Question		Answer	Marks	AO	Guidance
16		**DR** $2^{2x+3} = k \times 2^{2x}$ **oe seen**	**M1**	**3.1a**	NB $k = 2^3$ or 8
		substitution of $u = 2^x$ to obtain quadratic in u $8u^2 - 18u + 9 = 0$	**M1** **A1**	**1.1** **1.1**	FT their k; any explicit indication of an appropriate substitution leading to a three term quadratic gains this mark. Allow **M1A1** for $8 \times (2^x)^2 - 18 \times 2^x + 9 = 0$
		$(2u - 3)(4u - 3)[= 0]$	**B1FT**	**2.1**	**Dependent on both M1 gained.** Independent mark for solving their 3 term quadratic by factorising or using the formula May see $[u =] \frac{-(-18) \pm \sqrt{(-18)^2 - 4 \times 8 \times 9}}{2 \times 8}$ or $[8]\left(\left(u - \frac{9}{8}\right)^2 - \left(\frac{9}{8}\right)^2 + \frac{9}{8}\right)[= 0]$ **oe**
		$u = \frac{3}{2}$ or $u = \frac{3}{4}$	**A1**	**1.1**	
		$x = \log_2 \frac{3}{2}$ or $x = \log_2 \frac{3}{4}$	**A1**	**3.2a**	Allow exact equivalents eg $x = \log_2 3 - 1$ or $x = \log_2 3 - 2$ If **A0A0** allow **SC B1** for one correct x-value obtained from correct u value www
			[6]		