QUESTIONS 3.4** and **4.2.2** must be answered on the attached **ANSWER SHEETS.** Write your name in the space provided on the answer sheets and hand them in with your **ANSWER BOOK.**

3. Number the answers correctly according to the numbering system used in this question paper.

4. An approved calculator (non-programmable and non-graphical), may be used, unless stated otherwise.

5. **ALL** the workings/calculations must be shown, even when using a calculator.

6. **ALL** the final answers must be rounded off to **TWO** decimal places, unless stated otherwise.

7. Where applicable, units of measurement must be shown.

8. Start **EACH** question on a **NEW** page.

9. Write neatly and legibly.

QUESTION 1

1.1 Calculate the following: (Show all calculations)

1.1.1 $(18)^2 + \frac{1}{2}(500 - 92)$ (3)

1.1.2 $3^3 + \sqrt{121}$ (3)

1.2 Simplify the ratio of 12 : 60. (1)

1.3 Write 0,05 as a common fraction in its simplest form. (2)

1.4 Convert 2 500 mℓ to litres [1 000 mℓ = 1 ℓ]. (2)

1.5 Write $\frac{429}{110}$ as a decimal fraction. (1)

1.6 Determine 11% of R4 621. (2)

1.7 Sasha wants to buy a bottle of sauce from her local supermarket. In order to compare the prices for the 300 mℓ and the 500 mℓ bottles, she works out the cost each time for 100 mℓ.

1.7.1 Calculate the cost of 100 mℓ of sauce if a 300 mℓ bottle of sauce cost R10,53. (2)

1.7.2 Calculate the cost of 100 mℓ of sauce if a 500 mℓ bottle of sauce costs R22. (2)

1.8 A clothing store paid R110 for a shirt and made a profit of R22 when they sold it. Calculate the percentage profit that the clothing store made on the sale of the shirt. Use the formula:

$$\textbf{Percentage Profit} = \frac{\textbf{Profit}}{\textbf{Cost Price}} \textbf{ x 100\%}$$ (2)

1.9 Convert 120 ° F to degrees Celsius (°C).

Use the formula: **Temperature in ° C = $\frac{5}{9}$ × (Temperature in ° F - 32°)** (3)

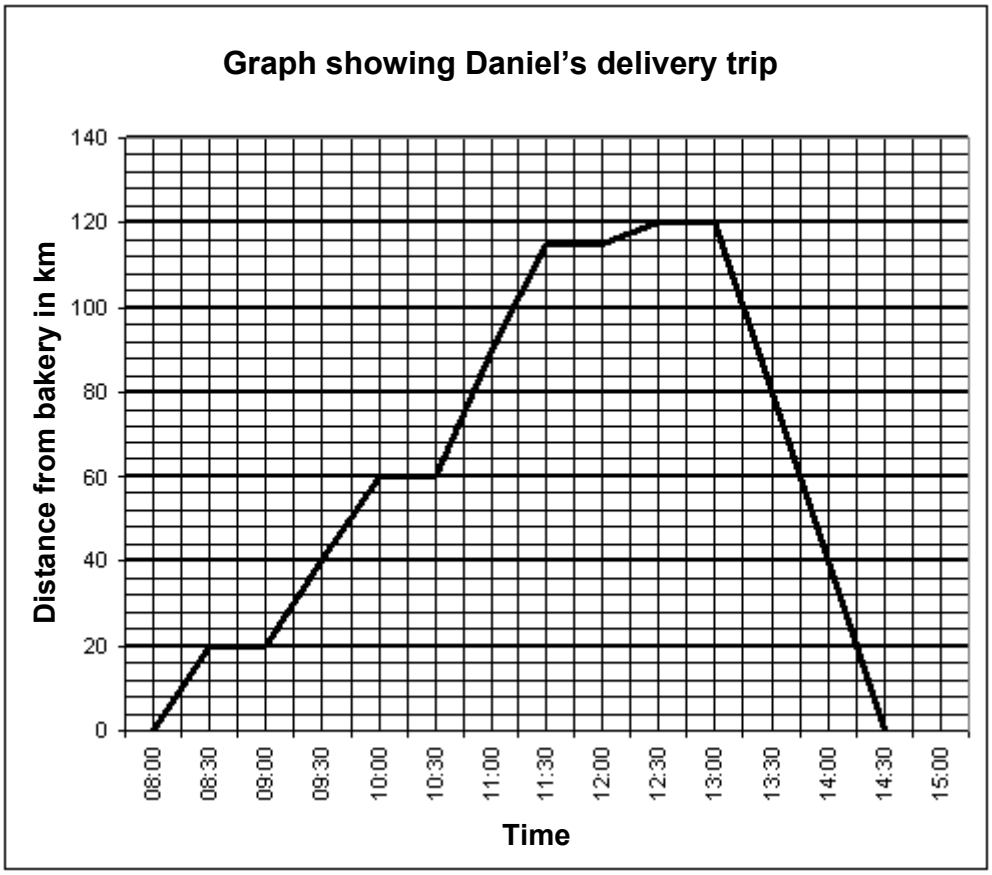
1.10 Henry travelled 231 km in 3 hours. Find his average speed using the formula:

