



MATHEMATICAL LITERACY: PAPER I

Time: 3 hours

150 marks

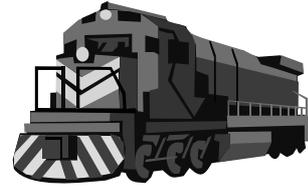
PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of 11 pages and an Answer Booklet of 4 pages (i – iv). Please make sure that your question paper is complete. Please remove the Answer Booklet from the middle of your paper.
 2. This question paper consists of FIVE questions. Answer ALL the questions.
 3. Questions 3.1, 3.2, 3.4, 3.5 and 5.4 must be answered in the Answer Booklet. Write your examination number in the space provided and hand it in with your Answer Book.
 4. Number the answers correctly according to the numbering system used in this question paper.
 5. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
 6. ALL the calculations must be clearly shown.
 7. ALL the final answers must be rounded off to TWO decimal places, unless stated otherwise.
 8. Units of measurement must be indicated where applicable.
 9. Write neatly and legibly.
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QUESTION 1

1.1 Determine $12\frac{1}{2}\%$ of R364. (2)

1.2 A train travels at an average speed of 90 km per hour.



Calculate the average speed of the train in metres per second. (2)

1.3 A bag of mealies, that has a mass of 480 kg, costs R3 600. Calculate the price of a bag of mealies that has a mass of 200 kg. (3)

1.4 The population of a town increases from 213 500 to 245 670. Calculate the percentage increase in the population of the town. (3)

1.5 An insurance broker's commission is calculated as follows:

5%	On the first R5 000
2,5%	On the next R15 000
1%	On the amount over R20 000

How much commission would be earned on R20 000? (4)

1.6 Convert 318 kg to pounds, rounded off to the nearest pound.
(1 kilogram = 2,204 pounds) (2)

1.7 Calculate the amount of money Sikhu will have in his bank account if he invests R10 000 for 10 years, with the interest compounded yearly at a rate of 6% per annum. (3)

$$A = P(1 + i)^n$$

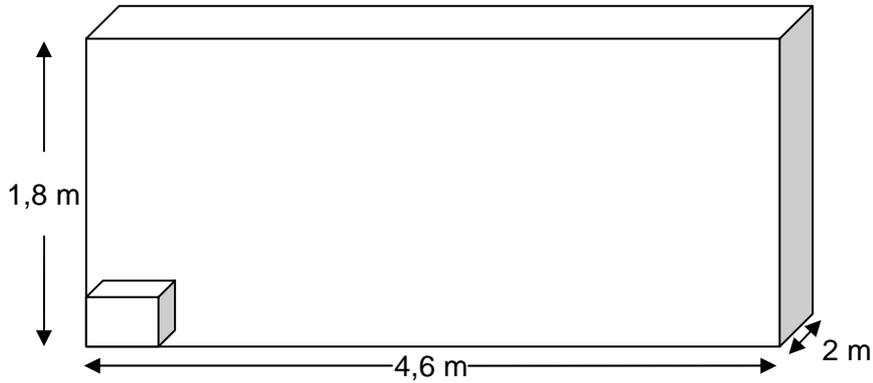
A = Total amount of money at the end of the investment period

P = Initial amount of money invested

i = Interest rate per annum

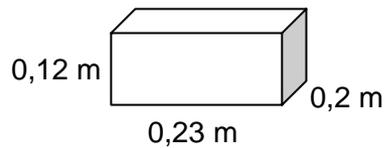
n = Number of years

- 1.8 How many boxes should a shopkeeper order from *Build-a-Box* to build a display with the following dimensions?



The boxes that will be ordered have the following dimensions:

$$\text{Volume} = \text{Length} \times \text{Breadth} \times \text{Height}$$



(5)

- 1.9 The letters of the word LITERACY are written on individual cards and the cards are placed in a bag. One card at a time is taken from the bag and not replaced.

1.9.1 Determine the probability that the first card selected is the letter 'T'. (2)

1.9.2 A second card is selected from the bag. Determine the probability that the second card selected is the letter 'L'. (2)

- 1.10 A map uses the scale of 1 : 100 000.

