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| [Image result for quiz](https://www.google.com.au/imgres?imgurl=http://churchfieldsjunior.com/wp-content/uploads/2016/04/73621.jpg&imgrefurl=http://churchfieldsjunior.com/quiz-night/&docid=0TWZ1XmaB2M3GM&tbnid=Yd7kvqdc7hzNIM:&vet=10ahUKEwjgsue_q7jZAhWLurwKHdAtAhkQMwi6AigkMCQ..i&w=700&h=700&bih=963&biw=1920&q=quiz&ved=0ahUKEwjgsue_q7jZAhWLurwKHdAtAhkQMwi6AigkMCQ&iact=mrc&uact=8) | **Year 12 Methods**  **Term 2 Week 2 Quiz** |  |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| 1. | A cylindrical drum, or radius *r* m and height *h* m, has circular ends constructed from material costing $75 per square metre and sides constructed of material costing $40 per square metre.     1. Explain why the cost *C*, in dollars, is given by . 2. If the oil drum must be constructed for $250, show that the volume of the oil drum is given by . 3. Use calculus methods to determine the dimensions that maximise the volume of the oil drum, and state this maximum value. | **1**  **3**  **4** |
| 2. | A manufacturer of chocolate produces 3 times as many soft centred choclates as hard centred ones. The chocolates are randomly packed in boxes of 20.   1. Find the probability that in a box there are: 2. an equal number of soft centred and hard centred chocolates.      1. fewer than 5 hard centred chocolates.      1. A random sample of 5 boxes is taken from the production line. Find the probability that exactly 3 of them contain fewer than 5 hard centred chocolates.      1. Determine the mean and standard deviation of the number of hard centred choclates in a box. | **3**  **1**  **2**  **2** |
| 3 | 1. Evaluate 2. log5 125 = 3 3. log3  = -3 4. Solve 5. log10 *x* = 3 x = 1000 6. 4 log2 *x* = 16 x = 16 | **2**  **2** |