|  |  |  |
| --- | --- | --- |
| MC900229237[1] ACE Examinations  2016  **YEAR 9**  **YEARLY EXAMINATION** | | Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Mathematics | | |
| **General Instructions**   * Reading time - 5 minutes * Working time - 90 minutes * Write using black or blue pen * You may use a pencil to draw or complete diagrams * Calculators may be used | **Total marks - 60**  **Section 1**  **25 marks**  Attempt Questions 1-25  Allow 35 minutes for this section  **Section 2**  **35 marks**  This section has two parts  Part A - Questions 26-30 25 marks  Part B - Questions 31-32 (advanced) 10 marks  Allow 55 minutes for this section | |

|  |
| --- |
| Section 1 |
|  |
| 25 marks |
| Attempt Questions 1 - 25 |
| Allow about 35 minutes for this section |
|  |
| Use the multiple-choice answer sheet for Questions 1-25 |
|  |

|  |  |  |
| --- | --- | --- |
| 1. A crowd of approximately 91 000 attended the grand final.   What is this number in scientific notation? | | |
|  | (A) | |
|  | (B) | |
|  | (C) | |
|  | (D) | |
|  | | |
| 1. Which data set has the mode larger than the range? | | |
|  | | (A) 0, 5, 7, 7, 7 |
|  | | (B) 3, 5, 6, 6, 8 |
|  | | (C) 4, 5, 5, 5, 10 |
|  | | (D) 5, 5, 6, 8, 11 |
|  | | |
| 1. What is the value of *y*? | | |
|  | | |
|  | | (A) 20 |
|  | | (B) 44 |
|  | | (C) 64 |
|  | | (D) 84 |
|  | | |
| 1. Kiara spent yesterday in Hobart. The temperature at 5 am was .   Between 5 am and 5 pm the temperature rose by  and then fell by .  What was the temperature at 5 pm? | | |
|  | | (A) |
|  | | (B) |
|  | | (C) |
|  | | (D) |

|  |  |
| --- | --- |
| 1. A GST of 10% is added to the price of a boat. The price of a boat before tax is $62,500. What is the price of the boat after the tax is added? | |
|  | (A) $63,125 |
|  | (B) $63,500 |
|  | (C) $68,750 |
|  | (D) $68,812.50 |
|  | |
| 1. Which expression is three less than ? | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |
| 1. This rectangular piece of cardboard has a perimeter of 40 cm. | |
|  | |
| What is the width of the rectangle? | |
|  | (A) 3.3 cm |
|  | (B) 8 cm |
|  | (C) 18 cm |
|  | (D) 28 cm |
|  | |
| 1. Toby buys 20 tickets in a raffle in which there are 400 tickets sold.   What is the chance that he does *not* win first prize? | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |

|  |  |
| --- | --- |
| 1. These two triangles have the same perimeter. | |
|  | |
| What is the value of *x*? | |
|  | (A) 3 |
|  | (B) 5 |
|  | (C) 6 |
|  | (D) 7 |
|  | |
| 1. Which expression is equivalent to ? | |
|  | (A) |
|  | (B) |
|  | (C) |
|  | (D) |
|  | |
| 1. Sean normally works four-hour shifts. He is paid $12.75 per hour normal time and $18.75 per hour for any time he works over four hours.   What is his total pay for working a shift from 10.30 am to 3.30 pm? | |
|  | (A) $63.75 |
|  | (B) $69.75 |
|  | (C) $93.75 |
|  | (D) $107.25 |
|  | |
| 1. What is the value of  if ? | |
|  | (A) |
|  | (B) |
|  | (C) 4 |
|  | (D) 16 |
|  | |

