KZN DEPARTMENT OF EDUCATION
GREENBURY SECONDARY SCHOOL

GRADE 10

MATHEMATICAL LITERACY - PAPER ONE
NOVEMBER EXAMINATION
2018

MARKS : 75 DURATION : 1 ½ HOURS

INSTRUCTIONS & INFORMATION

- This paper consists of :
  5 QUESTIONS AND 9 PRINTED PAGES (Including this cover page and Annexure A which has already been attached to your answer booklet)
- QUESTION FIVE must be completed on ANNEXURE A
- All calculations and steps must be shown clearly in ink.
- Number the answers correctly according to the numbering system used in this question paper.
- Round off **ALL** final answers appropriately according to the given context unless stated otherwise.
- An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
- Units of measurement must be indicated where applicable.
- ALL QUESTION PAPERS MUST BE SUBMITTED TO YOUR INVIGILATOR

QUESTION (18 MARKS)

1.1)
Mandy is a grade 10 learner at Gemini Secondary School. The grade 10 mathematical literacy learners decide to have an end of year function. Mandy wants to bake cupcakes using her grandmothers recipe.
Below is a list of ingredients needed to make 1 DOZEN of cupcakes.
Study the information below and answer the questions that follow:

INGREDIENTS (1 DOZEN CUPCAKES)

- 1 ½ cups flour
- ¾ cup sugar
- 2 tsp baking powder
- ½ tsp salt
- ½ cup milk
- ½ cup oil
- 2 eggs
- 1 tsp vanilla essence

PREPARATION TIME : 15 MINUTES

BAKING TIME : 15 MINUTES

INGREDIENTS: BUTTER CREAM ICING

- 125 g margarine
- 2 cups icing sugar
- 2 tablespoons milk
- Cocoa or food colouring

NOTE :

1 cup = 250ml

1 teaspoon = 5ml

1 tablespoon = 15ml

1.1.1) How many cupcakes can be made using one batch of the above recipe? (Provide an actual number.) (2)

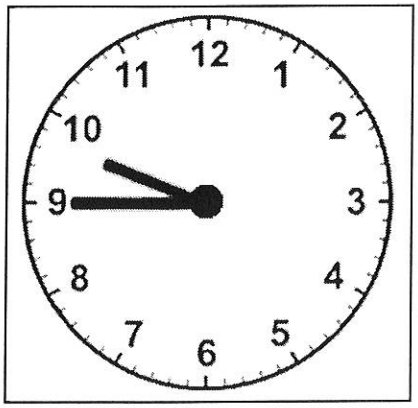
1.1.2) Convert the amount of oil needed to millilitres (2)

1.1.3) Mandy is not sure if she has enough milk in the fridge to bake **two dozens** of cupcakes.
How many millilitres of milk will be needed for the cupcakes and the icing combined? (3)

1.1.4) Mandy's oven is designed using °F. She sets the oven to 356 °F. Convert the temperature to degrees Celsius. (°C). (2)

$$°C = \frac{(°F - 32°)}{1,8}$$

1.1.5) The cupcakes need 1 ½ hours to cool before it can be iced. On the morning of the function, Mandy starts the baking process at the time indicated on the clock below, at what time will the cupcakes be ready to be iced? (2)



1.1.6) Mandy iced the cupcakes using pink, blue and green icing. There are 35 pink cupcakes, 23 blue cupcakes and 12 green cupcakes. If one cupcake is selected at random, determine the probability (as a simplified fraction) that it will NOT be a green cupcake. (2)

1.2) Mandy lives in Starlight town. 70% of the households in her town use prepaid electricity. If there are 2580 households , how many households use prepaid electricity? (2)

1.3) Mandy's mum received a salary increase of 10%. If her salary, with the increase amounts to R3 300 per month, calculate what her salary was **before** the increase. (3)

QUESTION 2 (20 marks)

2.1) Mandy's dad, Mr Mike works at an insurance company.

He earns a net salary of R 20 550 per month, after deductions.

He budgets every month as follows:

Mr Mike's budget for November

MONTHLY INCOME		MONTHLY EXPENSES	
Salary after deductions	R 21 750	Bond repayment	R 6000
Housing subsidy	(C)	Municipal rates	R 450
		Water and refuse	R350
		Electricity	R600
		Food	R 2950
		Car instalment	R2800
		Petrol	R 1800
		Entertainment	R 1500
		School fees	R 950
		Clothes and cellphones (12% of the salary after deductions)	(A)
TOTAL	R 22 550	TOTAL	(B)

2.1.1) In your own words, explain the term fixed expense and select ONE fixed expense from the above budget (2)

2.1.2) Mandy calculated the value of A to be R 2610.

