



<b><u>FACULTY</u></b>	: Education
<b><u>DEPARTMENT</u></b>	: Childhood Education
<b><u>CAMPUS</u></b>	:SWC
<b><u>MODULE</u></b>	: MATINA3 Mathematics for Intermediate Phase
<b><u>SEMESTER</u></b>	: First
<b><u>EXAM</u></b>	:June 2019

<b><u>DATE</u></b>	: 2019 June 06	<b><u>SESSION</u></b>	:1
<b><u>ASSESSOR(S)</u></b>	: MR AE Libusha		
<b><u>MODERATOR</u></b>	:Ms N Mbusi (University of Mpumalanga)		
<b><u>DURATION</u></b>	: 2 $\frac{1}{2}$ HOURS	<b><u>MARKS</u></b>	: 100

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NUMBER OF PAGES: 6 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
  2. Number your answers clearly
  3. You are allowed to use a calculator.
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## **QUESTION 1**

- 1.1. Explain the difference between discrete data and continuous data and also give an example of data that can be used in each. 4
- 1.2. Identify the population and the sample from the statement below:
- The average weight or mass of every sixth person entering the mall within a 3 hour period was 82kg 2
- 1.3 A counsellor surveys a random sample of 60 out of 900 high school students. 75% of them said they were going to University. She used the results to determine that 675 students in the overall school would be planning to go to university
- 1.3.1. Do you agree with her predictions, Give a reason to substantiate your reasoning 3
- 1.3.2. Use necessary calculation to show how 675 was obtained 2
- 1.3.3. How many actual students said they will be planning to go to university (show calculations) 2
- 1.4. For each of the following pairs of variables, identify the independent variable and the dependent variable. If it is not possible to identify this, then write 'not appropriate'. And also state a reason to substantiate your reasoning.
- 1.4.1 The number of visitors at a local swimming pool and the daily temperature 2
- 1.4.2 The blood group of a person and his or her favourite TV channel 2
- 1.5. A teacher wanted to find the average height of learners who attend school in Thuto primary school. Give two ways that a teacher can use in order to select a sample for the survey. The first must be an example of a biased sample and the second must be an example of an unbiased sample. 4

[21]

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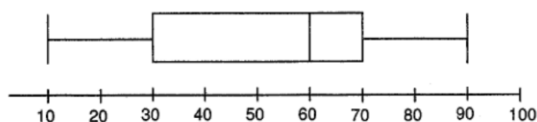
## **Question 2**

Two schools, M-cee-nai High and Bee Vee High are in competition to see which school performed better in mathematics in the June Examination. The marks of the learners at M-cee-nai High school are recorded below. The box whisker diagram below illustrates the results of Bee Vee High School. Both schools have 25 learners. (Marks are given in %).

Marks of M-cee-nai High School learners

9	14	14	19	21
23	33	35	37	37
42	45	55	56	57
59	68	75	75	75
77	78	80	81	92

The box and whisker diagram for the Bee Vee High School Learners



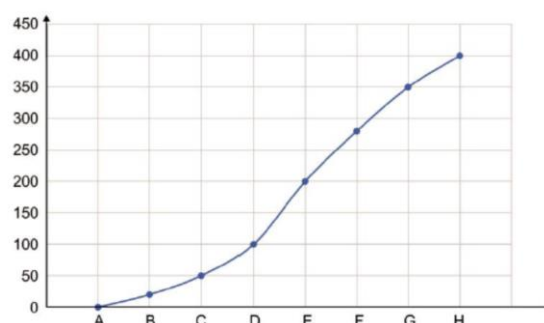
- 2.1. Write down the five-number summary for M-cee-nai High School. 5
- 2.2. Draw the box and whisker diagram that represents M-cee-nai High School marks. Clearly indicate ALL relevant values. 3
- 2.3. Calculate the mean mark of M-cee-nai High School. 2
- 2.4. Comment on the skewness of the data of M-cee-nai High School and give a reason to substantiate your answer 3
- 2.5. If the standard deviation for M-cee-nai High School is 25.2, What percentage of the number of students were one standard deviation above the mean? 3
- 2.6. Determine which school performed better in the June Examination and give reasons for your conclusion. 3

[20]

### Question 3

A number of learners were asked how many WhatsApp messages they sent during a day. The results are summarised in the table and the cumulative frequency curve given below.

