



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

<u>ASSESSOR(S)</u>	: MR AE Libusha		
<u>MODERATOR</u>	: Ms N Mbuso (University of Mpumalanga)		
<u>DURATION</u>	: $2\frac{1}{2}$ HOURS	<u>MARKS</u>	: 100

NUMBER OF PAGES: 8 PAGES

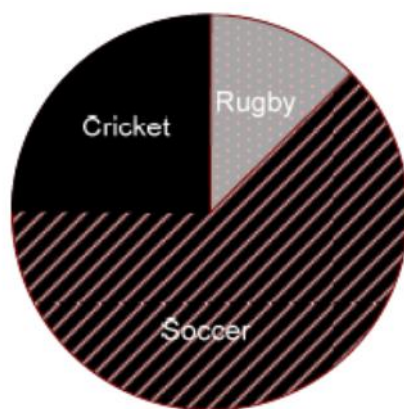
INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
 2. Number your answers clearly
 3. You are allowed to use a calculator.
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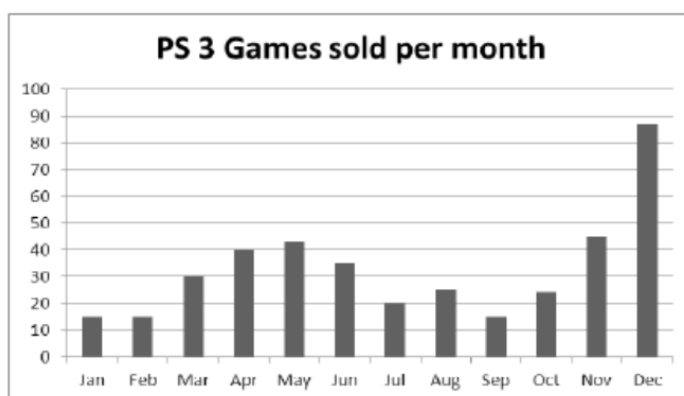
[Section A] QUESTION 1

Write answers only for this section

- 1.1. Senzo has three marbles of the same size in his pocket, a green, a red, and a blue. What is the likelihood when he puts his hand into his pocket and without looking, takes out a red marble? Is it certain, likely, 50% chance, unlikely or impossible? 2
- 1.2. The pie chart below shows the number of cricket balls, soccer balls and rugby balls sold by a sport shop in one year. The number of rugby balls is $\frac{1}{5}$ of the number of soccer balls sold. If 60 cricket balls were sold. How many soccer balls were sold? 2



- 1.3. The graph shows the number of PS3 games sold for a period of one year. Which is the best reading of the number of PS3 games sold in December? *



- 1.4. Given the following set of data: 2,3,3,4,4,5,5,6,6,6,6,7,8,9,10. What is the median? 2
- 1.5. In how many different ways can the four people be arranged in a line next to each other for a photograph? 2



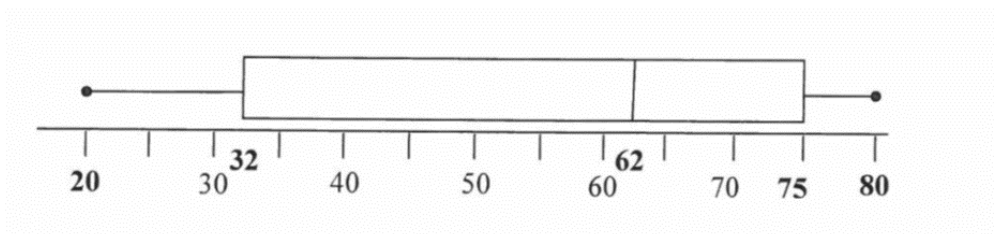
- 1.6. From a batch of 3 000 lightbulbs, 100 were selected at random and tested. If 5 of the lightbulbs in the sample were found to be defective, about how many defective lightbulbs would be expected in the entire batch? 2

- 1.7. Following are the marks obtained by 44 students in Geography. Arrange these marks in a table using tally marks. 2