Show how this amount is calculated. (2)

2.1.3) Calculate the total expenses (B) (2)

2.1.4) Mr Mike receives a housing subsidy.

Calculate the value of the housing subsidy (C) (2)

2.1.5) Calculate the amount Mr Mike has leftover each month as savings. (2)

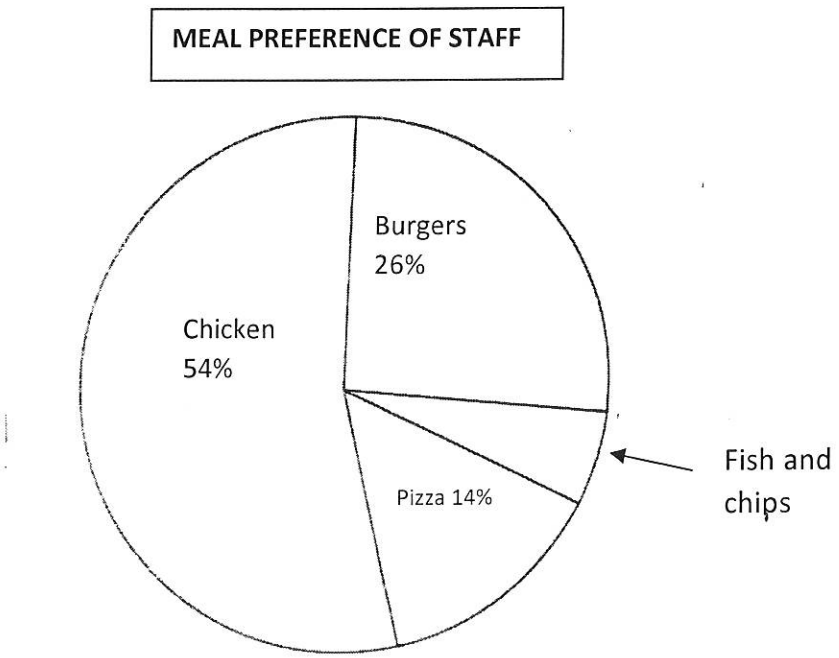
2.1.6) Suggest one thing that he can change in his budget in order to be able to save more each month. (2)

2.1.7) What percentage of his total expenses is the bond repayment?

(Round off your answer to the nearest whole number) (2)

2.2) Mr Mike decides to buy his staff a meal to celebrate his recent promotion.

The pie chart below shows the results of a survey he conducted amongst 50 of his staff members to determine their favourite meal:



2.2.1) What percentage of the staff prefer fish and chips? (2)

2.2.2) If there are 50 people altogether, how many people chose burgers? (2)

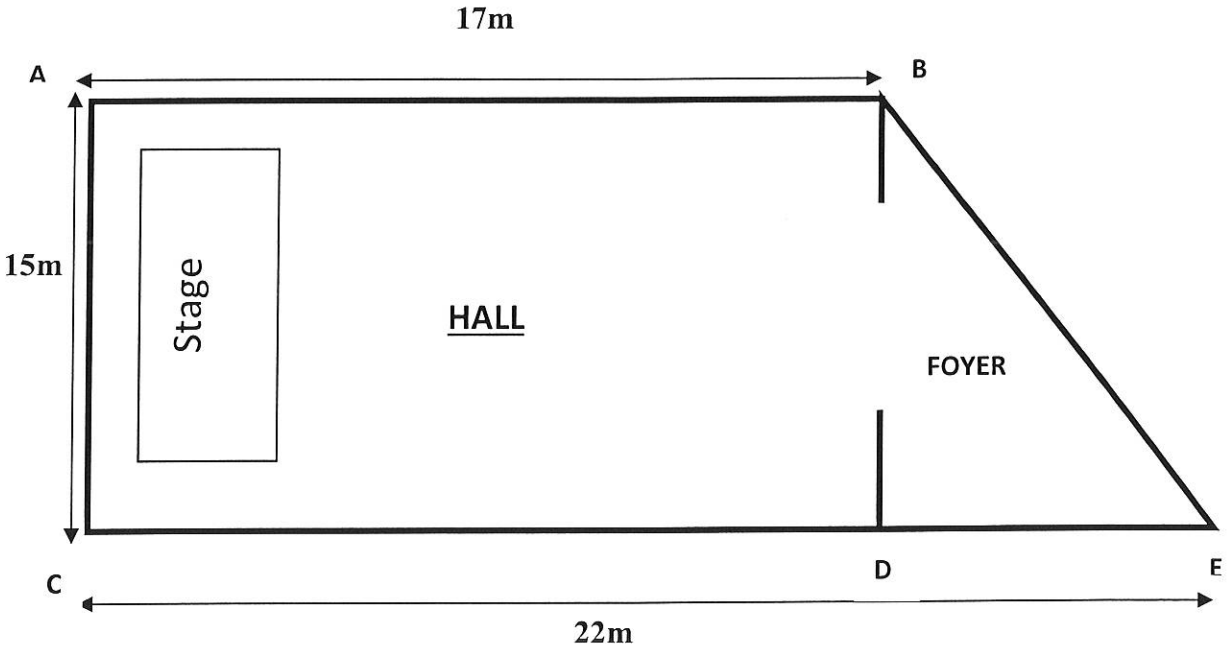
2.2.3) How many more people prefer chicken compared to pizza? Show all working. (2)

