

Question			Answer	Mark	AO	Guidance
7	(a)	(i)	3^{rd} term of AP is $a + 2d$ $ar = a + 2d \Rightarrow r = \frac{a + 2d}{a}$ AG	B1 [1]	2.1	Must see $a + 2d$ (either on its own or as one side of an equation) before this answer.
		(ii)	$\frac{a + 3d}{a + 2d} = \frac{a + 2d}{a}$ oe $[a^2 + 3ad = a^2 + 4ad + 4d^2]$ $\Rightarrow d = -\frac{a}{4}$	M1 A1	3.1a 1.1	May be implied by A1. May see $a(a + 3d) = (a + 2d)^2$ oe or $a\left(\frac{a+2d}{a}\right)^2 = a + 3d$ Must be d in terms of a so do not accept $a = -4d$ for this mark.
			Alternative method $ar - a = 2(ar^2 - ar)$ $r - 1 = 2r(r - 1)$ or $1 = 2r$ $\Rightarrow r = \frac{1}{2} \Rightarrow d = a \times \left(\frac{1}{2}\right)^2 - a \times \frac{1}{2}$ $\Rightarrow d = -\frac{a}{4}$	M1 A1		May be implied by A1. (NB $ar - a = 2d$ with (a)(i) substituted is not sufficient) Must be d in terms of a so do not accept $a = -4d$ for this mark.
				[2]		
7	(b)		$r = \frac{a-\frac{a}{2}}{a}$ or $\frac{a-\frac{3a}{4}}{a-\frac{a}{2}}$ or $\frac{-4d+2d}{-4d}$ oe $= \frac{1}{2}$	M1 A1 [2]	1.1 1.1	FT their expression from (a)(ii) with $r = \frac{a+2d}{a}$ or $r = \frac{a+3d}{a+2d}$ May be implied by A1. Must see $\frac{1}{2}$ in their answer for (b) to score these marks.