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| MC900229237[1] ACE Examinations  2016  **YEAR 8**  **YEARLY EXAMINATION** | | Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Mathematics | | |
| **General Instructions**   * Reading time - 5 minutes * Working time - 75 minutes * Write using black or blue pen * You may use a pencil to draw or complete diagrams * Calculators may be used | **Total marks - 50**  **Section 1**  **20 marks**  Attempt Questions 1-20  Allow 30 minutes for this section  **Section 2**  **30 marks**  This section has two parts  Part A - Questions 21-24 20 marks  Part B - Questions 25-26 (advanced) 10 marks  Allow 45 minutes for this section | |

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| Section 1 |
|  |
| 20 marks |
| Attempt Questions 1 - 20 |
| Allow about 30 minutes for this section |
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| Use the multiple-choice answer sheet for Questions 1-20 |
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| 1. can be written as: | | |
|  | (A) | |
|  | (B) | |
|  | (C) | |
|  | (D) | |
|  | | |
| 1. What is the name of a triangle with two equal sides? | | |
|  | | (A) Equilateral |
|  | | (B) Identical |
|  | | (C) Isosceles |
|  | | (D) Scalene |
|  | | |
| 1. If  then *y* equals: | | |
|  | | (A) 5 |
|  | | (B) 24 |
|  | | (C) 36 |
|  | | (D) 180 |
|  | | |
| 1. Which of the following is the best price for a litre of petrol? | | |
|  | | (A) $1.36 for 1 L |
|  | | (B) $2 for 1.75 L |
|  | | (C) $1.50 for  L |
|  | | (D) $1 for 750 mL |
|  | | |
| 1. A coin and a six-sided die are tossed together.   How many elements in the sample space? | | |
|  | | (A) 2 |
|  | | (B) 6 |
|  | | (C) 8 |
|  | | (D) 12 |

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| 1. What is the number needed to complete the table of values if the rule is ? | |
| |  |  |  |  | | --- | --- | --- | --- | | *x* |  | 0 | 4 | | *y* |  | 4 | 16 | | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) 2 |
|  | |
| 1. What is 15% expressed as a fraction? | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |
| 1. Two numbers have a sum of  and a product of .   Which of the following is the larger of the two numbers? | |
|  | (A) |
|  | (B) |
|  | (C) 5 |
|  | (D) 15 |
|  | |
| 1. What is the value of *x* in this triangle? | |
|  | |
|  | (A) 12 |
|  | (B) 13 |
|  | (C) 14 |
|  | (D) 15 |
|  | |

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| 1. Amy breathes about 15 times each minute.   How many times would she breathe in 9 hours? | |
|  | (A) 90 |
|  | (B) 216 |
|  | (C) 8100 |
|  | (D) 486 000 |
|  | |
| 1. What is the area of a circle with a radius of 5.5 m? | |
|  | (A) 17.28 m2 |
|  | (B) 34.56 m2 |
|  | (C) 95.03 m2 |
|  | (D) 380.13 m2 |
|  | |
| 1. Which of the following fractions lie between zero and ? | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |
| 1. What is the solution to the equation ? | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |
| 1. Lara gets a 3% commission on the value of her sales.   How much does Lara receive in commission if she sells $2000 worth of goods? | |
|  | (A) $6 |
|  | (B) $60 |
|  | (C) $200 |
|  | (D) $300 |
|  | |

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| 1. What is the value of *x*˚? | |
|  | |
|  | (A) 45˚ |
|  | (B) 76˚ |
|  | (C) 121˚ |
|  | (D) 166˚ |
|  | |
|  | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |
| 1. Consider the data set: 9, 10, 11, 11, 17, 20, 21, 21.   Which of the following statements is true? | |
|  | (A) Mean = 12 |
|  | (B) Median = 12 |
|  | (C) Mode = 12 |
|  | (D) Range = 12 |
|  | |
| 1. What is the expression for the perimeter of the shape below? | |
|  | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |

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| 1. A person is chosen at random.   What is the probability the person was *not* born in June? | |
|  | (A) 0 |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |
| 1. What is the equation of the following line? | |
|  | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |

