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| Year  10 | | Mathematics Test  Bivariate Data | | Non Calculator Section |
| Short Answer Section | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Write all working and answers in the spaces provided on this test paper. | | | |
|  | **Questions 1 – 4 refer to the following.**  The graph below shown the number of mammal species present in a National Park since it was established 17 years ago. | | | |
| 1. | How many species of mammals were in the park after 2 years?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 2. | In the first six years of the park, how many species were lost?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 3. | Compare the rate at which species were lost in the first four years to that in the remaining eleven years.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 4. | What percentage of the original number of species was lost over the 17 years?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
|  | **Questions 5 – 8 refer to the following.**  The scatter graph compares the ages of husbands and wives when they were married, for fifteen couples. | | | |
| 5. | How many husbands had wives who were older than them?  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 6. | Describe in words the relationship between the ages of the husband and wife.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |
| 7. | On the graph draw a line of best fit for the scatter graph. | | | |
| 8. | Calculate the gradient of the line of best fit.  ..........................................................................................................................................................    .......................................................................................................................................................... | | | |

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|  | **Questions 9 – 12 refer to the following.**  The graph shows the age (in months) of a number of taxis and the income that they earn per day.  A line of best fit has been drawn on the graph. |
| 9. | What type of relationship exists between the age and income?  ..........................................................................................................................................................    .......................................................................................................................................................... |
| 10. | What is the gradient of the line of best fit?  ..........................................................................................................................................................    .......................................................................................................................................................... |
| 11. | What is the equation of the line of best fit?  ..........................................................................................................................................................    .......................................................................................................................................................... |
| 12. | Estimate the income from a thirty month old taxi.  ..........................................................................................................................................................    .......................................................................................................................................................... |

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| Year  10 | | Mathematics Test  Bivariate Data | | Calculator |
| Multiple Choice Section | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section. | | | |
|  | **Questions 1 – 3 refer to the following.**  The line graph shows how the population of a village has changed over a period of years. | | | |
| 1. | What was the highest population?  A. 1 210 B. 1 225 C. 1 250 D. 1 300 | | | |
| 2. | Between which years was the population above 1 100?  A. 1979 and 2000 B. 1979 and 1990  C. 1985 and 2000 D. 1985 and 1990 | | | |
| 3. | Between which years was there the greatest growth in population?  A. 1965 and 1970 B. 1970 and 1975  C. 1975 and 1980 D. 1980 and 1985 | | | |
| 4. | Which scatter graph indicates there is a linear relationship between *x* and *y*?  A. B. C. D. | | | |
| 5. | What type of relationship is shown on the scatter graph?  A. A strong positive linear relationship.  B. A weak positive linear relationship.  C. A strong negative linear relationship.  D. A weak negative linear relationship. | | | |
| 6. | Which scatter graph shows a strong negative linear relationship?  A. B.  C. D. | | | |
| 7. | Which scatter graph indicates there is a strong non-linear relationship between *x* and *y*?  A. B. C. D. | | | |
| 8. | A line of best fit has been drawn on the scatter graph.  Which would be a close estimate for the gradient of the line?  A.  B.  C.  D. | | | |
| 9. | A line of best fit has been drawn on the scatter graph.  Which could be the equation of the line?  A.  B.  C.  D. | | | |
| 10. | The line of best fit on a scatter graph comparing distance (*d* metres) and time (*t* seconds) is found to have an equation of.  What distance would you estimate would correspond to a time of 50 seconds?  A. 25 sec  B. 105 sec  C. 255 sec  D. 1250 sec | | | |

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| Year  10 | | | Mathematics Test  Bivariate Data | |  |
| Longer Questions | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Write all working and answers in the spaces provided on this test paper.  Calculators are allowed for this section. | | | | |
| 1. | The table below compares a cricketer’s score with the time that he was batting.     |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Score (runs) | 4 | 19 | 5 | 13 | 26 | 19 | 11 | 22 | 22 | 20 | | Time (min) | 5 | 23 | 6 | 18 | 33 | 24 | 14 | 27 | 30 | 23 | | | | | |
|  | (a)  2 marks | Mark the data onto a scatter plot using the grid below.  Score  Time | | | |
| (b)  2 marks | Draw a line of best fit on the graph. | | | |
| (c)  2 marks | Find the equation of the line of best fit.  .......................................................................................................................................................    ....................................................................................................................................................... | | | |
| (d)  1 mark | Estimate the time that a cricketer who scored 80 was batting.  ....................................................................................................................................................... | | | |

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| Year  10 | Mathematics Test  Bivariate Data | |  |
| Multiple Choice  Answer Sheet | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

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|  | Mathematics Test  Bivariate Data |
| Answer Sheet |

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| Short Answer | |
| 1 | 238 species |
| 2 | 32 were lost |
| 3 | The rate slows after the first 4 years. |
| 4 | 16.4% |
| 5 | 7 |
| 6 | The ages of husbands and wives were similar, within a few years. |
| 7 |  |
| 8 | Gradient =1 |
| 9 | As age increases, income decreases. |
| 10 | Accept values around -6 |
| 11 | Depends on line drawn. |
| 12 | $57.50 ( depends on line drawn.) |

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| Multiple Choice | |
| 1 | C |
| 2 | B |
| 3 | C |
| 4 | A |
| 5 | A |
| 6 | B |
| 7 | D |
| 8 | B |
| 9 | D |
| 10 | B |

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| Longer Answer | | |
| 1 | a |  |
|  | b |
|  | c |  |
|  | d | If S =80 |