WhatsApp messages sent	Frequency
$50 \leq x < 100$	20
$100 \leq x < 150$	30
$150 \leq x < 200$	P
$200 \leq x < 250$	M
$250 \leq x < 300$	80
$300 \leq x < 350$	70
$350 \leq x < 400$	50



- 3.1. What is the value of A on the horizontal axis of the cumulative frequency curve? 1
- 3.2. How many learners were asked for information? 1

3.3.	Determine the values of P and M in the table above.	2
3.4.	Calculate the interquartile range.	3
3.5.	If the cell phone company introduced a contract where you were not allowed to send more than 300 WhatsApp messages per day then: How would this affect the median? Explain.	2
		[9]

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## Section B

### Question 4

4.1.	The sample space is all the possible outcomes of an event. What is the sample space when two matches are played by a rugby springbok team?	6
4.2.	Explain the difference between independent events and dependent events and give one example of each.	6
4.3.	Define the following terms:	
4.3.1.	Mutually exclusive events	2
4.3.2.	Compound event	2
4.4.	What is the difference between the tree diagram and the Venn diagram?	4
		[20]

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### Question 5

- 5.1. A car park contains 5 VW and 3 Toyota cars. Two cars are stolen at different times, being selected at random. What is the probability that the stolen cars are both VW? 3
- 5.2. Study the solved mathematical problem below and answer the questions underneath

A box contains 4 red, 5 blue and 3 green balls. A ball is drawn at random without replacing. What is the probability of getting 2red, and 1green balls?

$$\begin{aligned}
 P(\text{red. blue. green}) &= P(\text{red}) \times P(\text{blue}) \times P(\text{green}) \\
 &= \frac{4}{12} \times \frac{5}{12} \times \frac{3}{12}
 \end{aligned}$$

$$= \frac{60}{1728}$$

$$= \frac{5}{144}$$

- 5.2.1. Explain why the mathematical problem above was solved incorrectly 2
- 5.2.2. Write down the correct method of solving the problem above 3  
[8]
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### **Question 6**

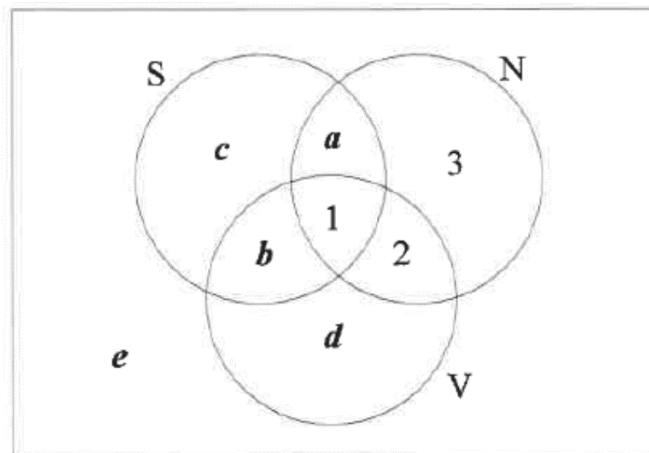
- 6.1 A bag contain 3 blue marbles and 2 red marbles. A marble is taken from the bag, the colour is recorded and the marble is put aside. A second marble is taken from the bag, the colour is recorded and then put aside
- 6.1.1. Draw a tree diagram to represent the information above. Show the probabilities associated with each branch, as well as the possible outcomes 4
- 6.1.2. Determine the probability of first taking a red marble and then taking a blue marble, in that order 3
- 6.2 A and B are two events. The probability that event A will occur is 0.4 and the probability that event B will occur is 0.3. The probability that either event A or event B will occur is 0.58.
- 6.2.1. Are events A and B mutually exclusive? Justify your answer with appropriate calculations 3
- 6.2.2. Are events A and B independent? Justify your answer with appropriate calculations 3
- [13]
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### **Question 7**

- 7.1. A survey was conducted amongst 100 learners at a school to establish their involvement in three codes of sport, soccer, netball and volleyball. The results are shown below.
- 55 learners play soccer(S)
  - 21 learners play netball (N)
  - 7learners play volleyball (V)
  - 3 learners play netball only
  - 2 learners play soccer and volleyball
  - 1 learner plays all 3 sports

3 learners play netball and volleyball

The diagram below shows the information above:



- 7.1. Determine the value of *a*, *b*, *c*, *d* and *e*. 5
- 7.2. What is the probability that one of the learners chosen at random from this group plays netball or volleyball? 2
- 7.3. What is the probability that one of the learners chosen at random from this group plays soccer and volleyball? 2

[9]

Total: 100