Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

MATHEMATICAL LITERACY

COMMON TEST

SEPTEMBER 2016

NATIONAL SENIOR CERTIFICATE

GRADE 10

MARKS: 75

TIME: $1\frac{1}{2}$ hours

This question paper consists of 9 pages.

INSTRUCTIONS AND INFORMATION

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

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

3. Start EACH question on a NEW page.

4. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

5. Show ALL the calculations clearly.

6. Round ALL the final answers off to TWO decimal places or according the given context, unless stated otherwise.

7. Indicate units of measurement, where applicable.

8. Write neatly and legibly.

QUESTION 1

1.1   Mrs Holmes was sent to the bank by her company make a deposit. Below is the deposit slip for the bank.

Standard Bank	Deposit slip Depositostrokie		Date Datum (YJYJ MM-DD)	**2016-05-27**	
Deposit to Deponeer aan	*Beads & Company*		Notes Note	5 000	00
Account number / Rekeningnommer 0 2 3 0 0 3 9 6 0			Coins/Munte	100	00
			Postal/Money order Posorders /-wissels		
Telephone no. including dialling code Telefoonno. en skakelkode 011 234 5678			Total cash and postal/money orders Totale kontant en posorders en-wissels	A	
Signature Handtekening *A Holmes*		Cheques deposited (Drawer's name) / Tjeks gedeponeer (Trekker se naam)			
Depositor's name or reference. These details will appear on the accountholder's/beneficiary's statement		1 N Ndlovu		1 050	00
Naam van deponeerder of verwysing. Hierdie besonderhede sal op die rekeninghouer/begunstigde se staat verskyn		2			
A Holmes 1 - 5 0 4 5 7 8 1 3		3			
Conditions		4			
Cheques, etc. handed in for collection will only be available as cash when paid. While acting in good faith and exercising reasonable care the Bank will not accept responsibility for ensuring that depositors/accountholders have legal title to cheques, etc. collected. Please ensure that the account number is correctly inserted as the Bank cannot be held responsible for errors resulting from incorrect information furnished.			Total cheques Totale tjeks	1 050	00
Voorwaardes Tjeks ens. wat vir invordering ingelewer is, sal slegs as kontant beskikbaar wees wanneer dit betaal is. Hoewel die Bank te goeder trou handel en redelike sorg uitoefen, kan hy nie verantwoordelikheid daarvoor aanvaar om seker te maak dat deponeerders/rekeninghouers regstitel het op tjeks ens. wat gevorder word nie. Maak asseblief seker dat die rekeningnommer korrek ingevul is. Die Bank kan nie aanspreeklik gehou word vir foute as gevolg van foutiewe inligting nie.			Total Totale R B		
The Standard Bank of South Africa Limited (Reg No. 1962 000738/06) An authorised financial services and registered credit provider (NCRCP15)					

Study the deposit slip and answer the questions that follow:

1.1.1   Write down the Drawer's name for the cheque.   (2)

1.1.2   Calculate the value of **A**, the total cash deposited.   (2)

1.1.3   Determine the value of **B**, the total amount deposited.   (2)

1.1.4   The cheque is cleared on the seventh day (excluding Saturday and Sunday) after it is deposited. If the cheque was deposited on a Friday, state the date and day of the week that the cheque will be cleared.   (3)

1.2

> Mrs Holmes decides to make and sells beaded earrings to supplement her income.
>
> The starter pack kit to make beaded jewellery cost R99,00.
>
> Each set of earrings cost R4,50 to make.
>
> She sells them for R10,50 a pair

1.2.1   Mrs Holmes made 50 pairs of earrings over a 3-month period.

       (a)   Show that her total cost including the starter pack will be R324,00   (2)

       (b)   Calculate Mrs Holmes profit if she sells all 50 pairs of earrings.   (2)

1.2.2   If Mrs Holmes makes and sells 100 pairs of earrings, her expenses will be R549,00 and her profit will be R600,00.

       Calculate her percentage profit using the formula:

$$\text{Percentage profit} = \frac{\text{profit}}{\text{expenses}} \times 100\%$$

       Give the answer rounded off to ONE decimal place.   (3)

1.2.3   Mrs Holmes deposited R5 000,00 in a fixed deposit at an interest rate of 6,8% compounded annually.

       (a)   Define the term "interest rate".   (2)

       (b)   Calculate, showing all steps, how much Mrs Holmes will have in total in her account after two years.   (5)

1.2.4   Mrs Holmes decides to investigate the bank fees for withdrawing money using her own bank ATM.
TABLE 1 below shows the bank fees for withdrawing money from different banks as well as how much it would cost to withdraw R1 000.

