Day 272	A Level Maths: C Tier 10-a-day
1 The table summarises the number of goals scored in a game by 20 people. Goals, x: 0, 1, 2, 3, 4 Frequency, f: 6, 3, 6, 2, 3 Find the mean.	
2 Solve $1.5^{3x} = 30$. Give your answer to 3 significant figures.	
3 For 7 data pairs, with advertising spend (£s hundreds) from 4 to 14, the regression line is $S = 19 + 7a$. Estimate sales (£s thousands) when $a = 20$ and comment on the reliability.	
4 A sequence is defined by $u_{n+1} = -2u_n - 5$, $u_1 = 2$. Find u_2, u_3 and u_4.	
5 A stone is thrown vertically downwards at 4 m s^{-1} from the top of a cliff and hits the sea after 4 s. Taking $g = 9.8$ m s^{-2}, find the height of the cliff.	

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6 Given that $dy/dx = 4xy$ and $y = 5$ when $x = 0$, find y in terms of x.	
7 Solve the simultaneous equations: $y = x^2 - 4x - 18$, $y = -3x + 2$.	
8 $\frac{x-2}{(x+4)(x+1)} \equiv \frac{A}{x+4} + \frac{B}{x+1}$. Find A and B, and hence find $\int \frac{x-2}{(x+4)(x+1)}\,dx$.	
9 Expand $(1-x)^{\frac{1}{3}}$ in ascending powers of x up to and including the term in x^2. State the range of values of x for which the expansion is valid.	
10 A particle of mass 2 kg slides from rest down a smooth plane inclined at angle α to the horizontal, where $\sin\alpha = \frac{3}{5}$. Take $g = 9.8$ m s^{-2}. Find (a) its acceleration, (b) its speed after 3 s.	