Question Number	Scheme	Marks
2(a)	$(4\mathbf{i} - 2\mathbf{j}) + (2\mathbf{i} + q\mathbf{j}) = (6\mathbf{i} + (q-2)\mathbf{j})$ $6 = 2(q-2)$ ratio 2:1 $q = 5$	M1A1 **DM**1 A1 (4)
(b)	$6\mathbf{i} + 3\mathbf{j} = 1.5\mathbf{a}$ $\mathbf{a} = (4\mathbf{i} + 2\mathbf{j})$ m s^{-2} $\mathbf{v} = \mathbf{u} + \mathbf{a}t = (-2\mathbf{i} + 4\mathbf{j}) + 2(4\mathbf{i} + 2\mathbf{j})$ $= 6\mathbf{i} + 8\mathbf{j}$ speed $= \sqrt{6^2 + 8^2}$ $= 10$ m s^{-1}	M1 A1 M1 A1**ft** **M**1 A1 (6) **[10]**

Notes for Question 2

Question 2(a)
First M1 for $(4\mathbf{i} - 2\mathbf{j}) + (2\mathbf{i} + q\mathbf{j})$
First A1 for $(6\mathbf{i} + (q-2)\mathbf{j})$ (seen or implied)
Second M1, **dependent on first M1**, for using 'parallel to $(2\mathbf{i} + \mathbf{j})$' to obtain an equation in *q only*.
Second A1 for $q = 5$

Question 2(b)
First M1 for their **resultant force** $= 1.5\mathbf{a}$
First A1 for $\mathbf{a} = 4\mathbf{i} + 2\mathbf{j}$
Second M1 for $(-2\mathbf{i} + 4\mathbf{j}) +$ 2 x (their **a)** **(M0** if force is used instead of **a)**
Second A1 **ft** for their velocity at $t = 2$
Third M1for finding the magnitude of their velocity at $t = 2$
Third A1 for 10 (ms^{-1})

N.B. In (b), if they use scalars throughout, M0A0M0A0M0A0