TABLE 1: Bank Fees for different South African banks

Name of Bank	Bank fees from own bank's ATM	Fees per R1 000 withdrawal
A	R3,95 + R1,30 per R100	R16,95
B	R4,00 + 1,20% of amount	R16,00
C	R4,00 + R1,32 per R100	X
D	R5,50	R5,50

(a)   Show that the value of X is R17,20   (2)

(b)   Describe the shape of the line graph that would represent the fees paid for withdrawing money from Bank D.   (2)

(c)   Bank A charges R23,40 for withdrawing R1 500,00.

Determine, showing all calculations, whether Bank B charges more than Bank A for withdrawing R1 500,00   (4)
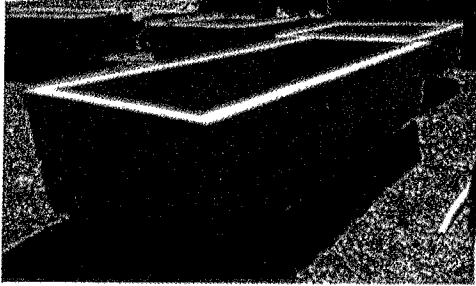
[31]

QUESTION 2

2.1 | Mr Simemane is planning to take his class on an excursion to an animal farm. He needs to prepare a **questionaire** for the learners. |

2.1.1   Define the term **"questionnaire'**.   (2)

2.1.2   State ONE valid reason why Mr Simelane gave his learners the questionnaire.   (2)

2.1.3   State whether each of the following questions are **suitable** or **unsuitable** for the questionnaire to gather data about the animals at the animal farm.

(a)   Count the number of different types of animals at the animal farm.   (2)

(b)   Write down the time taken to go to the animal farm.   (2)

(c)   State the mode of transport used to get to the animal farm.   (2)

2.1.4   Write down another way of gathering data besides a questionnaire based on this context.   (2)

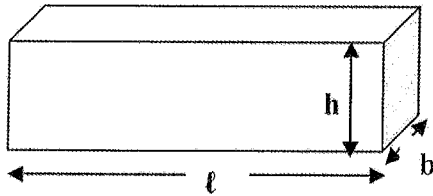2.2   The water troughs at the animal farm either have a circular base or a rectangular base.

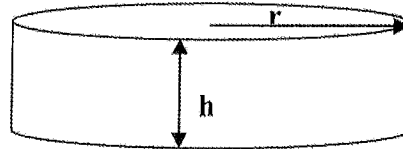**Picture of a rectangular based trough**   **Picture of a circular based trough**
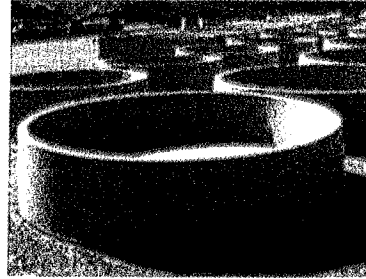
Dimension of rectangular based trough   **Dimension of circular based trough**

Length (ℓ) = 2 m
Breadth (b) = 1,5 m
Height (h) = 1 m

Radius (r) = 1,2 m
Height (h) = 1 m

2.2.1   Calculate the area of the base of the circular water trough.

          You may use the formula:

          Area of circle = $\pi \times$ radius^2 using π = 3,142   (3)

2.2.2   Mr Simemane asked the learners to investigate which of the water troughs can carry the most water.

          (a)   Calculate the maximum volume of the rectangular based trough.

                  You may use the following formula:

                  Volume of rectangular prism = length x width x height   (3)

          (b)   Calculate the maximum volume of the circular based trough.

                  You may use the following formula:

                  **Volume of a cylinder = $\pi \times$ (radius)$^2 \times$ height
                  using π = 3,142**

                                                                                      (3)
                                                                                      [21]

QUESTION 3

3.1 | The school governing body of Protea Primary School decides to hold a Fair on the school ground to raise funds. They erect a fence around the rectangular field.

The layout plan for the fair is illustrated below.