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| Section 2 Part A |
|  |
| 20 marks |
| Attempt Questions 21 ‒ 24 |
| Allow about 20 minutes for this section |
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| Answer the questions in the spaces provided. |
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| All necessary working should be shown in every question. |
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| **Question 21** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | Find the value of , correct to two decimal places. | | | | **1** |
|  |  | | | |  |
| (b) | What is the number halfway between 1.65 and 1.7? | | | | **1** |
|  |  | | | |  |
| (c) | Los Angles had a temperature of 35ºC when Moscow had a temperature of ºC. What is the difference in the temperatures? | | | | **1** |
|  |  | | | |  |
| (d) | Simplify . | | | | **1** |
|  |  | | | |  |
| (e) | Convert 8 m2 to square centimetres. | | | | **1** |
|  |  | | | |  |

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| **Question 22** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | What is the value of *y* in the diagram? | | | | **1** |
|  |  | | | |  |
|  |  | | | |  |
| (b) | Solve the following equations. | | | |  |
|  | (i) |  | | | **1** |
|  |  |  | | |  |
|  | (ii) |  | | | **1** |
|  |  |  | | |  |
| (c) | A rectangular prism is shown below. | | | |  |
|  |  | | | |  |
|  | (i) | What is the volume of the prism? | | | **1** |
|  |  |  | | |  |
|  | (ii) | What is the surface area of the prism? | | | **1** |
|  |  |  | | |  |

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| **Question 23** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | |  |  |  | | --- | --- | --- | | **Score** | **Tally** | **Frequency** | | 0 | |||| | 4 | | 1 | ||| | 3 | | 2 | || | 2 | | 3 | || | 2 | | 4 |  |  | | 5 | ||| | 3 | |  | Total | 20 | | | | |  |
|  | (i) | Complete the frequency table shown above. | | | **1** |
|  |  |  | | |  |
|  | (ii) | What is the median? | | | **1** |
|  |  |  | | |  |
| (b) | Given that ,  and  evaluate the following expressions: | | | |  |
|  | (i) |  | | | **1** |
|  |  |  | | |  |
|  | (ii) |  | | | **1** |
|  |  |  | | |  |
| (c) | A computer decreases in value by 15% a year. What is the value of a $2000 computer at the end of two years? | | | | **1** |
|  |  | | | |  |

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| **Question 24** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | A netball and a shirt together cost $60. If the cost of the netball is $24 more than the shirt, what was the cost of the netball? | | | | **1** |
|  |  | | | |  |
| (b) | Find the value of *x°*. | | | | **1** |
|  |  | | | |  |
|  |  | | | |  |
| (c) | The ratio of boys to girls in a class is 6:7. The number of girls increases from 14 to 15. What is the new ratio of boys to girls? | | | | **1** |
|  |  | | | |  |
| (d) | Find the value of the pronumeral in this diagram. | | | | **1** |
|  |  | | | |  |
|  |  | | | |  |
| (e) | Find the gradient of the line joining  and . | | | | **1** |
|  |  | | | |  |

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| Section 2 Part B: Advanced |
|  |
| 10 marks |
| Attempt Questions 25 ‒ 26 |
| Allow about 15 minutes for this section |
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| Answer the questions in the spaces provided. |
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| All necessary working should be shown in every question. |
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| **Question 25** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | Fully simplify | | | | **1** |
|  |  | | | |  |
| (b) | A number is selected from the set {1, 2, 3, … ,25}.  What is the probability the number chosen is divisible by 2 or 3? | | | | **1** |
|  |  | | | |  |
| (c) | What is the value of *x* in the following diagram? Give reasons. | | | | **2** |
|  |  | | | |  |
|  |  | | | |  |
| (d) | Seven numbers have a mean of 8. Six of the numbers are 10, 6, 6, 4, 11 and 10. Find the seventh number. | | | | **1** |
|  |  | | | |  |

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| **Question 26** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | A data set consists of {0, 1, 2, 2, 2, 2, 3, 4, 5}. How many numbers greater than 5 need to be added to change the median? (Give the least number). | | | | **1** |
|  |  | | | |  |
| (b) | Find the linear relationship between *x* and *y* in the following table. | | | | **2** |
|  | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | *x* | 1 | 3 | 5 | 7 | 9 | | *y* | 1 | 2 | 3 | 4 | 5 | | | | |  |
|  |  | | | |  |
| (c) | A rectangular garden has a length 12 m longer than its breadth. | | | |  |
|  | (i) | What is the breadth if the side length is *x*? | | | **1** |
|  |  |  | | |  |
|  | (ii) | What is the perimeter of the garden? | | | **1** |
|  |  |  | | |  |

**End of test**