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## PHYS 1110 Worksheet: Impulse and momentum

1. From mass $m$, net force $F$, and duration $\Delta t$, find acceleration $a$ and velocity change $\Delta v$.

| $m$ (kg) | $F$ (N) | $\Delta t$ (s) | $a$ (m/s$^2$) | $\Delta v$ (m/s) |
|---|---|---|---|---|
| 1 | 10 | 1 | | |
| 1 | 10 | 10 | | |
| 1 | 1 | 10 | | |
| 10 | 10 | 10 | | |

2. What are the units of:
   a. impulse?

   b. momentum?

3. From mass $m$, net force $F$, and duration $\Delta t$, find impulse $J$ and momentum change $\Delta p$.

| $m$ (kg) | $F$ (N) | $\Delta t$ (s) | $J$ ( _____ ) | $\Delta p$ ( _____ ) |
|---|---|---|---|---|
| 1 | 10 | 1 | | |
| 1 | 10 | 10 | | |
| 1 | 1 | 10 | | |
| 10 | 10 | 10 | | |

4. Show that when a net force $\vec{F}$ is applied to an object of mass $m$ for a time $\Delta t$, its change in momentum is $\Delta\vec{p} = \vec{F}\Delta t$.