$$\textbf{Average Speed} = \frac{\textbf{Distance}}{\textbf{Time}}$$ (3)

[26]

QUESTION 2

2.1 Daniel delivers bread to customers for Masakane Bakery. The graph below shows the distance he travels and the number of deliveries he makes during the course of one day. He only stops when he makes deliveries.



2.1.1 How many deliveries did Daniel make? (2)

2.1.2 How far did Daniel have to travel to get to his first customer? (2)

2.1.3 After how many kilometres did Daniel arrive at his last customer? (2)

2.1.4 At what time did Daniel arrive at his last customer? (2)

2.1.5 At what time did Daniel start his return journey? (2)

2.1.6 Calculate his average speed in km/h on the return journey if Daniel travelled a distance of 120 km in 1,5 hours.

Use the formula: $\textbf{Average speed} = \dfrac{\textbf{Distance}}{\textbf{Time}}$ (3)

2.1.7 Daniel made 4 stops of 0,5 hours each. How much time was spent, in total, on all his stops? (2)

2.2 Masakane Bakery has a recipe for making 2 loaves of fruit bread.

Recipe for 2 loaves of fruit bread:

1 kg	flour
2 teaspoons	salt
½ litre	water
15 g	yeast
300 g	dried fruit mix

2.2.1 Masakane Bakery wants to make 50 loaves of fruit bread. How many grams (g) of dried fruit mix would they need? (2)

2.2.2 Daniel's grandmother's scale is marked in pounds and ounces. Convert 25 kg of flour to pounds, where **1 kg = 2,2046 pounds**. (3)

2.2.3 If Daniel's grandmother uses 3,3 gallons of water, how many litres of water will it amount to, if **1 litre = 0,22 gallons**. (3)

[23]

QUESTION 3

FOR SALE

CLUSTER HOUSE WITH 2 BEDROOMS;
ONE BATHROOM;
SPACIOUS KITCHEN WITH BUILT-IN CUPBOARDS;
LIVINGROOM; DININGROOM.
SINGLE LOCK-UP GARAGE.

SELLING PRICE: R390 000

CONTACT BOHLE ON: 085 246 753

John and Sara are looking for a house to buy. They saw the above advert in their local newspaper and made an appointment with Bohle to view the property. They immediately fell in love with the house and decided to buy it. They decide that it will be a good idea to first do some calculations, so as to see if they can afford to buy the house.

Table 1: Transfer Fees and Bond Fees for purchasing a home

Price of property (rand)	Table A Transfer Fees					Table B Bond Fees			
	Transfer Tax	Admin Costs	Transfer Costs	VAT (14%)		Stamp Duty	Admin Costs	Bond Costs	VAT (14%)
100 000	Nil	200	3 000	420		200	200	1 800	252
145 000	250	200	3 100	434		280	200	2 000	280
190 000	2 500	260	3 500	490		370	260	2 200	308
235 000	4 500	260	3 800	532		460	260	2 400	336
280 000	7 000	260	4 400	616		560	260	2 700	378
330 000	9 800	340	4 700	658		660	340	3 000	420
390 000	14 600	340	5 100	714		780	340	3 400	476
410 000	16 200	340	5 500	770		820	340	3 700	518

Source: ABSA, 2005

NOTE:

- **Transfer Fees** are the costs paid by the new owner of the property to have the property transferred into his name. It must be paid to the lawyers handling the transfer.
- **Bond Fees** are the costs for registering the bond that are charged by the bank that lends the new owner money(the bond).

3.1 Use **Table 1** to answer the following questions.

Calculate the total amount that John and Sara will have to pay on a bond of R390 000 for:

3.1.1 Transfer Fees. Use the formula:

Transfer Fees = Transfer Tax + Admin Costs + Transfer Costs + VAT (3)

3.1.2 Bond Fees. Use the formula:

Bond fees = Stamp Duty + Admin Costs + Bond Costs + VAT (3)

3.2 On a bond of R390 000 the total fees payable for transfer fees and bond fees is R25 750. What percentage of the final cost of the house goes to fees?