QUESTION THREE (12 marks)

The mathematical literacy learners are considering having the function at the school hall.

A sketch of the hall is shown below.

Study the diagram and answer the questions that follow:



3.1) Calculate the length of the slant side of the foyer (BE) (3)

3.2) Determine the perimeter of the entire building (2)

3.3) Some of the learners will be performing music and dance items . They need to know the area of the stage. The dimensions of the stage are 11m by 5,5m. Calculate the area of the stage. (2)

3.4) When the learners conducted some research, they found that there will be a charge for using the school hall. Some of the learners think that this may be too expensive. They found a community hall in the area as an option.

STUDY THE COST FOR THE OPTIONS BELOW AND ANSWER THE QUESTONS THAT FOLLOW:

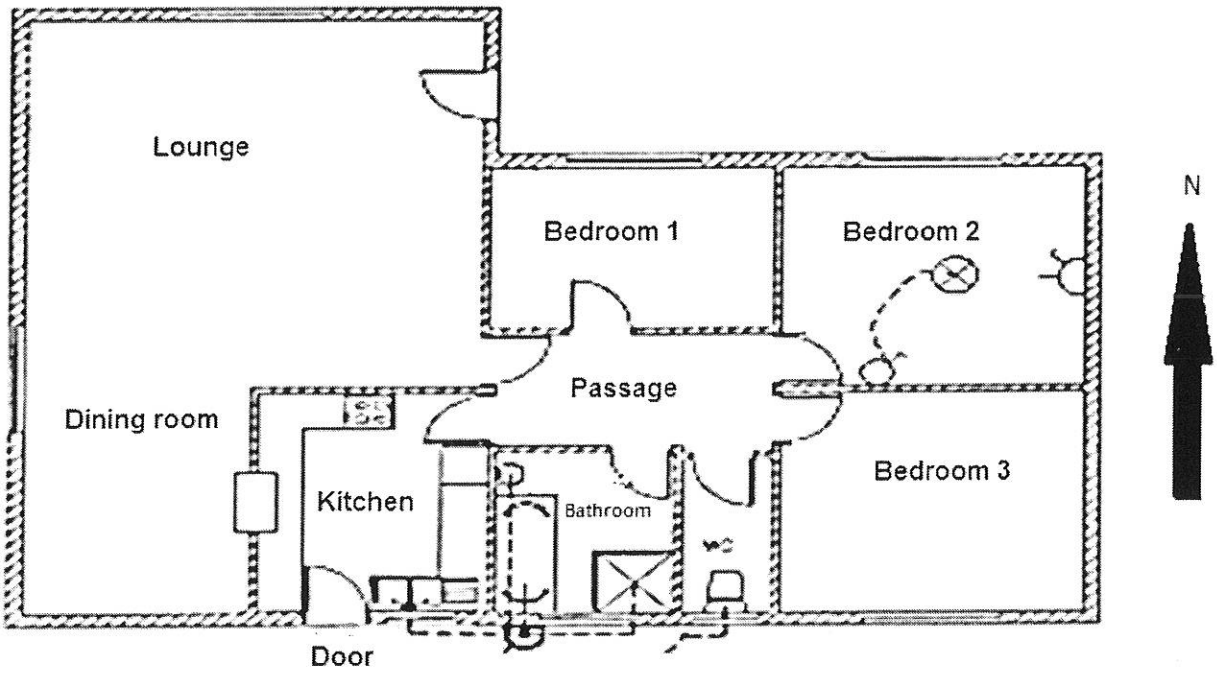
SCHOOL HALL	COMMUNITY HALL
R 50 PER LEARNER ATTENDING	R 200 PLUS R40 PER LEARNER ATTENDING

Which option will be the most economical for the learners to use if 120 learners will be attending? Show all calculations. (5)

QUESTION FOUR (13 marks)

Mr Mike recently purchased a new home. The floor plan of the house is shown below.

