|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | |  | | --- | | YEAR 12 Essentials Mathematics 2019  Test 5 –Data Collection and Bivariate Data | | Total Marks: 43 marks  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Total Time: 50 minutes |   ***Full working out must be shown to get full marks.Attempt all questions in the space provided***  ***Resources allowed: 1 A4 page, (1 side) of hand written notes, ruler, calculator*** | |  |
| **Question One** | | [4 marks; 1 each] | |
|  | |  | |
| Classify each of the following data collections according to whether they are a sample or census.   1. Favourite sports of secondary school students by surveying students in Year 10. 2. Number of hours spent completing homework each week by you class by surveying each student in your class. 3. Survey of all the customers leaving a sports shop between 10am and 11am to gauge customer satisfaction for that shop. 4. The most popular colours for cars sold in the last month in Western Australia, taken from the registration board database of all cars registered in the last month. | | | |
| |  |  | | --- | --- | | **Question Two** | [4 marks; 1 each] | | Give one advantage and disadvantage of conducting a census and sample.   |  |  |  | | --- | --- | --- | |  | Census | Sample | | Advantage |  |  | | Disadvantage |  |  | |  |  |  | | | | | | |
| **Question Three** | | [9 marks; 3 each] | |
| For each of the following investigations;   1. State the population to be surveyed, 2. Decide if a census or a sample should be used in collecting data. Give a reason for your answer.   Students opinions of the school uniform at Baldivis Secondary College.  Which venue should the year 12’s use for their school ball.  The most popular supermarket in Western Australia. | | | |
| **Question Four** | | [3 marks; 1 each] | |
| Give an example of how each of these sampling methods can be conducted.  Random sampling:  Systematic sampling:  Self-selecting sampling: | | | |
| **Question Five** | | [3 marks] | |
| A survey was conducted to find the satisfaction rating of the service provided at a local café. The day of the survey coincided with a hail storm which affected the area. The survey conducted was self-selecting and five people participated. All of the participants were 100% satisfied with the service provided. Explain why this data is misleading and unreliable, give two reasons. Provide an example of how data could be collected in a more reliable manner. | | | |
| **Question Six** | | [4 mark] | |
| Why are the following survey questions biased? Rewrite the question so that it is unbiased.   1. Do you agree that the school uniform at Baldivis Secondary College needs to be changed? 2. Rate how happy you are with the service received at the sports store   Good Very Good Excellent | | | |
| **Question Seven** | | [4 marks] | |
| In what way are the following samples biased? How could you get an unbiased sample?  Asking people leaving a soccer match about their favourite sport?  Asking random people at the shopping centre what they think of the uniform at Baldivis Secondary College. | | | |
| **Question Seven** | | [12 marks; 5, 1, 3 and 3 marks] | |
|  | |  | |
| A sample of students doing Mathematics Essential in Year 12 was taken. Their results for Test 2 and the Externally Set Task are given below (all marks are percentages).   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Test 2**  **(x)** | 44 | 72 | 83 | 57 | 58 | 95 | 50 | 72 | 80 | 73 | 76 | | **EST**  **(y)** | 9 | 39 | 58 | 45 | 18 | 52 | 25 | 58 | 36 | 12 | 30 |      1. Draw a scatterplot, on the grid below, to represent this data.  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  1. Draw in a trend line by eye. 2. Comment on the association between Test 2 and the EST 3. A student sits Test 2 but is away for the EST. If they got 85% on the test, predict the student’s EST mark, showing all working below &/ or on the diagram. Comment on the reliability of your prediction. | | | |