Use the formula:

$$\textbf{Percentage of final cost} = \frac{\textbf{Total fees}}{\textbf{Value of bond} + \textbf{Total fees}} \textbf{ x 100\%}$$ (3)

3.3 Before giving a house buyer a bond, the bank evaluates the property in order to see how much it is worth. Suppose the bank charges 0,2% on the R390 000 cost price to value John and Sara's new house, how much will John and Sara have to pay to have the property evaluated? (2)

3.4 John and Sara want to pave the driveway of their new house. The table below shows the number of bricks laid by the contractors for different periods of time.

Table 2: Relationship between number of hours worked and the number of bricks laid.

Number of hours worked	1	2	3	4	5	6
Number of bricks laid	30	60	90	120	150	180

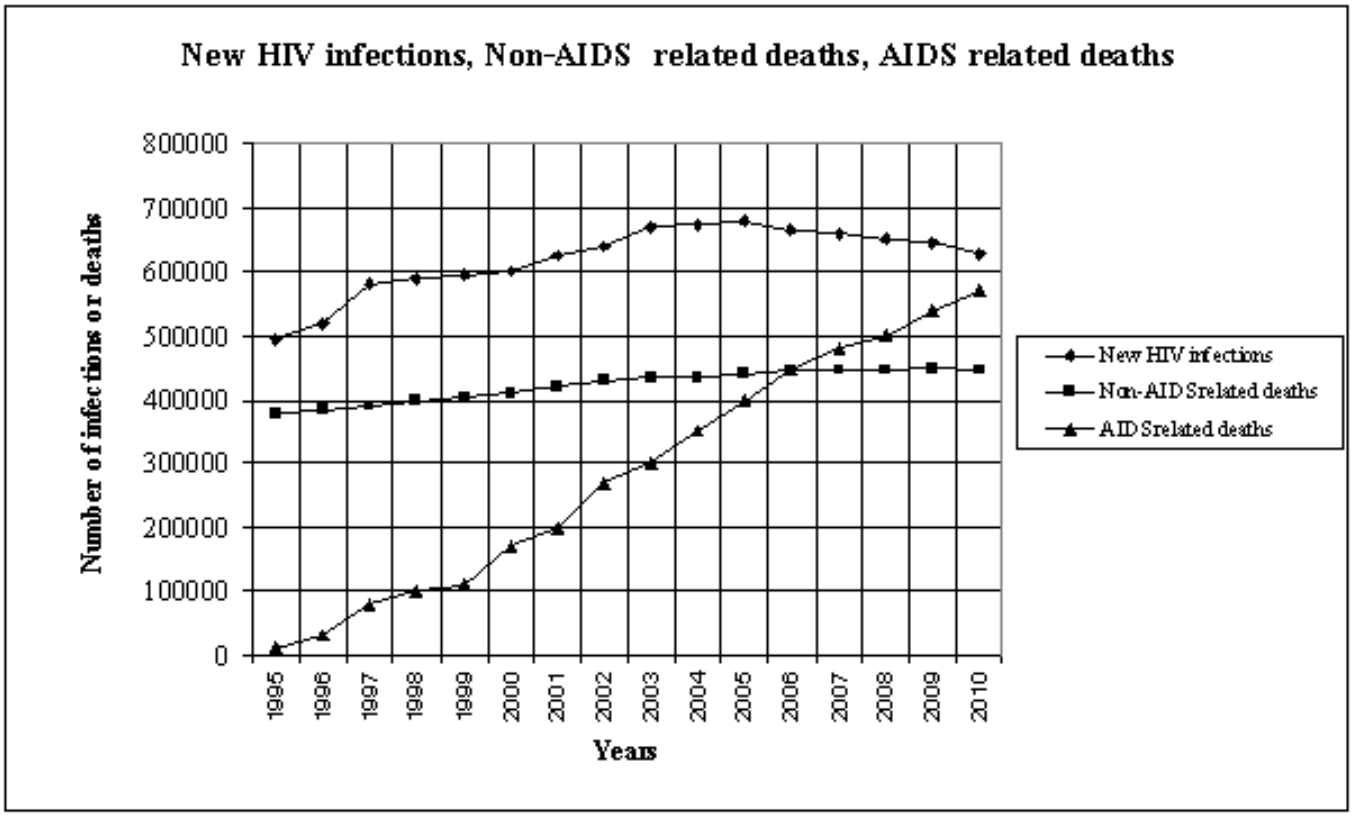
Use the information in **Table 2** to draw a graph on **ANSWER SHEET A** showing the relationship between the number of hours worked and the number of bricks laid. (5)

[16]

QUESTION 4

4.1

The following graph shows the number of new HIV infections, the number of Non-AIDS related deaths and the number of AIDS related deaths per year in South Africa up to 2009 and the number predicted for 2010.



