3. We use $\Phi = \vec{E} \cdot \vec{A}$, where $\vec{A} = A\,\hat{\mathrm{j}} = (1.40\,\mathrm{m})^2\,\hat{\mathrm{j}}$.

(a) $\Phi = (6.00\,\mathrm{N/C})\hat{\mathrm{i}} \cdot (1.40\,\mathrm{m})^2\hat{\mathrm{j}} = 0.$

(b) $\Phi = (-2.00\,\mathrm{N/C})\hat{\mathrm{j}} \cdot (1.40\,\mathrm{m})^2\hat{\mathrm{j}} = -3.92\,\mathrm{N \cdot m^2/C}.$

(c) $\Phi = [(-3.00\,\mathrm{N/C})\hat{\mathrm{i}} + (4.00\,\mathrm{N/C})\hat{\mathrm{k}}] \cdot (1.40\,\mathrm{m})^2\hat{\mathrm{j}} = 0.$

(d) The total flux of a uniform field through a closed surface is always zero.