4.1) Study the floor plan and answer the questions that follow:



Scale 1 : 120

SYMBOLS

DOOR 

WINDOW 

4.1.1) What is the compass direction of bedroom 3 from the lounge? (2)

4.1.2) How many doors are shown on the plan? (2)

4.1.3) Measure the length and breadth of bedroom 3 on the floor plan (in mm) (2)

4.1.4) Using the scale provided, calculate the actual dimensions of bedroom 3.

(Give your answer in metres) (4)

4.2) Mandy's mum travels 40km from home to work daily.

If she travels at an average speed of 90km/h, calculate the time (in minutes and seconds) that it would take her to reach work. (3)

QUESTION FIVE (12 marks)

The school coach at Mandy's school collected some information about the favourite sport of learners in order to prepare for the new year.

The table below shows the results of the survey for boys and girls:

TABLE 1 : BOYS

S	C	S	S	S
S	S	S	S	S
V	S	V	S	S
V	V	S	V	V
V	S	C	C	C
V	C	N	C	S
S	V	V	V	V
S	N	S	V	V

TABLE 2 : GIRLS

S	N	V	N	N
N	N	N	N	N
S	S	N	N	V
V	S	V	N	S
S	C	N	V	N
C	C	V	C	C
C	V	S	S	C
V	S	V	S	V

KEY

S – SOCCER V- VOLLEYBALL N – NETBALL C - CRICKET

5.1) Complete the tally table provided on ANNEXURE A to organise the above data (4)

5.2) Construct a double bar graph showing the favourite sport of the boys and girls surveyed

Draw your graph on ANNEXURE A. (6)

5.3) If a learner from the above data set is selected at random, determine the probability that it will be a girl who preferred playing volleyball.

(Give your answer as a % rounded to 1 dec) (2)

END OF PAPER – TOTAL 75 MARKS

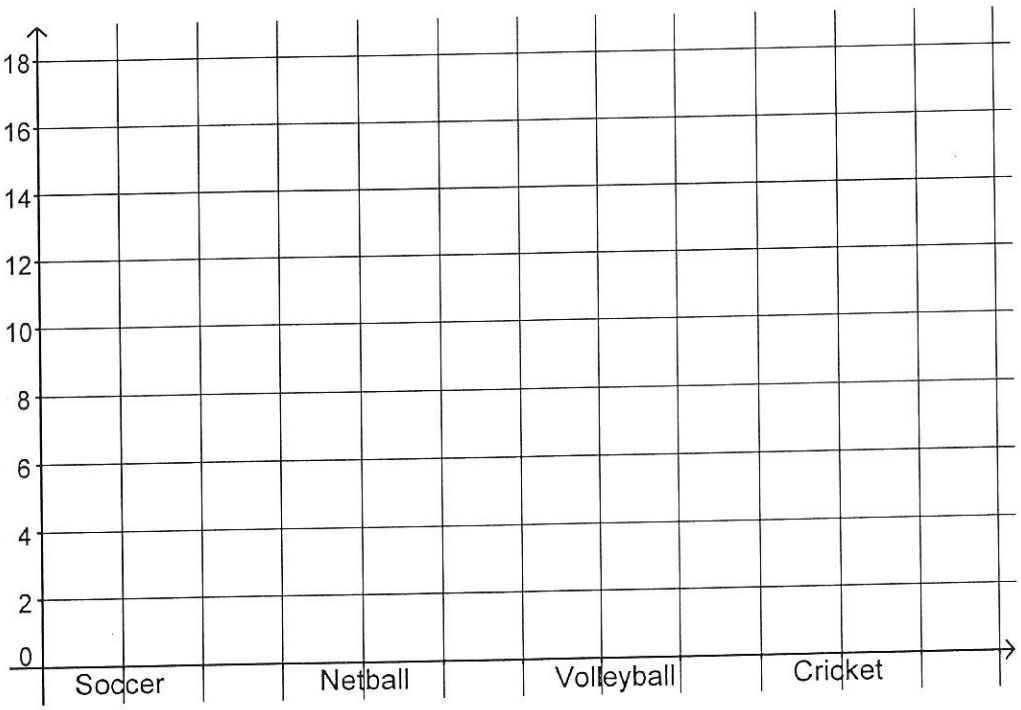
ANNEXURE A – QUESTION FIVE

NAME : _____ **GR : 10** _____

5.1)