LAYOUT PLAN OF THE SCHOOL FAIR
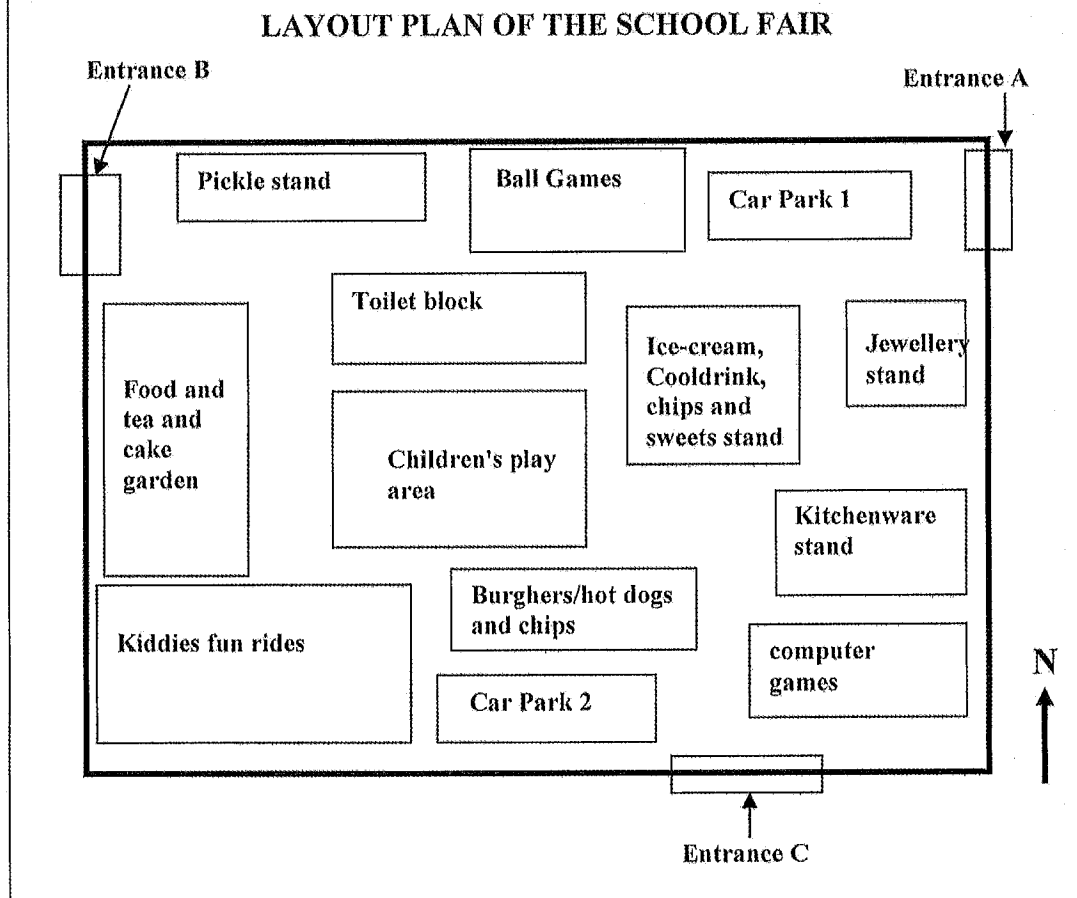
3.1.1   State the general direction from the Kiddies fun rides to Car Park 1.   (2)

3.1.2   Write down the number of stalls where games are played.   (2)

3.1.3   State one reason why Entrance B is for pedestrians only.   (2)

3.1.4   Name one item that could be sold at the jewellery stand.   (2)

3.1.5   The actual length of Car Park 2 is 30 m.

(a)   Measure the length of Car Park 2.   (2)

(b)   Determine the scale used to draw this layout plan in the format 1 : ...   (4)

3.2 | The computer is set up on a stand. The assembly instructions to set up the computer stand is given below but NOT in the correct order.

