Question	Scheme	Marks	AOs
2	$4^{3p-1} = 5^{210} \Rightarrow (3p-1)\log 4 = 210\log 5$	M1	1.1b
	$\Rightarrow 3p = \dfrac{210\log 5}{\log 4} + 1 \Rightarrow p = ...$	dM1	2.1
	$p = \text{awrt } 81.6$	A1	1.1b
		(3)	
			(3 marks)
Notes:			

M1: Takes logs of both sides and uses the power law on **each** side.

    Condone a missing bracket on lhs and slips.

    Award for any base including ln but the logs must be the same base.

dM1: A full method leading to a value for p.

    It is dependent upon the previous M mark and there must be an attempt to change the subject of the equation in the correct order.

    Look for $(3p-1)\log 4 = 210\log 5 \Rightarrow 3p = \dfrac{210\log 5}{\log 4} \pm 1 \Rightarrow p = ...$ condoning slips.

    You may see numerical versions E.g. $(3p-1) \times 0.60 = 210 \times 0.7 \Rightarrow 1.8p - 0.6 = 147 \Rightarrow p = 82$

    Use of incorrect log laws would be dM0. E.g $(3p-1)\log 4 = 210\log 5 \Rightarrow 3p = 210\log\dfrac{5}{4} \pm 1$

A1: awrt 81.6 following a correct method. Bracketing errors can be recovered for full marks

    A correct answer with no working scores 0 marks. The demand in the question is clear.

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There are alternatives:

E.g.   A starting point could be $4^{3p-1} = 5^{210} \Rightarrow \dfrac{4^{3p}}{4} = 5^{210}$

      but the first M mark is still for using the power law correctly on each side

      In such a method the dM1 mark is for using **all** log rules correctly and proceeding to a value for p.

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Using base 4 or 5

E.g. $4^{3p-1} = 5^{210} \Rightarrow (3p-1) = \log_4 5^{210}$

      The M mark is not scored until $(3p-1) = 210\log_4 5$

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