The distance between two shops is 600 m. Calculate the distance, in centimetres, between the two shops on the map.

(3)

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QUESTION 2

2.1 A group of six year olds at local primary schools in Gauteng was asked whether or not they could swim.

The results were recorded in the following table:

	Can swim	Cannot swim
Boys 	350	778
Girls 	228	432

- 2.1.1 How many children in total were questioned? (2)
- 2.1.2 Calculate the percentage of boys who can swim. (4)
- 2.1.3 Calculate percentage of children who cannot swim. (4)
- 2.1.4 Express the ratio of the number of girls who can swim to the number of girls who cannot swim, in its simplest form. (2)
- 2.1.5 One child was selected at random from the group of six year olds. Determine the probability that the child selected can swim. (2)

2.2 Yumna wants to purchase a DVD player which normally sells for R900.

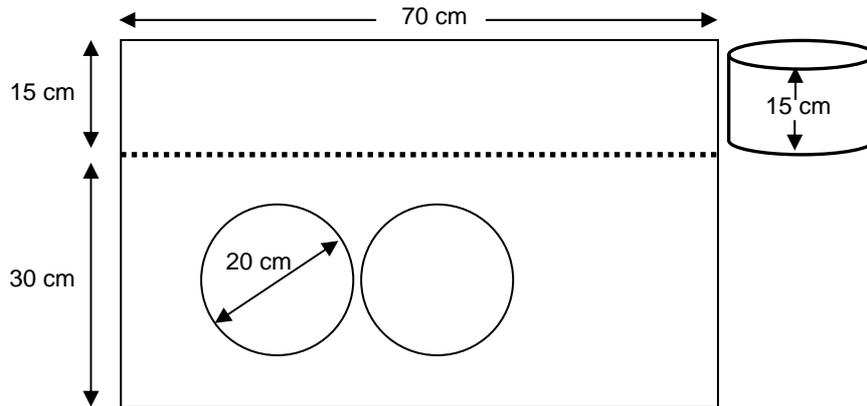
Game Audio is selling the DVD player with a 25% discount on the normal selling price.

Hi-Select Audio is selling the DVD player for $\frac{2}{9}$ of the normal selling price.

Calculate:

- 2.2.1 The discounted price of the DVD player at *Game Audio*. (3)
- 2.2.2 The discounted price of the DVD player at *Hi-Select Audio*. (3)
- 2.2.3 The price difference between the DVD player at *Game Audio* and the DVD player at *Hi-Select Audio*. (2)

2.3 A circular base, circular lid and the side of a right cylinder are cut from a rectangular piece of metal 70 cm by 45 cm as shown below:



The following formulas may be useful:

Area of circle = πr^2

Volume of cylinder = $\pi r^2 \times \text{height}$

Area of rectangle = length \times breadth

Circumference of circle = $2\pi \times r$

Using $\pi = 3,14$

Total surface area of cylinder

= $2 \times \pi r^2 + 2\pi r \times \text{height}$

2.3.1 From the piece of metal, a strip of width 15 cm must be cut to fit around the base which has a diameter of 20 cm, with no overlap.

Calculate the area of the strip, rounded off to two decimal places. (4)

2.3.2 Calculate the total surface area of the cylinder. (4)

2.3.3 Calculate the volume of the cylinder in litres.

1 litre = 1 000cm³ (4)

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QUESTION 3

Katlego and Zama are members of their school's charity club. They are hosting a charity event to raise money for victims of earthquakes throughout the world. They want the event to cost as little as possible so that they will have more money to donate to charity.

Zama has received quotes for hiring two different venues.

Venue 1 – Saints Inn	Venue 2 – Pine Lodge Country Club
Special rate of R17 per person. A minimum of 25 people must attend.	Fixed charge of R500 for the first 25 guests, then R12 per person for each guest thereafter.

Katlego has sent out invitations to 125 people to attend the charity event.