Source: Alan Whiteside and Clem Sunter, *AIDS: The challenge for South Africa*, Human & Rousseau, Tafelberg, 2000.

4.1.1 What were the number of AIDS related deaths

(a) in 2005? (2)

(b) in 2008? (2)

4.1.2 During 1998, 100 000 AIDS related deaths were recorded and during 2003, 300 000 AIDS related deaths were recorded. Calculate the increase in the number of AIDS related deaths from 1998 to 2003. (2)

4.1.3 After which year were the number of AIDS related deaths more than the non-AIDS related deaths? (2)

4.2 The table below shows the number of deaths due to different causes in South Africa over three years:

Table 3: Number of deaths in South Africa due to Tuberculosis, Pneumonia and other AIDS related illnesses:

Reported cause of death	1997	1999	2001	Total
Tuberculosis	25 000	40 000	57 000	**122 000**
Pneumonia	20 000	39 000	55 000	**114 000**
Other AIDS related illnesses	6 000	10 000	9 000	**25 000**
Total	**51 000**	**89 000**	**121 000**	**261 000**

Reference: Alan Whiteside and Clem Sunter, *AIDS: The challenge for South Africa*, Human & Rousseau, Tafelberg, 2000

4.2.1 Use **Table 3** to answer the following:

(a) During which year did the most deaths occur? (2)

(b) Which disease caused the most deaths over the 3 years? (2)

4.2.2 Use **ANSWER SHEET B** to draw a graph representing the data in **Table 3**. (6)

4.2.3 The number of deaths due to Pneumonia from 1997 to 2002 was 20 000; 27 000; 39 000; 46 000; 55 000; 68 000.

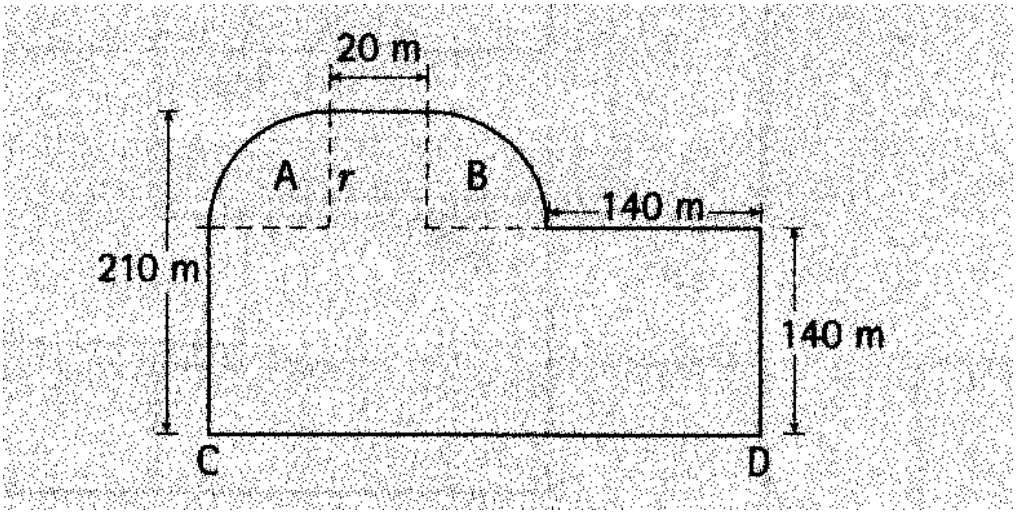
(a) Determine the median number of deaths due to pneumonia. (3)

(b) Determine the mean number of deaths due to pneumonia. (3)

[24]

QUESTION 5

Dillion walks his dog three times around the park every evening. The plan of the park is shown below:



5.1 **A** and **B** on the plan are quarter-circles. Together they form a semicircle. Determine the radius (**r**) of the semicircle formed. (3)

5.2 If the two quarter-circles A and B are put together, a semicircle with a diameter equal to 140 m is formed. Use the other measurements on the plan to calculate the length (CD) of the park. (2)

