

63. To exploit the symmetry of the situation, we imagine a closed Gaussian surface in the shape of a cube, of edge length d , with the charge q situated at the inside center of the cube. The cube has six faces, and we expect an equal amount of flux through each face. The total amount of flux is $\Phi_{\text{net}} = q/\epsilon_0$, and we conclude that the flux through the square is one-sixth of that. Thus, $\Phi = q/6\epsilon_0$.