Question			Answer	Mark	AO	Guidance
7	(a)	(i)	$\frac{a^2+b^2}{2}$, $\left(\frac{a+b}{2}\right)^2$	B1 [1]	1.1	Both oe (NOT $\frac{(a+b)^2}{2}$) isw any multiplying out in this part
7	(a)	(ii)	$\frac{a^2+b^2}{2}-\left(\frac{a+b}{2}\right)^2$	M1*	3.1a	Difference between two expressions from **(a)(i)**
			$=\frac{2a^2+2b^2-(a^2+2ab+b^2)}{4}$	dM1	1.1	oe, attempt collect over denominator of 4
			$=\frac{(a-b)^2}{4}\geq 0$	A1	2.2a	Must see $\frac{(a-b)^2}{4}$ and "≥ 0"
			Alternative method: $\left(\frac{a+b}{2}\right)^2=\frac{a^2+2ab+b^2}{4}$	M1*		Multiplying out their expression for the square of the mean of the form $(c+d)^2$ to reach $c^2+2cd+d^2$ (need not include the denominator). May be seen in part (a)(i). If two such expressions are present they must both be correctly multiplied out.
			For the statement to be true: $\frac{a^2+b^2}{2}\geq\frac{a^2+2ab+b^2}{4}$ $2a^2+2b^2\geq a^2+2ab+b^2$ $a^2+b^2\geq 2ab$ $a^2+b^2-2ab\geq 0$	dM1		Comparing their two expressions (condone <,>,= but expressions must be of the correct form i.e. not Σ) and attempting to manipulate (must include denominators)
			Which is true because $(a-b)^2\geq 0$	A1		(for any real values of *a* and *b*) Must see this or an equivalent statement
				[3]		
7	(b)		Variance is ≥ 0	B1 [1]	3.2a	Condone Variance is positive or 'never negative' (because Variance is the difference between the mean of the squares and the square of the mean)