5.3 If the diameter of the semicircle is equal to 140 m, determine the perimeter of the semicircle.

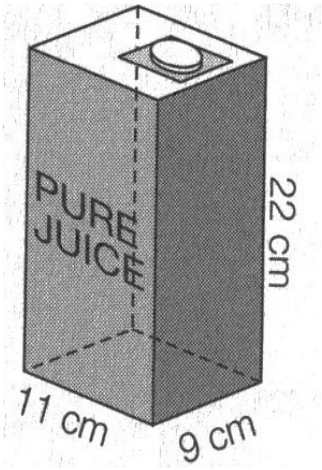
Use the formula: **Perimeter of semicircle = π × radius,** where π = 3,14 (3)

5.4 Dillion walks his dog three times around the park every evening. If the perimeter of the park is equal to 960 m, how far does he walk every evening? (2)

5.5 If Dillion takes $1\frac{1}{4}$ hours to walk 2,879 km, calculate the average speed at which he walks in km/h. (Give your answer correct to 1 decimal place).

Use the formula: $\textbf{Average speed} = \dfrac{\textbf{Distance walked (in km)}}{\textbf{Time taken (in h)}}$ (5)

5.6 Dillion enjoys drinking a Pure Juice after his walk in the park. He buys the Pure Juice in a carton with a rectangular prism shape, as shown in the drawing below.



Use the measurements in the sketch above to calculate the volume of the Pure Juice which Dillion drinks. Use the formula:

Volume = Length × Breadth × Height (3)

[18]

QUESTION 6

6.1 The municipality of Polokwane planned to build 44 new houses. They budgeted an amount of R8 million (R8 000 000) to pay for building some two-bedroom and some three-bedroom houses.

According to the costing clerk working for the municipality, the two-bedroom houses cost R160 000 each to build and the three-bedroom houses cost R240 000 each to build.

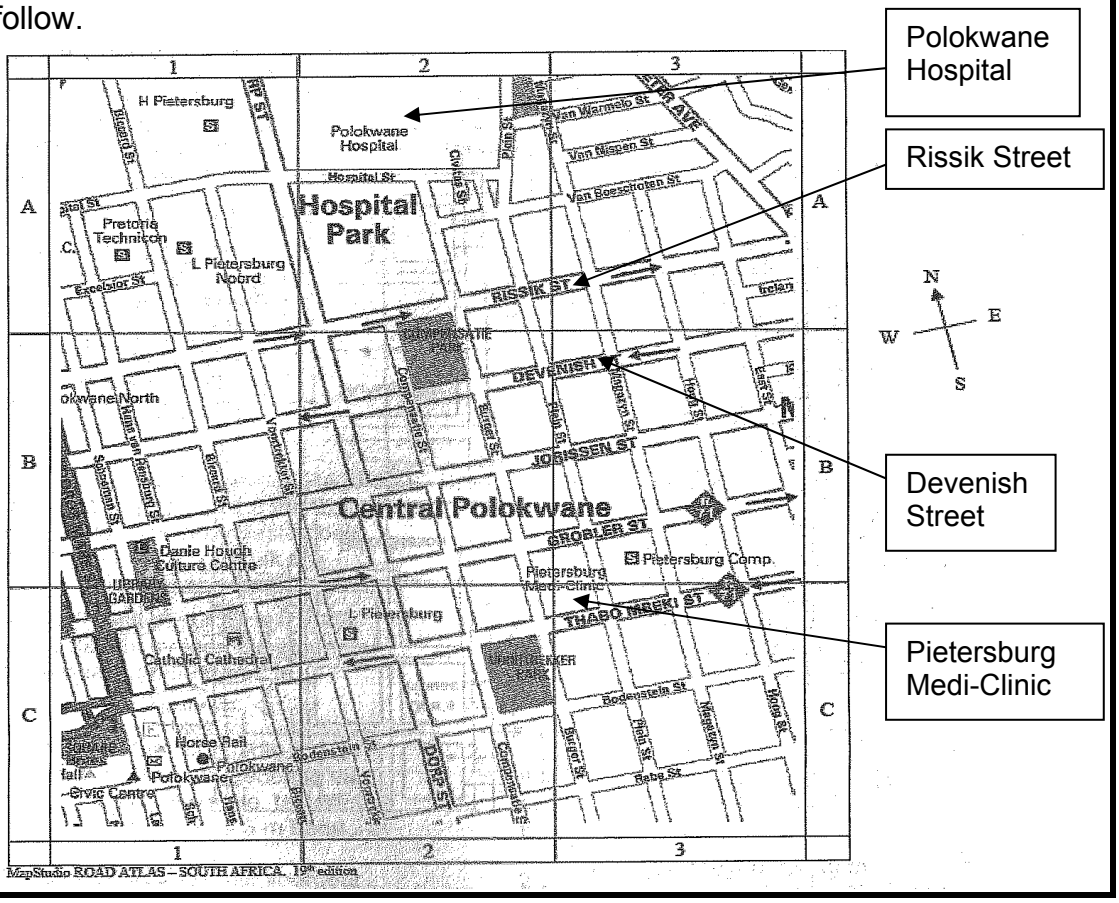
6.1.1 How many two-bedroom houses can the municipality build for R8 000 000? (2)