- 3.1 Complete Table 1 **on your Answer Booklet** for the cost to hire Venue 1. (6)
- 3.2 Complete Table 2 **on your Answer Booklet** for the cost to hire Venue 2. (8)
- 3.3 Write a formula to determine the cost of hiring Venue 2 for the charity event. (3)
- 3.4 Use the completed tables in Question 3.1 and Question 3.2 to draw two line graphs on the set of axes provided on your Answer Booklet, to show the cost of hiring Venue 1 and Venue 2. (9)
- 3.5 Using the letter A, show on your graph at which point the cost of hiring Venue 1 will be the same as hiring Venue 2. (Use the Answer Booklet for this question.) (2)
- 3.6 Zama decides to hire Venue 2 for the charity event. They sell the tickets at R120 per person. If they sell all the tickets for the charity event, calculate the profit from the ticket sales. (3)

3.7 Zama has received the account for the printing of the invitations.

The following method was used to calculate the cost per invitation:

- First 10 words 70 cents per word
- Additional words 65 cents per word
- Numbers 25 cents per digit
- Special characters 5c per character*
- Border Add R5

You are kindly invited
to attend
a charity drive for
earthquake victims

Time: 19:00

Date: 20 November 2010

Venue: Pine Lodge Country Club

Reply to: Zama 082 555 0505

* Example of a special character in the advertisement is the colon (:).

3.7.1 How many:

- (a) words are there in the invitation? (1)
- (b) special characters are there in the invitation? (1)
- (c) digits are there in the invitation? (1)

3.7.2 Calculate the cost of printing one invitation. (4)

3.7.3 Calculate the total cost of printing all the invitations. (2)

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QUESTION 4

Schools' Hostels to Become Motels

by Jevanne Gibbs

An innovative accommodation solution has been found for backpackers and budget tourists during the World Cup – turning schools' hostels into motels.

Backpackers coming to Johannesburg during the World Cup will have an added variety of lodgings from which to choose, as schools' hostels all over the city will be converted into 'motels'.

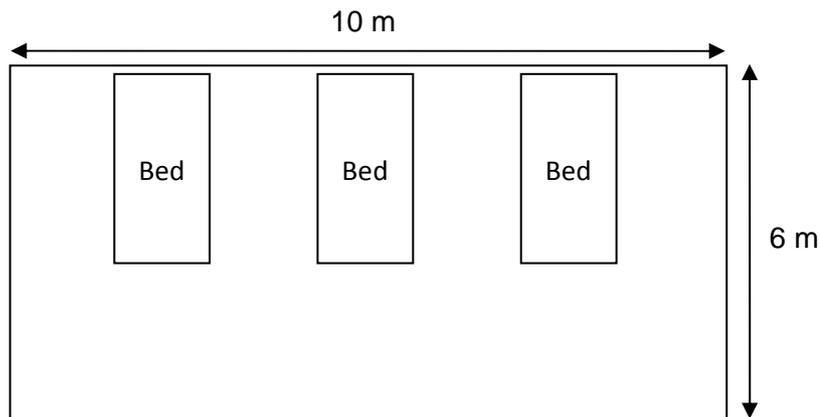


The hostels will be decorated to provide a homely atmosphere.

Facilities that will be available will include television, 24-hour bar; entertainment; Internet access; flea markets selling arts and crafts and other facilities.

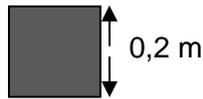
[Adapted from: <www.joburg.org.za>]

Gugu and Bergen, educators at one of these schools, drew a floor plan of a typical room in their hostel that they would be converting for the Soccer World Cup.



$$\text{Area of rectangle} = \text{length} \times \text{breadth}$$

- 4.1 Calculate the floor area of the empty room. (2)
- 4.2 The total inside wall area of the room measures $85,7 \text{ m}^2$ and the paint needed to paint the room is supplied in 5 litre tins that cost R129,99 per tin. Each 5 litre tin covers 50 m^2 . How many tins of paint will be needed to paint the inside walls of the room with one coat? Show all your working or explain how you obtained your answer. (4)
- 4.3 Gugu wants to tile the floor with square tiles, with one side 0,2 m long.



