



Basic Education

**KwaZulu-Natal Department of Basic Education
REPUBLIC OF SOUTH AFRICA**

MATHEMATICAL LITERACY P1

COMMON TEST

JUNE 2016

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MARKS: 100

TIME: 2 hours

N.B. This question paper consists of 10 pages and 1 Answer Sheet.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of **FIVE** questions. Answer **ALL** the questions.
2. Answer QUESTION 4.6 on the attached ANSWER SHEET. Write your **NAME**, **SURNAME** and **CLASS** in the spaces provided on the ANSWER SHEET and hand in the ANSWER SHEET with your ANSWER BOOK.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Start **EACH** question on a **NEW** page.
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 according to the context, unless stated otherwise.
8. Units of measurement must be indicated where applicable.
9. Write neatly and legibly.

QUESTION 1

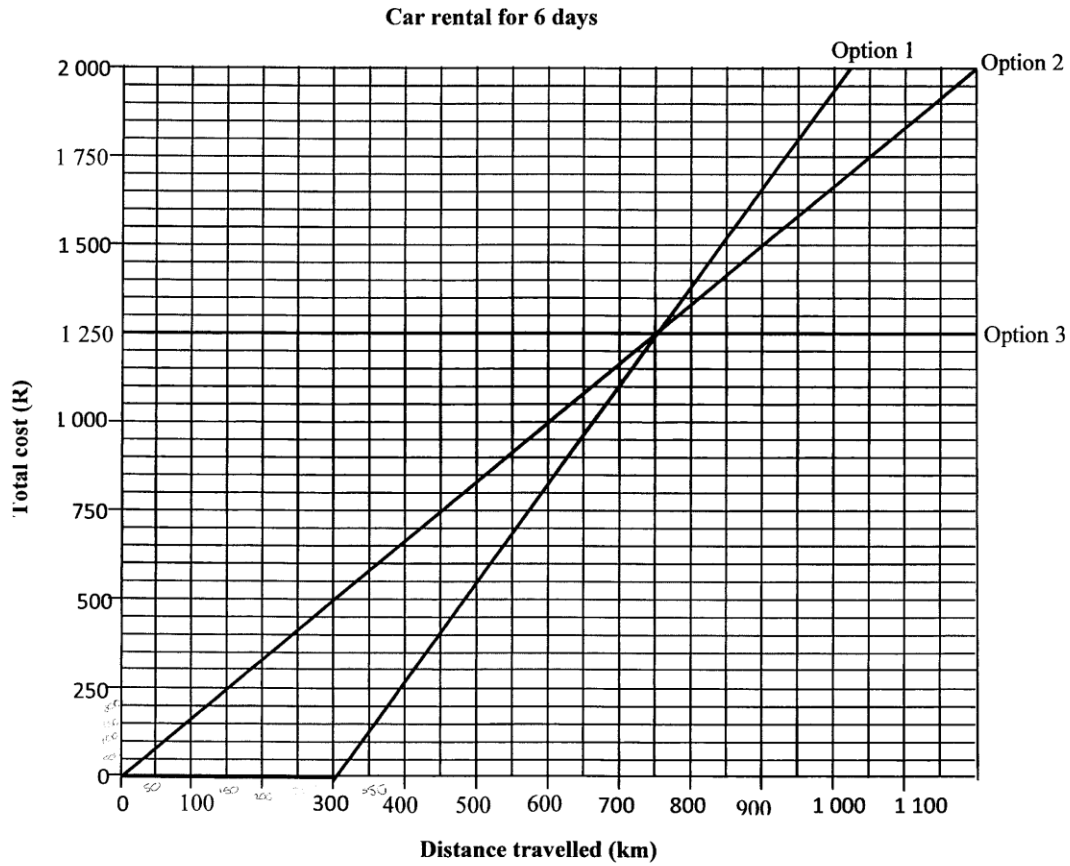
Thembisile from Ulundi (KwaZulu Natal) is teaching Numeracy at Anfield Secondary school in London. She is thirty years old. During Easter holidays, Thembisile plans to visit her parents in South Africa for six days. She has to book an aeroplane to South Africa. She comes across adverts of two different airlines with special fares in London Times newspaper.

Advert 1: London to Johannesburg fare £505 including airport taxes return ticket

Advert 2: London to Johannesburg fare £420 excluding airport taxes return ticket

- 1.1 How much would the ticket in Advert 2 cost in pounds (£) if the airport taxes were 12%? (2)
- 1.2 Which advert offers the cheaper flight? (2)
- 1.3 Determine the cost (in South African Rands) of a ticket in Advert 1 if the exchange rate is £ 1 : R19. (2)
- 1.4 Thembisile will take another flight from O.R Tambo International airport (Johannesburg) to Ulundi airport. The flight costs R450, 00 for a single trip ticket. Determine the total return cost for the flights from London to Ulundi if she chooses the cheaper flight from London. (3)

- 1.5 At Ulundi airport, Thembisile will hire a car from Bob's Car Rental Company. The company gives her three different options. Study the graphs and answer the questions.