6.1.2 How many three-bedroom houses can the municipality build completely for R8 000 000? (3)

6.1.3 Determine the cost of building 22 two-bedroom houses and 18 three-bedroom houses. (4)

6.1.4 The municipality spent R6 480 000 on building three-bedroom houses. How many houses did they build? (2)

6.2 During the Soccer World Cup, Carlos Batista was the Colombian soccer team's medical doctor. During Colombia's match in Polokwane, Carlos needed to spend time at the Polokwane Hospital and the Pietersburg Medi-Clinic. Use the map of Polokwane, below, to answer the questions that follow.



6.2.1 What is the grid reference for the Polokwane Hospital? (2)

6.2.2 Rissik Street is a one-way street going from west to east. What other street shown on the map is a one-way street going from west to east? (2)

6.2.3 Use the map and the directions key on the map to answer the following

(a) In which direction will Carlos travel on Devenish Street? (2)

(b) In which direction is the Polokwane Hospital situated from the Pietersburg Medi-Clinic? (2)

6.2.4 The distance on the map between the Polokwane Hospital and the Pietersburg Medi-Clinic is 55 mm. The scale is 1 : 22 500 mm. Use the scale to calculate the actual distance in kilometers.
[1 km = 1 000 000 mm] (4)

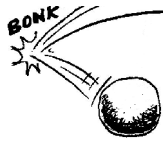
6.2.5 Carlos gets an allowance of 200 000 Colombian pesos per day. If the exchange rate for the South African rand against the Colombian peso is **1 SA rand = 385,99 Colombian pesos,** determine how much Carlos will receive per day in South African rand. (2)

[25]

QUESTION 7

7.1 Andy owns a sport shop. With the Soccer World Cup in mind he decided to run a promotion to try and attract more customers to his shop.

MARCH SPECIAL



A free high-bounce soccer ball to every child under 10.

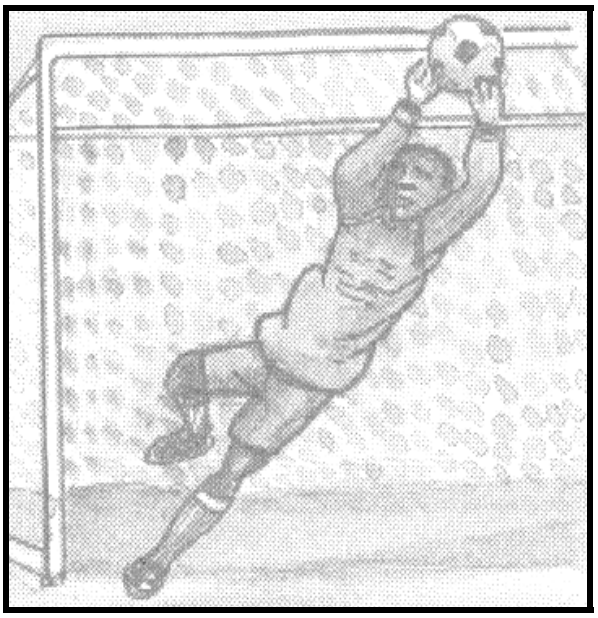
The high-bounce balls come marked with the names of five participating countries: South Africa (Bafana-Bafana), England, Germany, Italy and Brazil. If a child chooses a Bafana-Bafana or an England ball, the parent will receive a free soccer cap.

7.1.1 For each ball given away, what was the probability that the parent received a soccer cap? (2)

7.1.2 After four days of the promotion, 365 Bafana-Bafana and England caps were given away, of which 85 were England caps.

(a) What fraction of the 365 caps were England caps? Give the answer in the simplest form. (2)

(b) How many Bafana-Bafana caps were given away? (1)



7.2 Andy used young sales people to demonstrate a new computer game at four different positions in the shop. 200 pamphlets were distributed. The table below shows how many shoppers just took a pamphlet about the game, and how many actually watched the demonstration of the game. Andy is wondering if the positioning of the salespeople in the shop affected the probability of a shopper taking the time to watch the demonstration.

