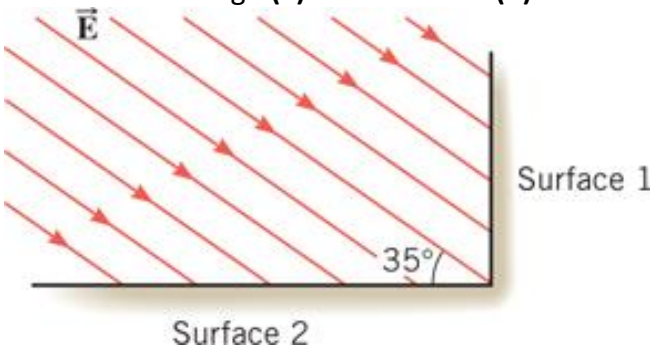
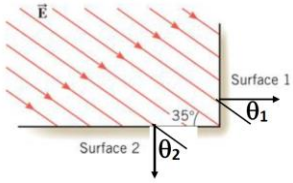
26. The drawing shows an edge-on view of two planar surfaces that intersect and are mutually perpendicular. Surface 1 has an area of 1.7 m^2, while surface 2 has an area of 3.2 m^2. The electric field $\vec{E}$ in the drawing is uniform and has a magnitude of 250 N/C. Find the magnitude of the electric flux through **(a)** surface 1 and **(b)** surface 2.



Consider the angles θ_1 and θ_2 in the figure below.



$\theta_1 = 35°$ as it is making the same angle as the 35°shown in the figure.

$$\theta_2 = 180° - (35° + 90°) = 55°$$

Now Flux is found from

$$\Phi_E = \vec{E} \cdot \vec{A} = EA\cos(\theta_{EA})$$

So for surface 1

$$\Phi_1 = EA_1\cos(\theta_1) = \left(250\ {}^{N}/_{C}\right)(1.7\ m^2)\cos(35°) = 348.1\ {}^{Nm^2}/_{C}$$

And for surface 2

$$\Phi_2 = EA_2\cos(\theta_2) = \left(250\ {}^{N}/_{C}\right)(3.2\ m^2)\cos(55°) = 458.9\ {}^{Nm^2}/_{C}$$

$$\Phi_1 = 350\ {}^{Nm^2}/_{C}$$
$$\Phi_2 = 460\ {}^{Nm^2}/_{C}$$

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