

***A World of Education…an Education for the World!***

#### GRADE 12 - MATHEMATICS PAPER 3

#### EXAMINER: MS. B. MAGANBHAI DATE: 28 JULY 2010

**MODERATOR: MRS. K. HULME TOTAL: 80 TIME: 1 HOURS**

**CANDIDATE’S NAME:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CANDIDATE’S MATHS TEACHER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

#### INSTRUCTIONS TO CANDIDATES:

1. Answer all questions in the answer book provided.
2. All written work must be done using blue or black ink. Diagrams and graphs must be drawn neatly using pencil.
3. No correction fluids may be used
4. Non-programmable calculators may be used unless otherwise stated.
5. Round off to TWO decimal places unless otherwise stated.
6. It is in your own interests to work neatly and to show all necessary steps in calculations.

**THIS EXAMINATION CONSISTS OF 5 PAGES**

**QUESTION 1:**

1. Given the sequence 39; 46; 53; 60; ...
2. Find the general formula for . (2)
3. Find the recursive formula for . (2)
4. Determine if . (4)

**[8]**

**QUESTION 2:**

1. Ian rolls two die. Find the probability that he gets a sum of 7 or a sum of 8. (5)

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1. 80% if the learners at Dainfern College carry a backpack (B) or a wallet (W). 40% carry a backpack and 50% carry a wallet. If a learner is selected at random, find the probability that the student carries both a backpack and a wallet. (5)
2. The grade 8s of Dainfern College collect information about their gender and handedness. The two-way table below gives the proportions of the class members:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | Gender | | |
| Male | Female | Total |
| Handedness | Right | 0,44 | A | B |
| Left | D | C | 0,08 |
| Total | E | 0,48 | 1 |

1. Complete the table by writing the values of A, B, C, D and E in your answer books. (5)
2. If a learner is chosen at random from the grade, what is the probability of the learner

being left-handed or male? (3)

1. What is the probability that a randomly selected learner is female and left-handed? (1)

**[18]**

**QUESTION 3 [ANSWER THIS QUESTION ON THE ANSWER SHEET]**

|  |  |  |
| --- | --- | --- |
| The frequency table below represents the marks out of 150 obtained by 300 Grade 12 learners in a Mathematics Exam (No fraction marks were given). | | |
| a. | Complete the table below. | (5) |
| |  |  |  |  | | --- | --- | --- | --- | | **Marks obtained** | **Mid-point** | **Frequency** | **Cumulative Frequency** | |  |  | 15 |  | |  |  | 30 |  | |  |  | 95 |  | |  |  | 70 |  | |  |  | 90 |  | | | |
| b. | Determine the estimate mean of the class. | (3) |
| c. | Draw an ogive curve using the data from the above table on the axes provided on the answer sheet. | (4) |
| **[12]**  **QUESTION 4:**     |  |  | | --- | --- | | In the isosceles triangle below, . It is also given that and. |  |  |  |  |  | | --- | --- | --- | | a | Prove that | (4) | | b | Hence, if it is given that , solve for *k.* | (5) | |  | What conclusion can you make about ? | (1) | |  |  | **[10]** |   **QUESTION 5:**  In the diagram, ABCD is a cyclic quadrilateral with . If AB and DC are extended to meet at P,  then .  If AB and DC are extended to meet at Q, then .  Find the value of  **[6]**  Q          A  B  P  C  D | | |
| **QUESTION 6:**  In the figure BCKS is a rectangle and the diagonal BK is perpendicular to the straight line AR which is drawn through B. The sides KS and KC produced meet this line at R and A respectively.  A  B C  R S K   1. Prove that . (3) 2. Join CS and prove that ACSR is a cyclic quadrilateral. (6) 3. Given that Δ prove that (5)   **[14]**  **QUESTION 7:**  GHJK is a square with the length of a side equal to units.  B is a point on KJ such that BJ = units and AB ⊥ HB with A on GK.  G A K  B  H J   1. Prove that Δ (3) 2. Prove that the area of (4) 3. If the area of ΔHJB is four times the area of ΔBKA, calculate in terms of . (5)   **[12]** | | |