Each of the following free body diagrams represents a different problem. From the given data, solve for the missing quantities. Complete solutions for each problem should be shown (use a separate sheet if necessary).


| 7) | 10 kg |  | 8) |  |  | 9) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\overline{20 N}$ |  | 4N | F | 10 kg | 5 N | $\bar{F}$ | 10 kg | 5 N |
| $\mathrm{F}_{\text {net }}=$ |  |  | $\mathrm{a}=2.0 \mathrm{~m} / \mathrm{s}^{2} \rightarrow$ |  |  | $\mathrm{a}=2.0 \mathrm{~m} / \mathrm{s}^{2} \leftarrow$ |  |  |
| $\mathrm{a}=$ |  |  | $\mathrm{F}_{\text {net }}=$ |  |  | $\mathrm{F}_{\text {net }}=$ |  |  |
|  |  |  | $\mathrm{F}=$ |  |  | $\mathrm{F}=$ |  |  |
| 10) | 15 kg |  | 11) | 80 kg | F | $\stackrel{\substack{12) \\ 6}}{\stackrel{6 N}{\leftrightarrows}}[$ | 10 kg |  |
| 20 N |  | F | 50 N |  |  |  |  | 5 N |
| $\mathrm{F}_{\text {net }}=7.5 \mathrm{~N}$ [East] |  |  | $\begin{aligned} & \mathrm{v}_{1}=6 \mathrm{~m} / \mathrm{s} \text { [East] } \\ & \mathrm{v}_{2}=6 \mathrm{~m} / \mathrm{s} \text { [West] } \\ & \Delta \mathrm{t}=4.0 \mathrm{~s} \end{aligned}$ |  |  | $\begin{aligned} & \mathrm{a}=1.7 \mathrm{~m} / \mathrm{s}^{2} \leftarrow \\ & \Delta \mathrm{t}=5.0 \mathrm{~s} \end{aligned}$ |  |  |
| $\mathrm{a}=$ |  |  | $\mathrm{a}=$ |  |  | $\mathrm{F}_{\text {net }}=$ |  |  |
| $\mathrm{F}=$ |  |  | $\mathrm{F}_{\text {net }}=$ |  |  | $\mathrm{F}=$ |  |  |
|  |  |  | $\mathrm{F}=$ |  |  | $\Delta \mathrm{V}=$ |  |  |