Table 4: Data on pamphlets took and demonstration watched

	Took pamphlet only	Watched demonstration	Total
Shop entrance	43	**B**	**55**
Next to till	31	4	**35**
At games section	28	25	**53**
At soccer section	25	32	**57**
Total	**A**	**73**	**200**

7.2.1 Use the information in **Table 4** to determine the missing numbers:

(a) A (1)

(b) B (2)

7.2.2 The probability of any shopper watching the demonstration is $\frac{73}{200}$.
Write this probability as a percentage. (2)

7.2.3 The probability of a shopper watching the demonstration at the shop entrance is 0,22. Write this decimal fraction as a common fraction in its simplest form. (2)

7.3 Andy decided to sell vuvuzelas. He buys one dozen vuvuzelas for R72. He decides to sell the vuvuzelas at R15 each.

Calculate:

7.3.1 The cost price of ONE vuvuzela (2)

7.3.2 The profit he made per dozen of vuvuzelas sold (2)

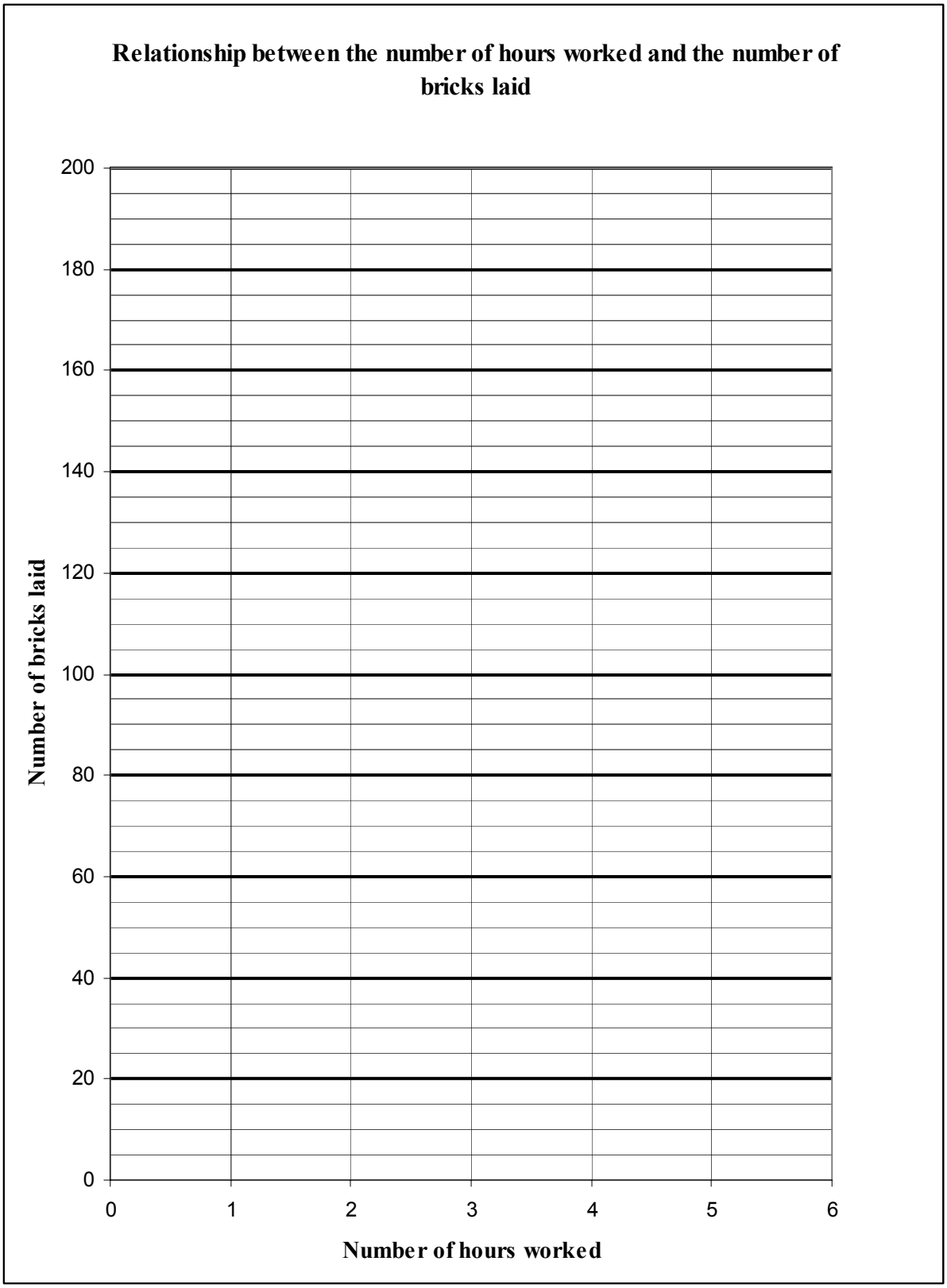
7.3.3 How much it cost Andy to buy 1 440 vuvuzelas (2)
[18]