9	2	5	2	9	7	9	2	8	5	2
5	6	8	5	5	6	8	2	7	2	9
6	5	2	8	2	6	3	5	6	2	6
2	3	5	7	2	6	5	6	6	8	3

- 1.8. Two dice are thrown and the two numbers are multiplied. Calculate the probability (in the simplest form) that: The product will be 12. 2

- 1.9 The box and whisker plot diagram below shows the marks (out of 80) obtained in a Geography test by a class of 9 learners. If the learners had to obtain 32 marks to pass the test, estimate the percentage of the class that passed the test. 2



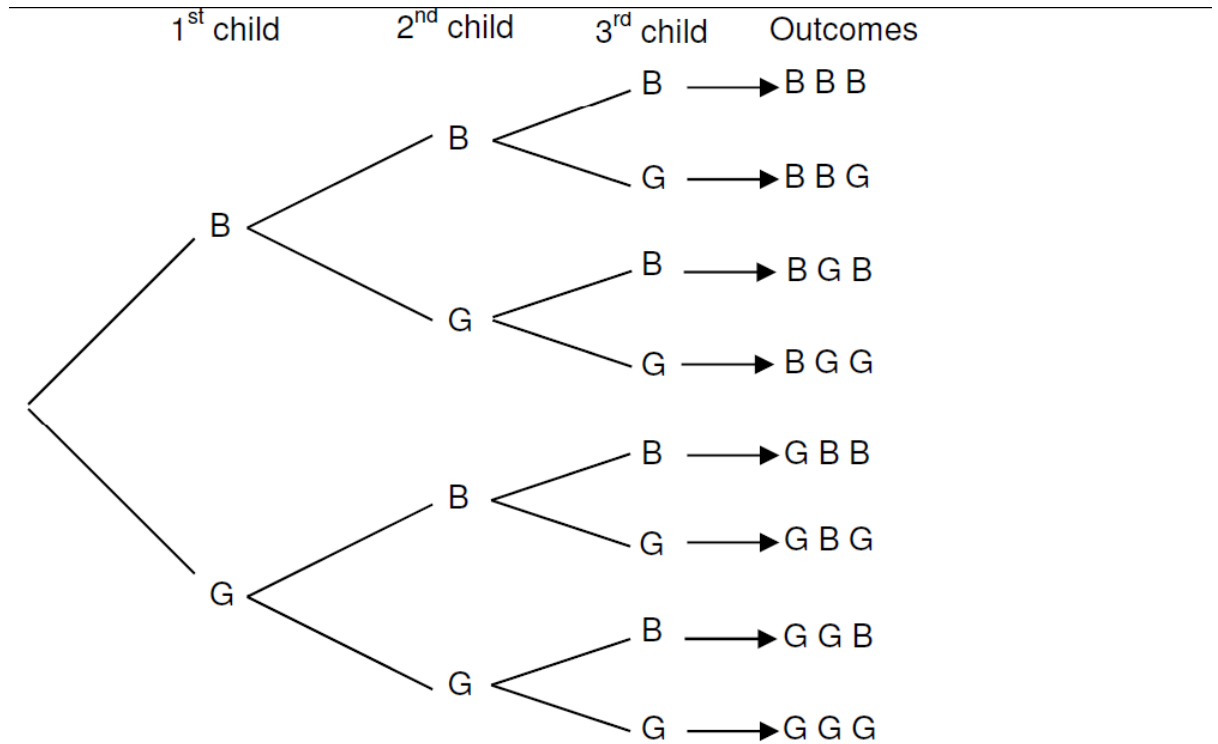
- 1.10 The maximum number of marks that could be obtained for a maths test was 40. Determine the mean if the marks obtained by ten learners are:
25 10 5 25 35 30 25 30 30 30 2

[20]

[Section B] Question 2

- 2.1. Suppose a family has three children. There are many combinations of boys (B) and girls (G) that can make up these three children. Use the tree diagram below to work

out:



