

Q	Marking instructions	AO	Mark	Typical solution
8(a)	Takes logs of both sides of the equation and applies addition rule	1.1a	M1	$\log_{10} V = \log_{10} p q^t$
	Completes rigorous argument to show required result  Condone missing base	2.1	R1	$\log_{10} V = \log_{10} p + \log_{10} q^t$  $\log_{10} V = \log_{10} p + t \log_{10} q$
8(b)	Equates $\log_{10} p$ to 3.90 or Forms two simultaneous equations using points from the line of best fit only	3.4	M1	$\log_{10} p = 3.90$  $p = 7940$
	Calculates gradient and equates to $\log_{10} q$ or Solves their pair of simultaneous equations to obtain $p$ and $q$	3.4	M1	$\log q = \frac{5.28 - 3.90}{40 - 0} = 0.0345$  $q = 1.08$
	Obtains correct <b>AWRT 8000</b> <b>CSO</b>	1.1b	A1	
	Obtains correct $q$ <b>AWRT 1.1</b> <b>CSO</b>	1.1b	A1	
8(c)	Substitutes $V = 500000$ into their $V = 7940 \times 1.08^t$ or into their $\log_{10} V = \log_{10} 7940 + t \log_{10} 1.08$ to form an equation for $t$ <b>PI</b> by correct $t$ value	3.4	M1	$500000 = 7940 \times 1.08^t$  $t = 53.82$
	Solves their equation for $t$ Must have $t > 40$	1.1a	M1	
	States their correct year using 1970+ their integer part of $t$ Must be later than 2010	3.2a	A1F	The house will first be worth half a million pounds during 2023
8(d)	Explains that their 2023 (FT later than 2010) is outside the range of data collected	3.5b	E1F	The model is only based on data between 1970 and 2010
	Explains that house prices may not continue to grow in the same way  Must refer to context not just to extrapolation/pattern Can be implied by comments such as: Theresa may have made improvements by adding a new room Prices could fall in a market crash	3.2b	E1	House prices may not continue to grow in the same way indefinitely
	<b>Total</b>		<b>11</b>	