

Q	Marking instructions	AO	Mark	Typical solution
7(a)	Obtains the correct volume AWRT 29 Condone incorrect or missing units	1.1b	B1	$W_2 = 29.4$
	Subtotal		1	

Q	Marking instructions	AO	Mark	Typical solution
7(b)	States $A = 30$ PI by building up of a sequence to three terms or $W_n = 30 \times 0.98^{n-1}$ seen	1.1b	B1	W_n is the nth term of a geometric sequence, a 2% reduction gives a common ratio of 0.98 $A = 30$
	Explains W_n is (the nth term of) a geometric sequence explaining that a 2% reduction gives a common ratio of 0.98 PI by building up of a sequence to three terms	3.3	E1	
	Subtotal		2	

Q	Marking instructions	AO	Mark	Typical solution
7(c)	Uses geometric model with their value of A substituted to find S_{15}	3.4	M1	$S_{15} = \frac{30(1 - 0.98^{15})}{1 - 0.98}$ $= 392$
	Obtains their correct value of S_{15} FT their value of A Condone unrounded answers	1.1b	A1F	
	Subtotal		2	

Q	Marking instructions	AO	Mark	Typical solution
7(d)	Uses sum to infinity formula with their value of A substituted	3.4	M1	$S_{\infty} = \frac{30}{1 - 0.98}$ $= 1500$ 1.5 + 4 = 5.5 litres
	Obtains their correct value of sum to infinity	1.1b	A1F	
	Obtains 5.5 litres CAO Accept answer in litres or millilitres	3.2a	A1	
	Subtotal		3	

Q	Marking instructions	AO	Mark	Typical solution
7(e)	Explains that the model used assumes the drips continue indefinitely which is unrealistic	3.5b	E1	The sum to infinity was used but this assumes there are infinite drips, but they have stopped
	States a relevant environmental factor eg water has evaporated or wind affected water level or water consumed by animals	3.5a	E1	Water will evaporate over several hours
	Subtotal		2	

	Question Total		10	
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