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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name: | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | Date: *\_\_\_\_\_\_\_\_\_\_\_* | |
| pact jpg1 | | **Subject :Year 11 Applications**  **Test 5, 2015**  **Topics – Linear equations, simultaneous equations, piece-wise functions and step graphs** | | | | | | | 57  = % | |
| **Total Time:** | | ***60*** *minutes* | |  | | | | | | |
| **Total Reading:** | | *5**minutes* | |
| **Total Working:** | | *65**minutes* | |
| **Weighting:** | | *10% of the year.* | |
| **Equipment:** | | *Curriculum Council Formula Sheet; ½ page notes (A4 one side), CAS calculator; Scientific Calculator* | | | | | | | | |
|  | | | | | | | | | | |
| **SECTION 1: CALCULATOR FREE** | | | | | | | | | | |
| **Time:** | | ***26*** *minutes* | | **Marks for Section 1:** | | ***24*** *marks* | | | | |
| **Reading:** | | ***2*** *minutes* | | **Equipment Allowed:** | | *Nil* | | | | |
| **Working:** | | ***24*** *minutes* | |  | |  | | | | |
| **1.** | **[ 6 marks: 1, 1, 1, 1, 1, 1, mark each]**  **Solve the following equations:** | | | | | | | | | |
|  | 1. 5x + 3 = 63 | | | | 1. -7 – 2y = 23 | | | | | |
|  | | | |  | | | | | |
| 1. 5h + 13 = 2h – 2 | | | | 1. 14 – 4d = 27 – d | | | | | |
| **2.** | **[ 3 marks: 1, 2]**  The cost of hiring a limousine for the year 12 ball is $175 plus $3.50 for each kilometer travelled. | | | | | | | | | |
|  | 1. Construct a formula to calculate the cost of hiring a limousine with this company | | | | | | | | | |
|  | 1. Calculate the cost of hiring a limousine to travel 36km | | | | | | | | | |
| **3.** | **[ 6 marks: 1, 1, 2, 2]**  Graph the following linear functions on the number plane provided: | | | | | | | | | |
|  | 1. x = 5 | | | | 1. y = ½ x | | | | | |
| 1. 2x – 8y = 20 | | | | 1. 6x – y + 3 = 0 | | | | | |
|  |  | | | | | | | | | |
| **4.** | **[ 3 marks: 1, 1, 1]**  **Write the linear equation for the following table of values:** | | | | | | | | | |
|  | a)   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | x | 0 | 1 | 2 | 3 | 4 | 5 | | y | 1 | 5 | 9 | 13 | 17 | 21 | | | **b)**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | x | 6 | 7 | 8 | 9 | 10 | 11 | | y | 8 | 10 | 12 | 14 | 16 | 18 | | | | | **c)**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | x | 2 | 4 | 1 | 5 | 3 | 6 | | y | 1 | 7 | -2 | 10 | 4 | 13 | | | | |
| **5.** | **[ 6 marks: 1, 2, 3]**  **Solve the following simultaneous equations:** | | | | | | | | | |
|  | **a)** y= 2x + 6  y + 3x = -4 | | | | **b)** 10x + 11y = 39  5x – 22y = 47 | | | | | |
|  | **c)** 3x + 5y = -9  7x + 4y = 2 | | | |  | | | | | |
|  |  | | | | | | | | | |
|  |  | | | | | | | | | |
| **~ END OF TEST SECTION 1~** | | | | | | | | | | |
| **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | | | **Date:** | |
| **SECTION 2: CALCULATOR ASSUMED** | | | | | | | | | |

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| --- | --- | --- | --- |
| **Time:** | ***37*** *minutes* | **Marks for Section 2:** | ***33*** *marks* |
| **Reading:** | ***2*** *minutes* | **Equipment Allowed:** | *½ page notes(A4 one side), CAS calculator* |
| **Working:** | ***39*** *minutes* |  |  |

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| **6. [ 5 marks: 1, 1, 3]**  The value (V) of a car t years after it is purchased is given by the equation V = 350 – 80t. | |
| 1. Find the value of the car when it was new 2. After 5 years 3. Plot the relationship. | |
| **7. [ 2 marks]**  A swimming pool is being filled at a constant rate so that after 4 hours it contains 5000 litres, and 3 hours later it contains 9500 litres. Write an equation representing this relationship, letting V be the volume in the pool after t hours. | |
|  | |
| **8. [ 3 marks: 1, 1, 1]**  Find the equations of the line that passes through the points below: | |
| 1. (-1, 3) (0, 4) | |
| 1. (-2, -2) (0, 2) | |
| 1. (5, 5) (1, 3) | |
| **9. [ 3 marks: 1, 1, 1]**  Find the equation of the line given the gradient and one point: | |
| 1. m= 6 (-1, 5) | |
| 1. m= -2 (0, 3) | |
| 1. m= -10 (9, -1) | |
| **10. [ 2 marks: 1, 1]**  Find the equation of the line from the following graphs: | |
|  | |
| 1. Line A | 1. Line B |
| **11. [ 3 marks: 2, 1]**  The year 12’s are looking at transportation to their school ball. A hummer limo can carry 10 people, and a normal taxi can carry 2 people. There are 40 people that need transportation, and they need 8 vehicles for safety requirements.  a) Write the simultaneous equations for this information  b) Find the number of hummer limo’s and taxi’s they will need | |
|  | |
| **12. [11 marks: 2, 6, 3 ]**  A real estate agent charges the following commission rates for selling property.   * 8% of the first $70 000 of the properties price * 5% of the next $80 000 * 3.5% of the remaining amount  1. Complete the table of values using the rates given above:  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Property price ($P) | 0 | 70 000 | 150 000 | 800 000 |  | | Commission (C) |  |  |  |  |  |  1. Use the table above to help you draw a piecewise graph displaying the agents commission for property values from $0 to $800 000      1. Find the commission earned for selling: 2. A unit for $115 000   ii. A house for $370 000  iii. A farm house and land for $730 000 | |
| **13. [ 4 marks]**  Graph the following step graph, showing the cost ($C) for the number of hours (n) spent in a car park: | |
|  | |
| **~ END OF TEST SECTION 2 ~** | |