Question	Scheme	Marks	AOs
9	$2\log_5(3x-2)-\log_5 x=2$		
	Uses one correct law e.g. $2\log_5(3x-2)\to\log_5(3x-2)^2$ **or** $2\to\log_5 25$ **or** $\log_5 ...=2\to ...=5^2$	B1	1.1a
	Uses two correct log laws: either $2\log_5(3x-2)\to\log_5(3x-2)^2$ **and** $2\to\log_5 25$ or $2\log_5(3x-2)-\log_5 x\to\log_5\dfrac{(3x-2)^2}{x}$ leading to an equation without logs	M1	3.1a
	Correct equation without logs, usually $\dfrac{(3x-2)^2}{x}=25$	A1	1.1b
	$\dfrac{(3x-2)^2}{x}=25\Rightarrow 9x^2-37x+4=0\Rightarrow(9x-1)(x-4)=0\Rightarrow x=...$	dM1	1.1b
	$x=4$ only	A1 cso	3.2a
		(5)	

(5 marks)

Notes:

B1: Uses one correct log law. The base does not need to be seen for this mark.
This mark is independent of any other errors they make.

M1: This can be awarded for the overall strategy leading to an equation in x **not involving logs**.
It requires the correct use of two log laws as in the main scheme to reach an equation in x
This mark may **not** be awarded for correct application of two laws following incorrect log work, but numerical slips are condoned.

A1: For a correct unsimplified equation with logs removed and **no incorrect work seen.**
Ignore any incorrect simplification of their equation.

Allow recovery on missing brackets, e.g., $\log_5\dfrac{3x-2^2}{x}=2\to\dfrac{9x^2-12x+4}{x}=25$

Correct equations are likely to be $\dfrac{(3x-2)^2}{x}=25$ or, e.g., $(3x-2)^2=25x$ but you might see

$9x-12+\dfrac{4}{x}=25$ Sight of a correct equation does **not** imply either the previous M1 or the A1.

Note: $\dfrac{\log_5(3x-2)^2}{\log_5 x}=2\to\dfrac{(3x-2)^2}{x}=25$ may be seen and scores B1M0A0.

dM1: For a correct method to solve their equation, **via a 3TQ set = 0**
The 3TQ may be solved by calculator - you may need to check their value(s).
Can be implied by one correct value for their 3TQ set = 0 correct to 1d.p.

A1:	cso $x = 4$ only. If $x = \frac{1}{9}$ is also given it must be rejected. $x = 0$ might also be seen and must be rejected. Ignore any reasoning for rejecting any values. Note that calculators can solve the equation at any stage and so full log work must be shown leading to a 3TQ set = 0.