LOGS-SURDS-SET-2

1	Find the value of x when $5\log 2 - \log 8 = \log x$. $x =$ .... [2]

MS-1

4		**2**	**M1** for $\log 2^5$ or $\log \dfrac{a}{8}$ or $3\log 2$ or $\log 2^3$

2	**(a)** Solve $3\log 2 - 2\log 5 = \log x$. $x =$ .... [3] **(b)** Solve $\log_y 4 = \dfrac{1}{3}$. $y =$ .... [1]

MS-2

(a)	$\dfrac{8}{25}$ or 0.32	**3**	**M1** for correct use of $n\log a = \log a^n$ **M1** for correct use of $\log a - \log b = \log(a \div b)$
(b)	64	**1**	

3	Find the value of
	(a) $\dfrac{\log 4}{\log 8}$,
	Answer(a) .... [2]
	(b) $\log_4 8$.
	Answer(b) .... [1]

MS-3				
(a)	$\dfrac{2}{3}$		2	**M1** for $\dfrac{2\log 2}{3\log 2}$ or $\log_8 4$
(b)	1.5 oe		1	

4	(a) Write down the value of $\log_9 3$.
	.... [1]
	(b) $2\log 2 + \log 11 = \log x$.
	Find the value of x.
	$x =$ .... [2]

MS-4				
(a)	$\dfrac{1}{2}$ or 0.5		1	
(b)	44		2	**M1** for correct use of $2\log 2 = \log 2^2$ oe or for correct use of $\log p + \log q = \log pq$

5	Find the value of each of the following.		

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(a) $(0.2)^3$

Answer(a) .... [1]

(b) $\left(\dfrac{1}{2}\right)^{-1}$

Answer(b) .... [1]

(c) $64^{\frac{2}{3}}$

Answer(c) .... [1]

(d) $\log_9 3$

Answer(d) .... [1]

MS-5			
(a)	0.008 or $\dfrac{1}{125}$ oe	**1**	
(b)	2	**1**	
(c)	16	**1**	
(d)	$\dfrac{1}{2}$ or 0.5	**1**	

6

(a) Find the value of $\log_3\left(\dfrac{1}{9}\right)$.

Answer(a) .... [1]

(b) $p = \dfrac{\log q}{\log 3}$

Find q in terms of p.

Answer(b) $q = $ .... [2]

MS-6	(a)	-2		1	
	(b)	3^p		2	**B1** for $\log_3 q$ or $p \log 3$ seen or **SC1** for answer $10^{\,p \log 3}$

7	
	(a) $3 = \log_p 8$
	Write down the value of p.
	Answer(a) p = ... [2]
	(b) $\log 12 + \log 9 = q\log 2 + r\log 3$
	Find the values of q and r.
	Answer(b) q = ...
	$r =$ .... [3]

MS-7	(a)	2		2	**M1** for $p^3 = 8$
	(b)	$q = 2, r = 3$		3	**M1** for use of $\log ab = \log a + \log b$ or $\log a^b = b \log a$ **M1** dep for log 12 and log 9 in terms of log2 and log3 only, or $\log 2^2 + \log 3^3$ seen, or $108 = 2^q \times 3^r$

8	**(a)** Find the value of $\log_{25} 5$.
	.... [1]
	(b) Simplify $\log 63 - 2\log 3$.
	.... [2]

MS-8				
	(a)	$\dfrac{1}{2}$ or 0.5	1	
	(b)	log 7	2	**M1** for correct use of $\log a^n = n\log a$ or $\log(a \div b) = \log a - \log b$

9	**(a)** Simplify $\sqrt{75}$.
	Answer(a) .... [2]
	(b) Find the value of $\log_{10} 1000$.
	Answer(b) .... [1]

MS-9				
	(a)	$5\sqrt{3}$	B2	Award M1 for evidence of $\sqrt{25 \times 3}$
	(b)	3	B1	**[3]**

10	(a) Find $\log_2 8$.			
		Answer(a)		[1]
	(b) Find p when $\log 3 + 2\log 5 = \log p$.			
		Answer(b) $p =$		[2]

MS-10					
	(a)	3	**1**		
	(b)	75	**2**	**B1** for [log] 25 seen	

11	(a) $2\log x = 3\log 4$
	Find the value of x.
	$x =$ .... [2]
	(b) $\log x + \log u - \log v = \log p$
	Find p in terms of x, u and v.
	$p =$ .... [1]

| MS-11 | (a) | 8 | 2 | **B1** for answer 2^3
 or **M1** for $\log(x^2)$ or for $\log(4^3)$ seen |
| | (b) | $\dfrac{xu}{v}$ | 1 | |