- 1.5.1 Write down the equations/formulae for calculating the total cost for hiring a car for using each of the options represented in the above graphs. (7)
- 1.5.2 How many free kilometres will Thembisile get when choosing Option 2? (2)
- 1.5.3 Determine the total cost of hiring a car using Option 1 for travelling 400 km single trip. Show calculations. (3)
- 1.5.4 (a) What does the break-even point for option 1 and 2 mean in this context? (2)
- (b) How much is the break-even cost for option 1 and 2? (2)
- 1.5.5 Which option has unlimited mileage (kilometres)? (2)

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QUESTION 2

Thembisile is worried about her weight status, she weighs 110kg. She wants to reduce her weight by changing her diet. She is now a vegetarian. She pages through the magazine and finds the Italian pasta salad recipe for vegetarians.

Italian pasta salad recipe**Serves 4 people****Ingredients**

1 $\frac{1}{2}$ cup shell, bow-tie or corkscrew pasta
 2 cups broccoli, chopped
 1 cup cauliflower, chopped
 1 cup sliced fresh mushrooms
 16 ounce can artichoke hearts, drained and chopped
 $\frac{1}{2}$ cup chopped onions
 1 cup Italian salad dressing
 $\frac{3}{4}$ cup sliced black olives
 1 tomato chopped
 1 avocado chopped

Method

- Cook pasta according to package directions. Drain and rinse in cold water. Drain well.
- Steam broccoli and cauliflower first
- In a large bowl combine the cooked pasta with the broccoli, cauliflower, mushrooms, artichoke hearts and onion.
- Toss with the dressing then cover and chill for 4 hours before serving

Preparation time: 10 minutes**Cooking time: 10 minutes**Source: www.pastasalads.com

- 2.1 Determine the number of cups of pasta needed for serving 8 people (2)
- 2.2 Determine the amount black olives in millilitres needed for serving 4 people if one cup = 250 ml. (2)
- 2.3 Determine the rate of the can of artichoke hearts in grams if 1g = 0,035714285 ounce. (2)
- 2.4 Thembisile has a body mass index (BMI) of 35,9kg/m². Calculate her height in metres.
 You may use the following formula:
- $$\text{BMI} = \frac{\text{weight in (kg)}}{(\text{height in (m)})^2} \quad (4)$$
- 2.5 If Thembisile starts making the salad at 11:25, at what time will it be ready for serving? (3)

2.6 Below is a diagram of a stove that Thembisile uses to boil pasta.

Top view of a stove

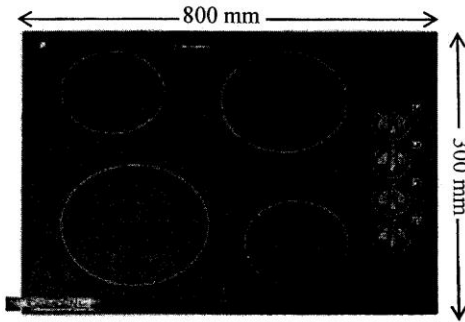


Photo of a pot with water



2.6.1 Calculate the area in square metres (m^2) occupied by the stove.

You may use the following formula:

$$\text{Area of a rectangle} = \ell \times w \quad (3)$$

2.6.2 Calculate the circumference of the large plate of a stove if the diameter is 26cm.

You may use the following formula

$$\text{Circumference} = 2\pi r \quad \text{Use } \pi = 3,142 \quad (3)$$

2.6.3 Calculate the volume of water in litres inside the pot if it is $\frac{3}{4}$ full.

You may use the following formula:

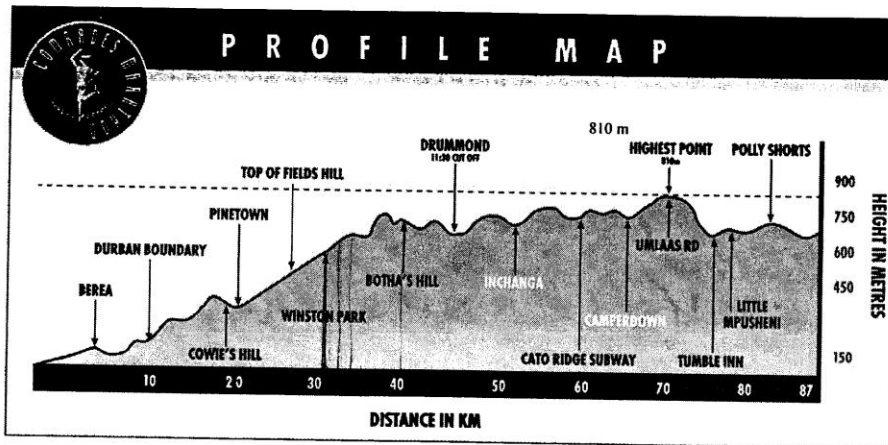
$$\text{Volume of a cylinder} = \pi r^2 h. \quad \text{Use } \pi = 3.142$$

$$\text{Note: } 1\,000 \text{ cm}^3 = 1\ell \quad (5)$$

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QUESTION 3

Comrades marathon is a race that is run from Durban to Pietermaritzburg every year. The starting point of the race alternates every year. Study the profile map of the comrades marathon from Durban to Pietermaritzburg below and answer the questions that follow.



