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| **Mathematics 2200**  **Common Mathematics Assessment**  **Sample 2013** | |
| Name: |  |
| Mathematics Teacher: |  |
|  |  |

27 Selected Response 27 marks

11 Constructed Response 40 marks

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**FINAL 67 Marks**

**TIME: 2 HOURS**

**NOTE**

Diagrams are not necessarily drawn to scale.

**FORMULAE**

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**Selected Response:**

Choose the appropriate response on the answer sheet or SCANTRON.

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| 1. | How many terms are in the sequence | |
| (A) | 43 |
| (B) | 45 |
| (C) | 46 |
| (D) | 48 |

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| 2. | In an arithmetic sequence, and . Which expression represents ? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 3. | Which describes the series ? | |
| (A) | convergent with a sum of |
| (B) | convergent with no sum |
| (C) | divergent with a sum of |
| (D) | divergent with no sum |

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| 4. | What is the exact length of BC? | |
| (A) |  |
| (B) | 12 |
| (C) |  |
| (D) |  |

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| 5. | The point lies on the terminal arm of an angle in standard position. What is the value of ? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 6. | Solve: , where | |
| (A) | and |
| (B) | and |
| (C) | and |
| (D) | and |

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| 7. | What is the length of ***x***? | |
| (A) | 7.2 |
| (B) | 10.4 |
| (C) | 11.3 |
| (D) | 16.2 |

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| 8. | Which represents the function ? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 9. | Which represents a parabola with y-intercept and vertex ? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 10. | If is written in the form , what is the value of ***q****?* | |
| (A) |  |
| (B) |  |
| (C) | 1 |
| (D) | 28 |

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| 11. | A rancher plans to use 430 m of fencing to build a cattle enclosure with three equal sections. Which represents the total area of the enclosure in terms of its width, x? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 12. | Theresa’s incorrect solution to the equation is shown. In which step does the **first** error occur?  *Step 1*  *Step 2*  *Step 3*  *Step 4* | |
| (A) | 1 |
| (B) | 2 |
| (C) | 3 |
| (D) | 4 |

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| 13. | Which describes the quadratic function that has vertex and passes through the point ? | |
| (A) | The axis of symmetry is and the discriminant is negative. |
| (B) | The axis of symmetry is and the discriminant is positive. |
| (C) | The axis of symmetry is and the discriminant is negative. |
| (D) | The axis of symmetry is and the discriminant is positive. |

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| 14. | Solve: | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 15. | Determine a simplified expression for the value of ***x***: | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 16. Write as an entire radical. | | |
|  | (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 17. Simplify completely: | | |
|  | (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 18. Simplify completely: | | |
|  | (A) |  |
|  | (B) |  |
|  | (C) |  |
|  | (D) |  |

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| 19. Simplify completely: | | |
|  | (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 20. Simplify completely: | | |
|  | (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 21. Simplify completely: | | |
|  | (A) |  |
|  | (B) |  |
|  | (C) |  |
|  | (D) |  |

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| 22. | The graph shown represents the reciprocal of which quadratic function? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 23. | What is the range of ? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 24. | Which is a solution to the system ? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 25. The first four steps of an incorrect solution to the system  are shown. Identify the step in which the **first** error occurs.  *Step 1 :*  *Step 2:*  *Step 3:*  *Step 4:* | | |
|  | (A) | 1 |
|  | (B) | 2 |
|  | (C) | 3 |
|  | (D) | 4 |

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| 26. | Which represents the inequality ? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

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| 27. | Which is a solution to ? | |
| (A) |  |
| (B) |  |
| (C) |  |
| (D) |  |

**Constructed Response:**

Answers to be written on this paper in the space provided. Show all workings.

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| 28. | The first three terms of an arithmetic sequence are . Algebraically determine the value of ***x*** and state the common difference. | 3 marks |

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| 29. | The monthly production of crude oil, in barrels, for the first four months for a test well at Hebron is given below. In theory, what is the expected lifetime production of the well, to the nearest barrel?   |  |  | | --- | --- | | Month | # of Barrels | | 1 | 40 000 | | 2 | 34 000 | | 3 | 28 900 | | 4 | 24 565 | | 3 marks |

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| 30. | Calculate the length of CD to the nearest tenth of a cm. | 4 marks |

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| 31. | From a height of 2 m, a volleyball is hit into the air. After 1 second, the ball reaches a maximum height of 7 m. Write the quadratic function, in the form  , that models the situation and use it to determine the height of the ball at 1.5 seconds.  Function  Height | 3 marks |

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| 32. | Algebraically determine the **exact** roots, in simplest form: | 4 marks |

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| 33. State restrictions on the variable and **solve**: | 4 marks |

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| 34. Identify all non-permissible values and **solve**: | 4 marks |

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| 35. | Algebraically determine the **invariant points**, **equations of asymptotes**, and  **x- and y-intercepts** for the functions and .  Sketch both graphs on the same set of axes. | 4 marks |
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| 36. | Solve algebraically: | 4 marks |

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| 37. | The right triangle shown has a perimeter of and an area of . Algebraically determine the value(s) of ***x*** and ***y***. | 4 marks |

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| 38. | Algebraically determine the value(s) of ***x*** where lies above . | 3 marks |

ANSWERS:

1.D 2.D 3.A 4.C 5.B 6.C 7.D 8.B 9.C 10.B 11.A 12.B 13.B 14.C 15.B 16.C 17.A18.B 19.D 20.A 21.A 22.C 23.D 24.C 25.C 26.D 27.A

28. x = 3, d = 9 29. 266 667 barrels 30. CD = 12.2cm

31. Function Height 5.75m 32.



33. restriction: , solution



34. non-permissible values: solution:



35. invariant points:



equation of asymptotes:



x-int: (-2,0) y-int: (0,4)

36.



37. Solution: (3,5)

38. solution in interval notation:

