ACE Examination 2016

Year 10 Mathematics Yearly Examination

Worked solutions and marking guidelines

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| **Section 1** | | |
|  | **Solution** | **Criteria** |
| 1 |  | 1 Mark: A |
| 2 | Each of the digits is equally likely with a fair dice.  ‘Any number’ | 1 Mark: D |
| 3 | Total number of scores  Middle score is the 10th  score or 4. | 1 Mark: B |
| 4 |  | 1 Mark: D |
| 5 | Volume of box:  Volume of cube: | 1 Mark: B |
| 6 | Gradient intercept formula: .  Gradient is 3. | 1 Mark: C |
| 7 |  | 1 Mark: C |
| 8 |  | 1 Mark: C |
| 9 |  | 1 Mark: B |
| 10 |  | 1 Mark: A |
| 11 | (Matching sides are in proportion). | 1 Mark: A |
| 12 |  | 1 Mark: B |
| 13 |  | 1 Mark: C |

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| 14 |  | | | 1 Mark: D |
| 15 | (exterior angle theorem)  (straight angle is 180˚) | |  | 1 Mark: C |
| 16 |  | | | 1 Mark: A |
| 17 |  | | | 1 Mark: C |
| 18 | Total number of apartments  There are 5 apartments with 2 residents. | | | 1 Mark: A |
| 19 |  | | | 1 Mark: B |
| 20 | (A)   (B)  (C)  (D) | | | 1 Mark: B |
| 21 |  | | | 1 Mark: A |
| 22 |  | | | 1 Mark: B |
| 23 | Graph represents a concave down parabola or .  The *y*-intercept () is positive. Answers indicate point | | | 1 Mark: A |
| 24 | Five books on the table have a price of $3, $4, $6, $8 and $8.  Cheapest price is $3. | | | 1 Mark: C |
| 25 |  | Pythagoras theorem | | 1 Mark: C |

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| **Section 2 Part B** | | |
|  | **Solution** | **Criteria** |
| 26(a)  (i) | Total number of fruit is 20. | 1 Mark: Correct answer. |
| 26(a)  (ii) |  | 1 Mark: Correct answer. |
| 26(b) | Billie pays $18,000 in interest. | 1 Mark: Correct answer. |
| 26(c) (i) | Gradient is 3. | 1 Mark: Correct answer. |
| 26(c) (ii) | or | 1 Mark: Correct answer. |
| 27(a) |  | 1 Mark: Correct answer. |
| 27(b) (i) | (Cointerior, supplementary,) | 1 Mark: Correct answer. |
| 27(b) (ii) | (vertically opposite angles are equal) | 1 Mark: Correct answer. |
| 27(c) (i) |  | 1 Mark: Correct answer. |
| 27(c) (ii) |  | 1 Mark: Correct answer. |
| 28(a) (i) | Area of a rectangle is the length times the breadth. | 1 Mark: Correct answer. |
| 28(a) (ii) | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | *x* | 0 | 5 | 10 | 15 | 20 | | *A* | 0 | 75 | 100 | 75 | 0 | | 1 Mark: Correct answer. |

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| 28(a) (iii) |  | 1 Mark: Correct answer. |
| 28(b) |  | 1 Mark: Correct answer. |
| 28(c) | GST paid is $35. | 1 Mark: Correct answer. |
| 29(a) (i) | Triangular prism | 1 Mark: Correct answer. |
| 29(a) (ii) |  | 1 Mark: Correct answer. |
| 29(b) (i) |  | 1 Mark: Correct answer. |
| 29(b) (ii) |  | 1 Mark: Correct answer. |
| 29(b) (iii) |  | 1 Mark: Correct answer. |
| 30(a) | Consider  and  (given)  (given)  (common side)  (SAS) | 2 Marks: Correct answer.  1 Mark: Shows some understanding. |
| 30(b) |  | 1 Mark: Correct answer. |
| 30(c) | Complement of 27˚ is 63˚    Ship is 106 metres from the base of the cliff. | 2 Marks: Correct answer.  1 Mark: Uses appropriate trig ratio. |

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| **Section 2 Part A: Advanced** | | |
|  | **Solution** | **Criteria** |
| 31(a) |  | 1 Mark: Correct answer. |
| 31(b) | Complementary angles | 1 Mark: Correct answer. |
| 31(c) | Let    Therefore  or | 1 Mark: Correct answer. |
| 31(d) | Let the first number be *x*. Numbers are .    Therefore  (ignore : numbers are positive integers)  Consecutive positive integers are 3, 4 and 5. | 2 Marks: Correct answer.  1 Mark: Forms a quadratic equation or shows some understanding. |
| 32(a) (i) |  | 2 Marks: Correct answer.  1 Mark: Shows some understanding. |
| 32(a) (ii) |  | 1 Mark: Correct answer. |

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| 32(b) (i) |  | 1 Mark: Correct answer. |
| 32(b) (ii) | Circle with centre  and radius 2 | 1 Mark: Correct answer. |