www.comradesmarathon.com

- 3.1 Determine the total distance of the marathon in kilometres. (2)
- 3.2 Determine the height of the highest point in kilometres. (3)
- 3.3 Determine the half-way point (in kilometres) for the comrades marathon. (2)
- 3.4 Calculate the average speed in metres per minute of a runner from the starting point to Cato Ridge subway if he/she took 5 hours 45 minutes.

You may use the following formula

$$\text{Average speed} = \frac{\text{Distance}}{\text{Time}} \quad (5)$$

- 3.5 The marathon from Durban to Pietermaritzburg is called uphill run. Identify the town where the longest uphill start and estimate its distance. (2)
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QUESTION 4

Mr Smith is a part time coach for learners who do long jump. He wants to select the team of players. He will select the team from Grade 12A And Grade 12B and 12C. He measures the heights of tallest learners from each class. The heights are shown in the table below.

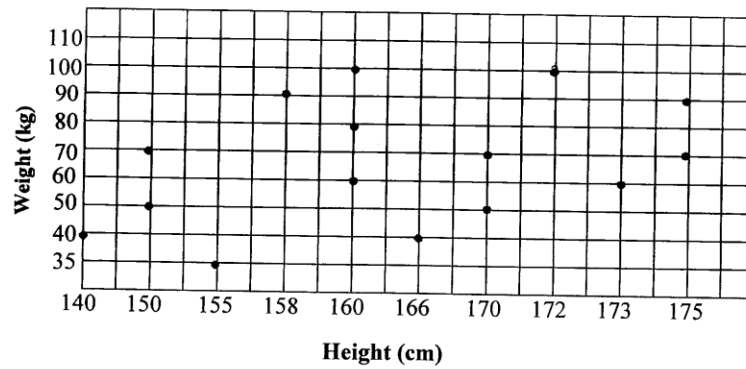
Table 1: Heights of learners from 12A, 12B and 12C in metres

12A	1,50	1,60	1,70	1,40	1,50	1,70	1,60	1,75	1,55	1,58	1,60	1,72	1,66	1,73	1,75
12B	1,40	1,50	1,54	1,61	1,61	1,63	1,71	1,71	1,72	1,73	1,72	1,74	1,74	1,75	1,76
12C	1,41	1,42	1,48	1,48	1,50	1,50	1,52	1,53	1,55	1,58	1,60	1,61	1,62	1,70	1,75

- 4.1 Calculate the mean (average) height for learners in 12B. (3)
- 4.2 Determine the range of the heights of learners in 12A. (2)
- 4.3 Determine the median for the heights learners in 12C (2)
- 4.4 Determine the mode for the heights of learners in 12A. (2)
- 4.5 (a) Mr Smith will take all learners with a height from 1,6 to 1,76 to form a team. How many learners will form a team from 3 classes? (2)
- (b) Hence determine which class will have more learners in the team? (2)
- 4.6 Complete the frequency table on the answer sheet using values on the table above. (5)

- 4.7 Study the graph below representing height of learners and their weights in 12A and answer the questions that follow.

Graph showing heights of learners and their weights in 12A



- 4.7.1 What type of graph is this? (2)
- 4.7.2 Determine the weight of a learner whose height is 172 cm in 12A. (2)
- 4.7.3 Is there any correlation between the height and weight displayed in the graph above? If so what type of correlation is it? (2)

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QUESTION 5

5. Job is a grade 12 learner at Keyway High school. He asks his parents to hire the car for him to use during the matric dance. The company they approached has the following types of cars available, 10 Sport Utility Vans (SUVs), 8 hatchbacks and 6 sedans.

- 5.1 (a) What is the probability that Job will choose a hatchback? Write your answer as a common fraction in simplest form. (3)
- (b) What is the probability that Job will NOT choose a sedan? Write your answer as a decimal fraction. (3)
- 5.2 Job's father saved his once-off bonus of R25 000, 00 for the matric dance at the beginning of the year when Job was doing grade 10. The money has been in the account for two years. The interest rate is 1,5% **compounded half yearly**.
- 5.2.1 Calculate the total amount in the account after two years. (5)

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TOTAL MARKS: 100