BOYS			GIRLS		
SPORT	***TALLY***	***FREQUENCY***	***SPORT***	***TALLY***	***FREQUENCY***
SOCCER			SOCCER		
NETBALL			NETBALL		
VOLLEYBALL			VOLLEYBALL		
CRICKET			CRICKET		

5.2)



5.3) _____

_____

MATHEMATICAL LITERACY
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GRADE 10 PAPER 1 : MARKING MEMO

QUESTION ONE

QUESTION	WORKING	EXPLANATION	MARKS
1.1.1	12✓	2 A	2
1.1.2.	1 cup = 250 ml ½ cup = x x = 250 x ½✓ = 125 ml✓	 1M 1A	2
1.1.3.	Cupcakes : 1 dozen = ½ cup milk 2 dozens = x x = 2 x ½ = 1 cup milk = 250 ml✓ Icing : 1 dozen = 2 tablespoons milk 2 dozens = x x = 4 tablespoons milk x 15 = 60 ml✓ Total Amount of Milk Required = 250ml + 60ml = 310 ml ✓	 1A 1A 1CA	3
1.1.4.	$℃ = \frac{(\ °F - 32)}{1,8}$ $= \frac{(356 - 32)}{1,8}$ ✓ = 180°C✓	 1S 1A	2
1.1.5.	09 : 45 + 00 : 15 (prep time) + 00 : 15 (baking time) } ✓ + 01 : 30 (cooling) 11 : 45✓	 1M 1A	2
1.1.6.	P (not Green) = $^{70}/_{70}$ - $^{12}/_{70}$ ✓ = $^{58}/_{70}$ = $^{29}/_{35}$ ✓	1M 1A	2
1.2.	$^{70}/_{100}$ x $^{2580}/_{1}$ ✓ = 1806 households✓	1M 1A	2

1.3.	$^{100}/_{110}$ ✓ x $^{R3\ 300}/_{1}$✓ = R3 000 ✓	2M 1A	3

QUESTION TWO

QUESTION	WORKING	EXPLANATION	MARKS
2.1.1.	Fixed Expense : expenses that remain the same every month. ✓ Bond Repayment/ Car Installment/ municipal rates✓	1E 1A	2
2.1.2.	A = $^{12}/_{100}$ x R21 750✓ = R2 610✓	1M 1A	2
2.1.3.	B = R6 000 + R450 + R350 + R600 + R2 950 + R2 800 + R1 800 + R1 500 + R950 +R2 610✓ = R20 010✓	1MA 1CA	2
2.1.4.	R22 550 - R21 750✓ = R800✓	1M 1A	2
2.1.5.	R22 550 - R20 010✓ = R2 540✓	1M 1A	2
2.1.6.	Cut down on entertainment/clothes and cellphones. ✓✓	2O	2
2.1.7.	$^{R6\ 000}/_{R20\ 010}$ x $^{100}/_{1}$✓ = 30 %✓	1M 1A	2
2.2.1.	100 % - (54% + 26% +14%)✓ = 100 % - 94% = 6 %✓	1M 1A	2
2.2.2.	$^{26}/_{100}$ x $^{50}/_{1}$✓ = 13 people✓	1M 1A	2
2.2.3.	Chicken = $^{54}/_{100}$ x $^{50}/_{1}$ = 27 people Pizza = $^{14}/_{100}$ x $^{50}/_{1}$ = 7 people Difference = 27 – 7✓ = 20 people✓	 1M 1CA	2

QUESTION 3

QUESTION	WORKING	EXPLANATION	MARKS
3.1.	$BE^2 = BD^2 + DE^2$ $= (15\ m)^2 + (5\ m)^2$ ✓ $= 225\ m + 25\ m$ $= 250\ m$ $BE = \sqrt{250}\ m$✓ $= 15{,}81\ m$✓	1M 1CA 1CA	3
3.2.	$P = 15m + 17m + 22m + 15{,}81m$✓ $= 69{,}81m$✓	2 CA (FROM 3.1)	2
3.3.	$A = L \times B$ $= 11m \times 5{,}5m$✓ $= 60{,}5\ m^2$ ✓	1M 1A	2
3.4.	School Hall = R50 x 120 learners✓ = R6 000✓ Community Hall = R200 + (R40 x 120 learners) ✓ = R5 000✓ The Community Hall is most economical. ✓	 1M 1A 1M 1A 1CA	5

