## ACHIEVEMENT QUESTIONS ON A TYPICAL NCEA PAPER. (A)

ALGEBRA. You need to get these right for achievement.
Question ONE

| (a) Simplify $\left(a^{4}\right)^{3}(5 a)^{2}$ | (b) Simplify $\left(27 b^{6}\right)^{-1 / 3}$ |
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Question TWO

| (a) Factorise $4 x^{2}+4 x-15$ | (b) Solve $4 x^{2}+4 x-15=0$ |
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Question THREE
(a) Solve for $x: \log x=3 \log 4$
(b) Solve for $x: \log _{4} x=2$

CALCULUS You need to get these right for achievement.
Question ONE

| (a) If $f(x)=3 x^{2}+4 x-5$ find the gradient <br> when $x=2$ | (b) The gradient function $f^{\prime}(x)=3-4 x$ <br> The graph passes through $(2,7)$, find the <br> equation for $f(x)$ |
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Question TWO
(a) Find the $x$ coordinate of the point on the graph $y=x^{2}-3 x+7$ where the gradient is equal to 8
(b) Find the $x$ coordinate of the points on the graph $y=\frac{x^{3}}{3}-x^{2}-15$ where the gradient is equal to 0

Question THREE
(a)The curve $y=f(x)$ goes through (0, 0)and $f^{\prime}(x)=3 x^{2}-2 x$. Find the $y$ value if $x=4$
(b) The temperature $\boldsymbol{T}$ in an experiment at $\boldsymbol{t}$ seconds is $T=4 t^{2}+2 t$. Find the rate of increase of the temperature at $t=5$ seconds.