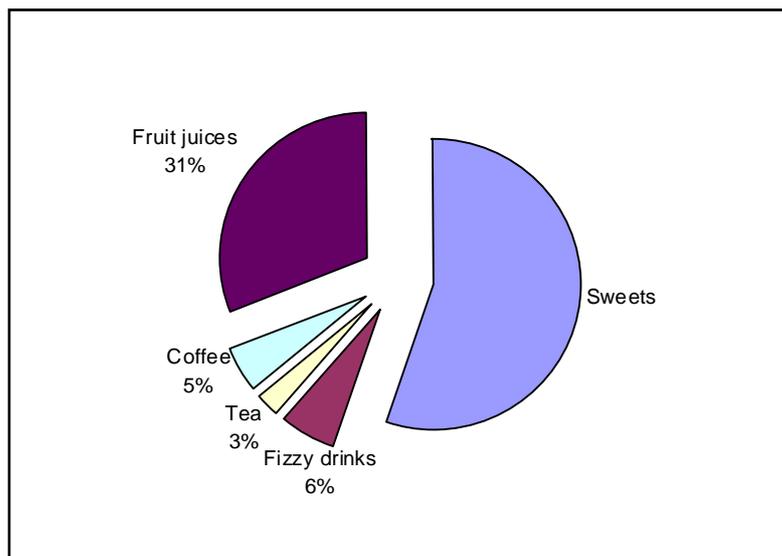
- 4.3.1 Calculate the area of one floor tile. (2)
- 4.3.2 How many floor tiles would she need in order to tile the whole floor? (3)
- 4.3.3 Tiles are sold in boxes. Each box holds one square metre of tiles and costs R84,99 per box. When buying the tiles, 10% more are ordered, due to cutting wastage. How many boxes must be ordered? (4)
- 4.4 Gugu and Bergen have researched various room charges and have decided to charge R250 (excluding VAT) per person sharing per day in a **standard room**.
- They have also decided to put three single beds into each of the standard rooms.
- 4.4.1 How much money could they make per day per room? (excluding VAT) (2)
- 4.4.2 If Value Added Tax (VAT) is 14%, calculate the total charge for a standard room per day. (2)
- 4.4.3 A backpacker from England has booked a bed in a standard room. If the exchange rate is $\text{£}1 = \text{R}11,84$, calculate the cost per day in pounds, excluding VAT. (2)

4.5 Bergen and Gugu also want to raise money for the school's tuck-shop, for the hostel conversions. They have done some research and the average number of each of the most popular items sold each day is shown in the table below.

	Quantity of items sold daily
Sweets	198
Mug of coffee	18
Mug of tea	12
Can of fizzy drink	22
Bottle of fruit juice	110

4.5.1 Calculate the total number of items sold at the tuck-shop in one day. (2)

4.5.2 Calculate how many bottles of fruit juice they can expect to sell over 5 days. (2)



4.5.3 Calculate the percentage of sweets sold. (3)

4.5.4 Calculate the size of the angle that forms the *Fizzy drinks* segment. (2)

4.5.5 Bergen cannot decide on a suitable title for the chart. Considering all the information above, what would be a suitable title for the pie chart? (1)

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QUESTION 5

Public transport is an essential part of the world in which we live. Most people in South Africa cannot afford their own cars, and so rely heavily on public transport or other forms of transport such as walking.

The table below is a comparative study of the modes of transport for learners in South Africa, Australia and the United Kingdom.

	Walk	Car	Bus	Bicycle	Train	Taxi	Other
South Africa	73,1%	12,9%	6,4%	1,2%	0,7%	5,3%	0,4%
United Kingdom	18,3%	52,3%	15,2%	0,7%	11,9%	0%	1,6%
Australia	37,9%	34,9%	22,6%	1,9%	1,7%	0%	1%

[Source: <www.statsa.gov.za>]

- 5.1 What is the most popular mode of transport in South Africa? (1)
- 5.2 Which is the least popular mode of transport in South Africa? (1)
- 5.3 In 2008, there were 1,2 million learners in South African schools. Calculate the estimated number of learners who walked to school in South Africa. (2)
- 5.4 Draw a suitable bar graph to compare the modes of transport in South Africa and Australia. Use the set of axes provided in the Answer Booklet to answer this question. (10)
- [14]**

Total: 150 marks