2.1.1 The probability that all three children are girls 1

2.1.2 The probability that at least two of the three children are boys 1

2.1.3 The probability that one of the three children is a girl 1

2.1.4 The probability that all three children are of the same gender 1

2.2. Explain the difference between the mutually exclusive and mutually inclusive events 2

2.3. In a hat there are cards numbered from 1 to 10. Cards are drawn one at a time from the hat and replaced. Event L represents numbers less than 3. Event B represent numbers between 3 and 6. Event G represent numbers greater than 6



2.3.1	Give a reason why it is impossible at any one draw to get a card from L and B	2
2.3.2	Calculate the P(L and B)	2
2.3.3	Calculate the P(L or B)	2
2.3.4	Explain if event L, G and B are inclusive or mutually exclusive events, and write down your reasons for this being good term to use for such event	3
		[21]

Question 3

- 3.1 There are 42 learners in a class. 19 learners play soccer, 26 learners play cricket and 6 play both soccer and cricket.
- 3.1.1. Draw Venn diagram to represent this information 4
- 3.1.2. Calculate the probability that a learner chosen at random plays soccer or cricket (write the answer only) 2
- 3.1.3 Calculate the probability that a learner chosen at random does not play both sports. (write the answer only) 2
- 3.2 Study the solved mathematical problem below and answer the questions underneath:

We have numbered cards from 1 to 20 and picked one at random. Find the probability that the card picked is numbered a multiple of 2 or multiple of 5

$$\begin{aligned}
 &P(\text{multiple of 2 or Multiple of 5}) \\
 &= P(\text{multiple of 2}) + P(\text{multiple of 5}) \\
 &= \frac{10}{20} + \frac{4}{20} \\
 &= \frac{14}{20} \\
 &= \frac{7}{10}
 \end{aligned}$$

- 3.2.1 Explain the one concept that was overlooked on the above mathematical problem. 2
- 3.2.2 Solve the problem above using the correct method 3

Section C

Question 4

- 4.1. Explain the difference between univariate data sets and bivariate data sets and also give an example of the graphical representation of data that can be used in each 6
- 4.2. Give a brief description of the meaning of biased sample and also give an example of a scenario with the sample that is not biased. 4
- 4.3. Diebelondlvu Secondary school wanted to change the menu in the school tuckshop. The school has 800 learners. The person taking the sample went to all the classes in the school and chose all learners whose surname starts with the letter T.
- 4.3.1. What is the population in this data set? 2
- 4.3.2. What is the sample in this data set? 2
- 4.3.3 Is the chosen sample biased or fair? Give a reason to support your statement 3
- 4.3.4 Is the data received continuous or discrete data set? Give a reason to support your statement. 2
- 4.4. What is the difference between a tree diagram and a venn diagram? 4

[23]

Question 5

- 5.1. Fifteen of the learners in a Grade 10 class were asked to work out how many kilometers they lived from school. The following list of data shows the distances in km:
- 4; 7; 1; 9; 4; 8; 11; 10; 19; 2; 5; 7; 19; 3; 11
- 5.1.1 Calculate the mean distance and the five-number-summary for the above data set. 6

- 5.1.2 If the standard deviation for the data above is 5.46. How many learners are within one standard deviation of the mean? 3
- 5.1.3 Determine the Interquartile range 2
- 5.1.4 Draw box-and-whisker diagrams to represent the data. 3
- 5.1.5 State whether each data set is symmetric, positively skewed or negatively skewed and state the reason why you think this is so. 2
- 5.1.6 Use necessary calculations to determine if there is an upper outlier. 3
- [19]

Question 6

- 6.1 The JMPD sent out the data set below to the presiding officer. The table below shows the percentage for blood alcohol level and the percentage risk of having a car accident.

Blood Alcohol level (%)	Relative Risk of Having a Car Accident (%)
1.00	1.0
0.05	2.9
0.10	8.5
0.15	24.8
0.20	72.2
0.21	89.5

- 6.1.1. Represent the above information in a scatter plot on the diagram sheet provided. 4
- 6.1.2. Discuss the correlation between the variables 2
- 6.1.3. Draw the line of best fit in the scatter plot drawn for QUESTION 6.1.1 2
- 6.1.4. Why do we represent the blood alcohol level on the x- axis? 2
- [10]

Name_____

student no:_____

Question 6.1.1

