Question	Scheme	Marks	AOs
3	$3^x = 7^y \rightarrow x\log 3 = y\log 7$	M1	3.1a
	e.g. $\left(\frac{x}{y} =\right) \frac{\log 7}{\log 3}$	A1	1.1b
		(2)	
			(2 marks)

Notes

Note: Condone absence of reference to the value of $\frac{x}{y}$ being undefined when $x = y = 0$

M1: For the key step in attempting to take logarithms with the same base of both sides **and** apply the power law to both sides, e.g., $x = y\log_3 7$ or $y = x\log_7 3$ or $x\ln 3 = y\ln 7$

Condone e.g. $x = \log_3 7y$ but not $x = \log_3(7y)$

Alternatively, takes a root of both sides (either x or y), takes logs with the same base of both sides and applies the power law e.g., $3^x = 7^y \rightarrow 3^{\frac{x}{y}} = 7 \rightarrow \frac{x}{y}\log 3 = \log 7$

May be implied by a correct answer.

A1: $\left(\frac{x}{y} =\right) \frac{\log 7}{\log 3}$ or equivalent, e.g, $\frac{\ln 7}{\ln 3}$ or $\log_3 7$ or $\frac{1}{\log_7 3}$ Condone e.g. $\frac{\ln|7|}{\ln|3|}$

Correct answer only scores both marks provided there is no incorrect log work.

Any base k may be used for e.g. $\frac{\log_k 7}{\log_k 3}$ provided it is the same base in both logs, although watch out for e.g. $\left(\frac{\log_3 7}{\log_7 3}\right)^{\frac{1}{2}}$ or $\frac{\log_3 k}{\log_7 k}$ for constant $k > 0$ which are exceptions and correct.

There is no need to see $\frac{x}{y} =$ but it should be clear what their answer is.

Do not ISW if they incorrectly apply log laws e.g. $\frac{\log 7}{\log 3} = \log\frac{7}{3}$ or $= \log 7 - \log 3$ or $= \log(7-3)$ all of which score M1A0.

You may ISW after a correct answer if they go on to provide a decimal approximation.
A decimal approximation with no correct log work seen (1.7712…) scores no marks.