Decision 1 Algorithms Questions

6 Two algorithms are shown.

Algorithm 1		**Algorithm 2**	
Line 10	Input P	Line 10	Input P
Line 20	Input R	Line 20	Input R
Line 30	Input T	Line 30	Input T
Line 40	Let $I = (P * R * T)/100$	Line 40	Let $A = P$
Line 50	Let $A = P + I$	Line 50	$K = 0$
Line 60	Let $M = A/(12 * T)$	Line 60	Let $K = K + 1$
Line 70	Print M	Line 70	Let $I = (A * R)/100$
Line 80	Stop	Line 80	Let $A = A + I$
		Line 90	If $K < T$ then goto Line 60
		Line 100	Let $M = A/(12 * T)$
		Line 110	Print M
		Line 120	Stop

In the case where the input values are $P = 400$, $R = 5$ and $T = 3$:

(a)   trace **Algorithm 1**;   *(3 marks)*

(b)   trace **Algorithm 2**.   *(4 marks)*

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5   A student is using the following algorithm with different values of A and B.

Line 10	Input A, B
Line 20	Let $C = 0$ and let $D = 0$
Line 30	Let $C = C + A$
Line 40	Let $D = D + B$
Line 50	If $C = D$ then go to Line 110
Line 60	If $C > D$ then go to Line 90
Line 70	Let $C = C + A$
Line 80	Go to Line 50
Line 90	Let $D = D + B$
Line 100	Go to Line 50
Line 110	Print C
Line 120	End

(a)   (i)   Trace the algorithm in the case where $A = 2$ and $B = 3$.   *(3 marks)*

(ii)   Trace the algorithm in the case where $A = 6$ and $B = 8$.   *(3 marks)*

(b)   State the purpose of the algorithm.   *(1 mark)*

(c)   Write down the final value of C in the case where $A = 200$ and $B = 300$.   *(1 mark)*