|  |  |  |
| --- | --- | --- |
| 1. A right-angled triangle has sides *a*, *b* and *c*. | | |
|  | | |
| What is Pythagoras theorem for the above triangle? | | |
|  | (A) | |
|  | (B) | |
|  | (C) | |
|  | (D) | |
|  | | |
| 1. has coordinates  and . | | |
|  | | Not to scale |
| What is the area (in square units) of ? | | |
|  | (A) 12 | |
|  | (B) 16 | |
|  | (C) 24 | |
|  | (D) 36 | |
|  | | |
| 1. What is the expanded form of ? | | |
|  | (A) | |
|  | (B) | |
|  | (C) | |
|  | (D) | |
|  | | |
| 1. Bailey earns $1710 per week. What is the equivalent monthly income? | | |
|  | (A) $3420 | |
|  | (B) $6840 | |
|  | (C) $7328 | |
|  | (D) $7410 | |
|  | | |

|  |  |  |
| --- | --- | --- |
| 1. A fair coin can either land on heads or tails.   What are the chances of getting two heads when two coins are tossed? | | |
|  | | (A) |
|  | | (B) |
|  | | (C) |
|  | | (D) 2 |
|  | | |
| 1. What is the speed of a car in m/s given that it travels 140 km in 4 hours? | | |
|  | | (A) 9.7 |
|  | | (B) 583 |
|  | | (C) 35,000 |
|  | | (D) 126,000,000 |
|  | | |
| 1. What is the amount of space inside the following empty tent? | | |
|  | | |
|  | (A) 2 m3 | |
|  | (B) 3 m3 | |
|  | (C) 6 m3 | |
|  | (D) 9 m3 | |
|  | | |
| 1. What is the simplified form of ? | | |
|  | | (A) |
|  | | (B) |
|  | | (C) |
|  | | (D) |
|  | | |

|  |  |  |
| --- | --- | --- |
| 1. What is the value of *a* in this diagram? | | |
|  | | |
|  | (A) 10˚ | |
|  | (B) 18˚ | |
|  | (C) 20˚ | |
|  | (D) 40˚ | |
|  | | |
| 1. The average height of two boys in a class is 1.35 m. The average height of three girls from the same class is 1.25 m. What is the average height (in metres) of these 5 students? | | |
|  | (A) 1.09 | |
|  | (B) 1.25 | |
|  | (C) 1.29 | |
|  | (D) 1.30 | |
|  | | |
| 1. What is the gradient of the line passing through  and ? | | |
|  | (A) | |
|  | (B) 0.5 | |
|  | (C) 1 | |
|  | (D) 2 | |
|  | | |
| 1. What is the value of *y* in the triangle below? | | |
|  | | |
|  | (A) 6 | (B) 7 |
|  | (C) | (D) |
|  | | |
| 1. What is the expanded form of ? | | |
|  | (A) | |
|  | (B) | |
|  | (C) | |
|  | (D) | |

