PHYS 212 Gauss’ Law Problems Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Gauss’ Law is given by:

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7. A point charge of 1.8 *μ*C is at the center of a Gaussian cube 55 cm on edge. What is the net electric flux through the surface?

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5. In Fig. [23-29](http://edugen.wileyplus.com/edugen/courses/crs4957/halliday9118/halliday9088c23/halliday9118/halliday9088c23/halliday9088c23xlinks.xform?id=halliday9088c23-fig-0029), a proton is a distance *d*/2 directly above the center of a square of side *d*. What is the magnitude of the electric flux through the square? (*Hint:* Think of the square as one face of a cube with edge *d*.)

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|  | |  | | --- | | http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif | | |  |  |  | | --- | --- | --- | | |  | | --- | | http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif | | http://edugen.wileyplus.com/edugen/courses/crs4957/halliday9118/halliday9088c23/image_n/nt0032-y.gif | | | |

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3. The cube in Fig. [23-27](http://edugen.wileyplus.com/edugen/courses/crs4957/halliday9118/halliday9088c23/halliday9118/halliday9088c23/halliday9088c23xlinks.xform?id=halliday9088c23-fig-0027) has edge length 1.40 m and is oriented as shown in a region of uniform electric field. Find the electric flux through the right face if the electric field, in newtons per coulomb, is given by:  
(a) http://edugen.wileyplus.com/edugen/courses/crs4957/halliday9118/halliday9088c23/math/math043.gif (b)http://edugen.wileyplus.com/edugen/courses/crs4957/halliday9118/halliday9088c23/math/math044.gif and (c) http://edugen.wileyplus.com/edugen/courses/crs4957/halliday9118/halliday9088c23/math/math045.gif.   
(d) What is the total flux through the cube for each field?

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| http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif | |  | | --- | | http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif | | |  |  |  | | --- | --- | --- | | |  | | --- | | http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif | | http://edugen.wileyplus.com/edugen/courses/crs4957/halliday9118/halliday9088c23/image_n/nt0030-y.gif | | |  | |  | |  | |  | | |