Question	Scheme	Marks	AOs
9(a)	Deduces that $A = \pm 50$ **or** $b = \dfrac{1}{4}$	B1	3.4
	Deduces that $A = \pm 50$ **and** $b = \dfrac{1}{4}$	B1	3.4
	Uses $t = 0, H = 1 \Rightarrow \alpha = ...$ E.g. $1 = "50"\sin(\alpha)° \Rightarrow \alpha = ...$	M1	3.4
	$H = \left| \pm 50\sin\left(\dfrac{1}{4}t + 1.15\right)° \right|$	A1	3.3
		(4)	
(b)	E.g. the minimum height above the ground of the passenger on the original model was 0 m or Adding "d" means the passenger does not touch the ground.	B1	3.5b
		(1)	
		(5 marks)	

Notes:

(a) Note that B0B1 is not possible

B1: Uses the equation of the given model to deduce that $A = \pm 50$ **or** $b = \dfrac{1}{4}$ o.e.

   May be seen embedded within their equation.

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M1: Uses $t = 0$ and $H = 1$ in the equation of the model to find a value for α .
   Follow through on their value for A. Allow for $\pm 1 = "50"\sin(\alpha)° \Rightarrow \alpha = ...$ where α is in degrees or radians.

   Note that in radians $\sin^{-1}\left(\dfrac{1}{50}\right) \approx \dfrac{1}{50}$ (0.0200…) which may appear incorrect but is in fact ok.

   Also in degrees a value of e.g. 1.14 (truncated) would indicate the method.

A1: Writes down the correct full equation of the model: $H = \left| "\pm" 50\sin\left(\dfrac{1}{4}t + 1.15\right)° \right|$ o.e.

   Condone omission of degrees symbol and allow awrt 1.15 for α.
   Allow if a correct equation is seen anywhere in their solution.

(b)

B1: Gives a suitable explanation with no contradictory statements.

   Condone "so that pod/capsule/seat/passenger/ferris wheel/it etc. will not hit/touch the ground"

   Responses that focus on the starting point of the model are likely to score B0