

Question	Scheme	Marks	AOs	
<b>12 (a)</b>	$\log_{10} V = 0.072t + 2.379$ $\Rightarrow V = 10^{0.072t+2.379}$ $\Rightarrow V = 10^{0.072t} \times 10^{2.379}$	$V = ab^t$ $\Rightarrow \log_{10} V = \log_{10} a + \log_{10} b^t$ $\Rightarrow \log_{10} V = \log_{10} a + t \log_{10} b$	B1	2.1
	States either $a = 10^{2.379}$ or $b = 10^{0.072}$	States either $\log_{10} a = 2.379$ or $\log_{10} b = 0.072$	M1	1.1b
	$a = 239$ or $b = 1.18$	$a = 239$ or $b = 1.18$	A1	1.1b
	Either $V = 239 \times 1.18^t$ or imply by $a = 239, b = 1.18$		A1	1.1b
			(4)	
<b>(b)</b>	The value of $ab$ is the (total) number of views of the advert <b>1 day after</b> it went live.	B1	3.4	
		(1)		
<b>(c)</b>	Substitutes $t = 20$ in either equation and finds $V$ Eg $V = 239 \times 1.18^{20}$	M1	3.4	
	Awrt 6500 or 6600	A1	1.1b	
		(2)		
<b>(7 marks)</b>				

(a) **Condone**  $\log_{10}$  **written**  $\log$  or  $\lg$  **written throughout the question**

**B1:** Scored for showing that  $\log_{10} V = 0.072t + 2.379$  can be written in the form  $V = ab^t$  or vice versa

Either starts with  $\log_{10} V = 0.072t + 2.379$  (may be implied) and **shows lines**

$$V = 10^{0.072t+2.379} \quad \text{and} \quad V = 10^{0.072t} \times 10^{2.379}$$

Or starts with  $V = ab^t$  (implied) and **shows the lines**

$$\log_{10} V = \log_{10} a + \log_{10} b^t \quad \text{and} \quad \log_{10} V = \log_{10} a + t \log_{10} b$$

**M1:** For a correct equation in  $a$  or a correct equation in  $b$

**A1:** Finds either constant. Allow  $a = \text{awrt } 240$  or  $b = \text{awrt } 1.2$  following a correct method

**A1:** Correct solution: Look for  $V = 239 \times 1.18^t$  or  $a = 239, b = 1.18$

Note that this is NOT awrt

(b)

**B1:** See scheme. Condone not seeing total. Do not allow number of views at the start or similar.

(c)

**M1:** Substitutes  $t = 20$  in either their  $V = 239 \times 1.18^t$  or  $\log_{10} V = 0.072t + 2.379$  and uses a correct method to find  $V$

**A1:** Awrt 6500 or 6600