

1. The vector area \vec{A} and the electric field \vec{E} are shown on the diagram below. The angle θ between them is $180^\circ - 35^\circ = 145^\circ$, so the electric flux through the area is

$$\Phi = \vec{E} \cdot \vec{A} = EA \cos \theta = (1800 \text{ N/C})(3.2 \times 10^{-3} \text{ m})^2 \cos 145^\circ = -1.5 \times 10^{-2} \text{ N} \cdot \text{m}^2/\text{C}.$$

