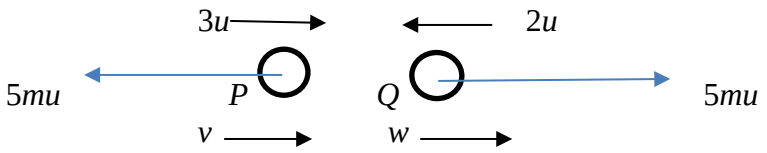
| Question Number | Scheme | Marks |
|---|---|---|
| **2.** |  | |
| **2(a)** | For $P$: $-5mu = 2m(v-3u)$ | M1A1 |
| | $v = \frac{1}{2}u$ | A1 (3) |
| | | |
| **2(b)** | For $Q$: $5mu = m(w-(-2u))$ | M1A1 |
| | $w = 3u$ | A1 (3) |
| | | |
| | **OR**: CLM: $2m\times 3u - m\times 2u = 2m\times\frac{1}{2}u + mw$ M1A1 | |
| | $w = 3u$ A1 | **(6)** |
| | **Notes for question 2** | |
| **2(a)** | M1 Dimensionally correct imp-momentum equation (M0 if $g$ is included), with correct terms, condone sign errors, but must be a difference of momenta and must be using $2m$ to give an equation in $v$ **only**. | |
| | A1 Correct equation | |
| | A1 cao (must be positive) | |
| **2(b)** | M1 Dimensionally correct imp-momentum equation (M0 if $g$ is included), with correct terms, condone sign errors, but must be a difference of momenta and must be using $m$ to give an equation in $w$ **only**. | |
| | A1 Correct equation | |
| | A1 cao (must be positive) | |
| | **OR:**<br>M1 Dimensionally correct CLM equation (Allow consistent extra $g$'s or cancelled $m$'s), with correct terms, condone sign errors, to give an equation in $w$ **only**.<br>**N.B.** They may find $w$ first and use CLM to find $v$. | |
| | **N.B. Mark parts (a) and (b) together if necessary.** | |
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