TOTAL: 150

ANSWER SHEET A:

QUESTION 3.4

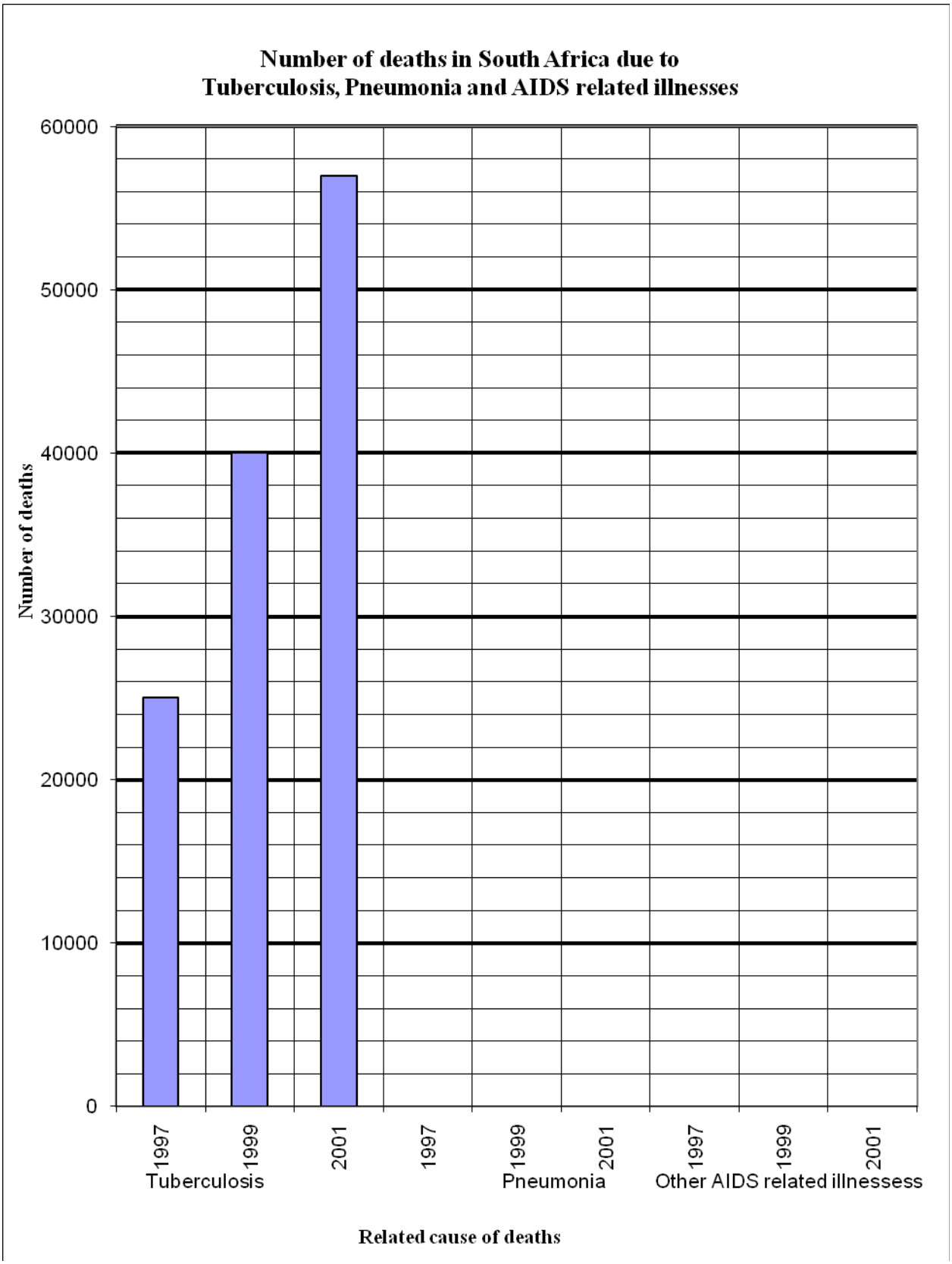
NAME: _____



ANSWER SHEET B:

QUESTION 4.2.2

NAME: _____



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