A

B

C

D

E

FINAL COMPUTER STAND
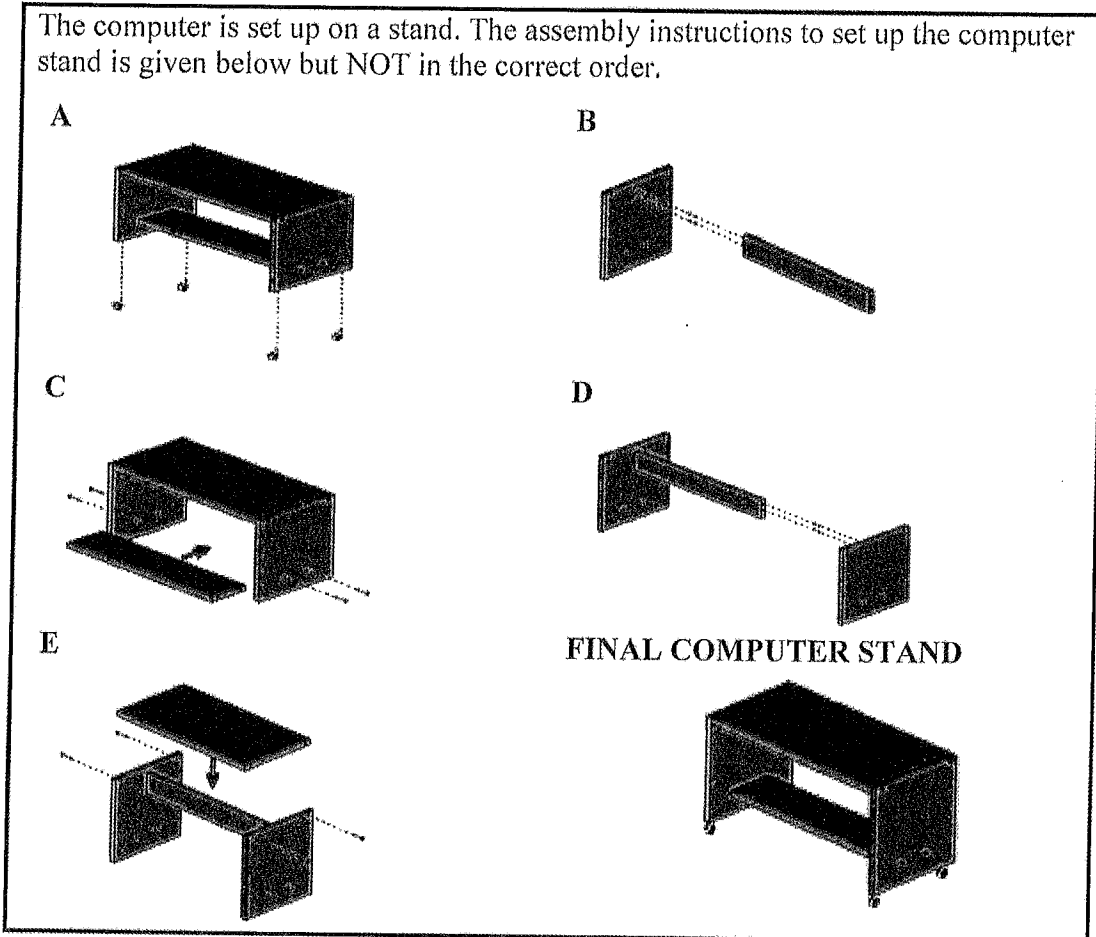
Arrange the set of instructions, in the correct order, to assemble the computer stand. (3)

3.3 The pickles are sold in cylindrical glass jars with a radius of 3,5 cm. the jars are placed in a rectangular box as illustrated below.
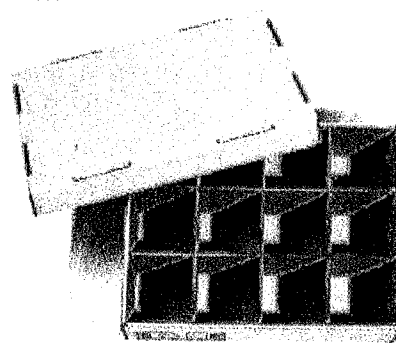
The jars are packed close to the sides of the edge of the box. The cardboard separating the jars is 0,5 cm thick.

3.3.1 Write down the diameter of the glass jar (2)

3.3.2 Determine the minimum inner dimensions (length and breadth) of the box if there are 12 jars in the box. (4)

[23]

TOTAL MARKS: 75

QUESTION 1 [31]

No	Solution		Explanation	Levels
1.1.1	N Ndlovu✓✓A	(2)	2 A answer	L1
1.1.2	A = R5 000 + R100 ✓M = R5 100✓A	(2)	1 M adding correct values 1 A answer **Answer only full marks**	L1
1.1.3	**B** = R5 100 + R1 050 ✓M = R6 150✓CA	(2)	1 M adding correct values 1 CA answer **Answer only full marks**	L1
1.1.4	Tuesday ✓✓A 5 June 2016✓A	(3)	2 A day 1 CA date	L1

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MEMORANDUM

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GRADE 10

Marks: 75

Symbol	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy (Answer)
C	Conversion
S	Simplification
RT / RG / RM	Reading from table / Reading from graph / Reading from map
F	Choosing the correct formula
SF	Substitution in formula
O	Opinion
P	Penalty e.g. for no units, incorrect rounding, etc
R	Rounding off / Reason
U	Unit

This memorandum consists of 7 pages.