QUESTION FOUR

QUESTION	WORKING	EXPLANATION	MARKS
4.1.1	South East/ SE ✓✓	2A	2
4.1.2	9 doors✓✓	2A	2
4.1.3	Length = 40mm or 41 mm✓ Breadth = 28 mm✓	2A	2
4.1.4	Length = If 40mm ×120✓ = 4800mm = 4,8m✓ OR 41 mm × 120 = 4920mm = 4,92m Breadth = 28 mm × 120✓ = 3360 mm = 3,36m✓	1M 1CA 1M 1CA	4
4.2	$T = \frac{40}{90}$✓ = 26 minutes✓ 40 seconds✓	1M 1A MINS 1A SEC	3

ANNEXURE A – QUESTION FIVE

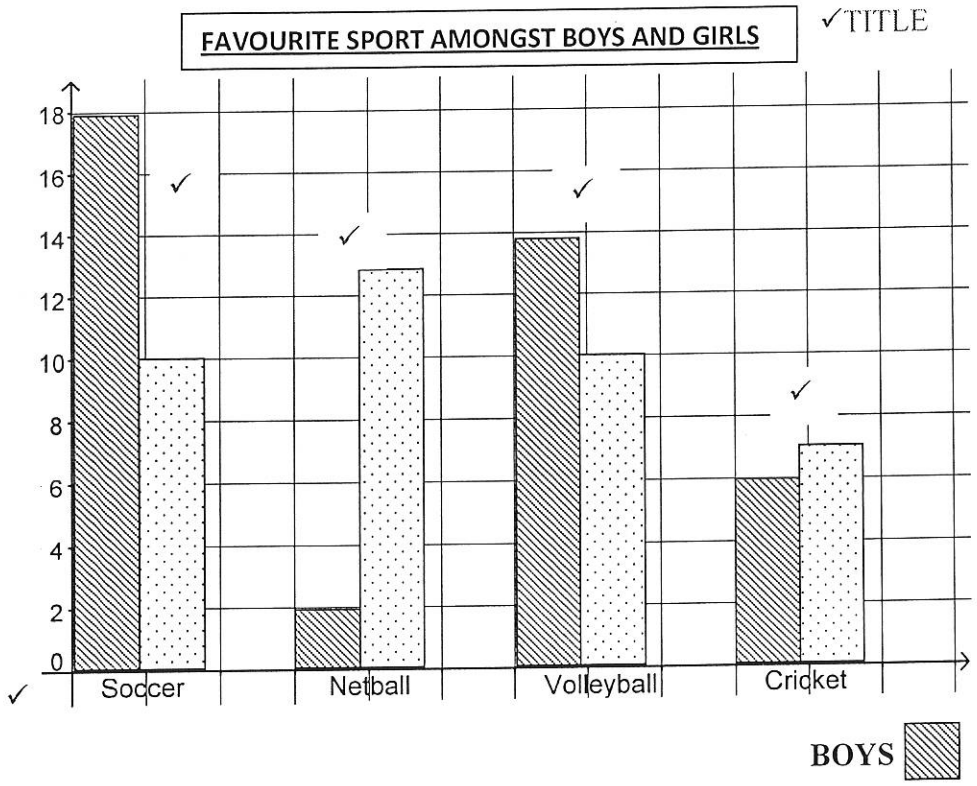
5.1)

BOYS			GIRLS		
SPORT	***TALLY***	*FREQUENCY*	***SPORT***	***TALLY***	*FREQUENCY*
SOCCER	𝍸 𝍸 𝍸 III	18	SOCCER	𝍸 𝍸	10
NETBALL	II	2	NETBALL	𝍸 𝍸 III	13
VOLLEYBALL	𝍸 𝍸 IIII	14	VOLLEYBALL	𝍸 𝍸	10
CRICKET	𝍸 I	6	CRICKET	𝍸 II	7

1 MARK FOR EACH SPORT (B & G) CORRECTLY DONE

(tally and freq mu both be correct)

5.2)



1 Mark for each correct set ✓✓✓✓CA

1A mark fc title

1Acorrect label on x and y axes

Total = 6

5.3) P(Girl who preferred volleyball) = $\frac{10}{80}$ ✓A×100 = 12,5%✓A (2)

12
12