|  |
| --- |
| Section 2 Part A |
|  |
| 25 marks |
| Attempt Questions 26 ‒ 30 |
| Allow about 40 minutes for this section |
|  |
| Answer the questions in the spaces provided. |
|  |
| All necessary working should be shown in every question. |
|  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Question 26** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | Evaluate correct to two decimal places. | | | | **1** |
|  |  | | | |  |
| (b) | Solve the following equations. | | | |  |
|  | (i) |  | | | **1** |
|  |  |  | | |  |
|  | (ii) |  | | | **1** |
|  |  |  | | |  |
| (c) | Zac sells cars where he is paid a retainer of $300 plus 3% of all sales. | | | |  |
|  | (i) | How much does Zac get paid if he sold no cars in the week? | | | **1** |
|  |  | | | |  |
|  | (ii) | How much does Zac get paid if he sold a car worth $68 000? | | | **1** |
|  |  | | | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Question 27** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | Simplify | | | |  |
|  | (i) |  | | | **1** |
|  |  |  | | |  |
|  | (ii) |  | | | **1** |
|  |  |  | | |  |
| (b) | Find the surface area of this cylinder. Answer correct to two decimal places. | | | | **1** |
|  |  | | | |  |
|  |  | | | |  |
| (c) |  | | | |  |
|  | (i) | Why is  similar to ? | | | **1** |
|  |  |  | | |  |
|  | (ii) | Find the value of *x*. | | | **1** |
|  |  |  | | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Question 28** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | The table below shows how many females and males among 85 students are right-handed or left-handed. | | | |  |
|  | |  |  |  |  | | --- | --- | --- | --- | |  | **Left-handed** | **Right-handed** | **Total** | | **Male** | 7 | 33 | 40 | | **Female** | 4 | 41 | 45 | | **Total** | 11 | 74 | 85 | | | | |  |
|  | (i) | What is the probability of selecting a female student? | | | **1** |
|  |  |  | | |  |
|  | (ii) | What is the probability of selecting a right-handed student? | | | **1** |
|  |  |  | | |  |
|  | (iii) | What is the probability of selecting a right-handed male student? | | | **1** |
|  |  |  | | |  |
| (b) | Jett works 38 hours at a normal rate of $20.80. He also works six hours at time-and-a-half and eight hours at double time. Calculate his total pay for the week. | | | | **1** |
|  |  | | | |  |
| (c) | Express 85 cents as a percentage of $2. | | | | **1** |
|  |  | | | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Question 29** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) |  | | | | **1** |
|  |  | | | |  |
| (b) | Find the area of this composite shape. | | | | **1** |
|  |  | | | |  |
|  |  | | | |  |
| (c) | Expand | | | | **1** |
|  |  | | | |  |
| (d) | Arrange the scores 21, 12, 11, 8, 11, 9, 10 and 2 into a stem-and-leaf plot. | | | | **1** |
|  | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Stem | Leaf | | | | | | | | | | | 0 |  |  |  |  |  |  |  |  |  |  | | 1 |  |  |  |  |  |  |  |  |  |  | | 2 |  |  |  |  |  |  |  |  |  |  | | | | |  |
| (e) | Factorise | | | | **1** |
|  |  | | | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Question 30** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | Calculate the area of the shape below correct to two decimal places. | | | | **1** |
|  |  | | | |  |
|  |  | | | |  |
| (b) | A ladder makes an angle of 55˚ with the ground and the foot of the ladder is 1.5 m from the base of the wall along the ground. | | | |  |
|  |  | | | |  |
|  | (i) | How high does the ladder reach up the wall? | | | **1** |
|  |  |  | | |  |
|  | (ii) | Calculate the length of the ladder. | | | **1** |
|  |  |  | | |  |
|  | (iii) | The top of the ladder is moved 50 cm down the wall.  What is the new angle the ladder makes with the ground? | | | **1** |
|  |  |  | | |  |
| (c) | What is the equation of a line parallel to the *x*-axis and 2 units above it? | | | | **1** |
|  |  | | | |  |

|  |
| --- |
| Section 2 Part B: Advanced |
|  |
| 10 marks |
| Attempt Questions 31 ‒ 32 |
| Allow about 15 minutes for this section |
|  |
| Answer the questions in the spaces provided. |
|  |
| All necessary working should be shown in every question. |
|  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Question 31** | | | (5 marks) |  | | | **Marks** |
|  |  |  | | | | |  |
| (a) | Simplify | | | | | | **1** |
|  |  | | | | | |  |
| (b) | Find the value of the pronumeral in each of the following diagrams. | | | | | | **2** |
|  | (i) |  | | | (ii) |  |  |
|  |  | | | | | |  |
| (c) | Simplify . | | | | | | **1** |
|  |  | | | | | |  |
| (d) | Expand and simplify | | | | | | **1** |
|  |  | | | | | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Question 32** | | | (5 marks) |  | **Marks** |
|  |  |  | | |  |
| (a) | The frequency histogram below shows the distribution of test scores. | | | |  |
|  |  | | | |  |
|  | (i) | What is the median score? | | | **1** |
|  |  | | | |  |
|  | (i) | What percentage of the scores is 18? | | | **1** |
|  |  | | | |  |
| (b) | Simplify | | | | **1** |
|  |  | | | |  |
| (c) | A card is chosen from a standard deck of 52 playing cards. | | | |  |
|  | (i) | What is the probability of selecting a heart or a king? | | | **1** |
|  |  |  | | |  |
|  | (ii) | What is the probability of selecting not a king? | | | **1** |
|  |  |  | | |  |

**End of test**