No	Solution	Explanation	Levels
1.2.1 (a)	Total cost = R99,00 + (R4,50 × 50) √M √M = R324 (2)	1 M adding 1 M multiplying	L2
1.2.1 (b)	√M Profit = R10,50 × 50 − R324√M/A = R525 √CA (2)	1 M multiplying 1 M/A subtracting cost 1 CA profit	L3
1.2.2	Percentage profit = $\dfrac{\text{profit}}{\text{expenses}} \times 100\%$ = $\dfrac{R600}{R549} \times 100\%$ √M = 109,3% √A (3)	1 SF substitution 1 A simplification Answer only full marks	L2
1.2.3 (a)	The percentage of a loan charged as interest to the borrower √√A (any other suitable definition) (2)	2 A definition	L1
1.2.3 (b)	After 1 year: Amount = R5 000,00 × $\dfrac{106,8}{100}$ √M√A = R5 340,00√CA After 2 years Amount = R5 340,00 × $\dfrac{106,8}{100}$ √M = R5 703,12√CA (5)	1 M increase by % 1 A correct values used 1 CA simplification 1 M increase by % 1 CA simplification	L4

No	Solution	Explanation	Levels
1.2.4 (a)	X = R4,00 + R1,30 × 10 √SF √A = R4,00 + R13,20 = R17,20 (2)	1 SF substitution 1 A correct values used	L2
1.2.4 (b)	A horizontal line parallel to the X-axis √√A (2)	2 A explanation	L2
1.2.4 (c)	Fees = R4,00 + $\dfrac{1,02}{100}$ × R1 500 √SF = R4,00 + R18,00√S = R22,00√A Bank B charges less√O (4)	1 SF substitution 1 Simplification 1 A solution 1O conclusion	L3 and L4
			[31]

QUESTION 2 [21]

No	Solution	Explanation	Levels
2.1.1	A questionnaire is simply a 'tool' for collecting and recording information✓✓A (Any other suitable explanation) (2)	2 A accuracy	L1
2.1.2	To make the excursion educational✓✓A (Any other suitable explanation) (2)	2 A accuracy	L4
2.1.3 (a)	Suitable ✓✓A (2)	2 A accuracy	L1
2.1.3 (b)	unsuitable ✓✓A (2)	2 A accuracy	L1
2.1.3 (c)	unsuitable ✓✓A (2)	2 A accuracy	L1
2.1.4	Telephone poll; ✓✓A (Any other suitable explanation) (2)	2 A accuracy	L2
2.2.1	Area of circle = π × radius² = 3,142 × (1,2 m)² ✓SF ✓A = 4,52 m² ✓A (3)	1 SF substitution 1 A simplification 1 A unit **Answer only full marks**	L2
2.2.2 (a)	Volume of rectangular prism = length × width × height = 2 m × 1,5 m × 1 m✓SF ✓A = 3 m³ ✓A (3)	1 SF substitution 1 A simplification 1 A unit **Answer only full marks**	L2

No	Solution	Explanation	Levels
2.2.2 (b)	Volume of a cylinder = π × (radius)² × height = 3,142 × (1,2 m)² × 0,8 m ✓SF ✓A = 3,62 m³ ✓A (3)	1 SF substitution 1 A simplification 1 A unit **Answer only full marks**	L2
			[21]

QUESTION 3 [23]

No	Solution	Explanation	Levels
3.1.1	Northeast or NE ✓✓A (2)	2 A correct direction	L1
3.1.2	2 ✓✓A (2)	2 A correct number	L1
3.1.3	No Car park ✓✓O (2)	2 O opinion	L4
3.1.4	Any jewellery item ✓✓O (earrings/bangles/bracelets/necklace/watch) (2)	2 O opinion	L4
3.1.5 (a)	3 cm ✓✓A (2)	2 A correct measurement	L1
3.1.5 (b)	3 cm : 30 m✓ M = 3 cm : 3 000 cm✓C = 1 : 1 000✓CA (4)	1 M writing as a ratio 2 C conversion 1 CA simplification **Answer only full marks**	L3
3.2	✓A ✓A B D E C A✓A (3)	1 A start correct 1 A middle 1 A end	L3

No	Solution	Explanation	Levels
3.3.1 (a)	7 cm ✓✓A	2 A diameter	L2
	(2)		

3.3.1 (b)	Length = 4 × 7 cm + 3 × 0,5 cm ✓M
	     = 29,5 cm ✓A
	
	Breadth = 3 × 7 cm + 2 × 0,5 cm ✓M
	     = 22 cm ✓CA
		1 M multiplying/adding
		1 A simplification
		
		1 M multiplying/adding
		1 CA simplification
			L3

	(4)		
	[23]		

TOTAL MARKS : 75