**MERIT QUESTIONS ON A TYPICAL NCEA PAPER. (A)**

**ALGEBRA *You need to get these right for Merit level***

Question ONE

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| (a) Simplify ***x2 – x – 6***  ***x2+ x – 12***  | (b) Solve ***x2 + 3x + 2 = 5x + 3*** ***2x – 1***  |

Question TWO

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| (a) ***If A = 400×(1.2)n calculate n if A = 900*** | (b) Find the only valid solution to ***x2 – 6x + 8 = 5*** ***x – 4***  |

Question THREE

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| (a) ***Find k if the equation*** ***3x2 + (k + 1)x + 12 = 0 only has one root.*** | (b) ***The equation x2 – 6x + 2 = k has only one solution. Find k*** |

**CALCULUS *You need to get these right for Merit level***

Question ONE

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| (a) ***The height of a ball kicked vertically up is h = 40t – 5t2. Find the greatest height the ball will reach.***  | (b) ***Find the minimum y value of the curve*** ***y = 3x2 – 12x + 5*** |

Question TWO

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| (a) ***Find the equation of the tangent to the curve y = x3 – 8x at the point where x = 2***  | (b) ***For what values of x is the curve y = x3 – 2x2 – 5x a decreasing function?*** ***3*** |

Question THREE

|  |  |
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| (a) ***The velocity of a model car at t secs is v = 5 + 2t. Find how far the car will move in the 3rd second ( from t = 2 to t = 3)***  | (b)***The equation of a curve is y = x2 + ax + b******and it passes through (1, 8).******If the gradient at x = 1 is 6, find a and b.***  |