Guass's Law Magnetism

Recall:

Electric Flux

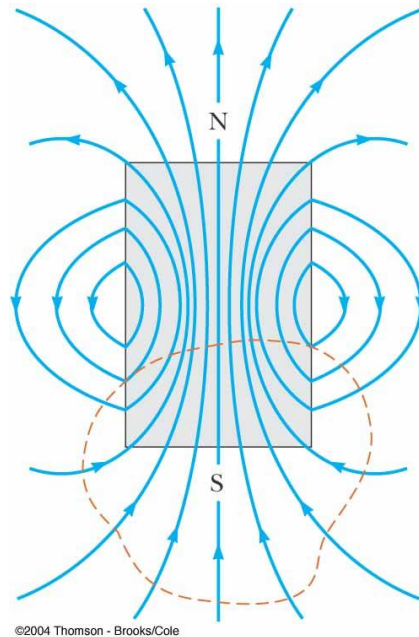$$\Phi_E = \oint \vec{E} \bullet d\vec{A}$$

Φ_E α net number of electric field lines crossing a closed surface

Magnetic Flux

$$\Phi_B = \oint \vec{B} \bullet d\vec{A}$$

Φ_E α net number of magnetic field lines crossing a closed surface

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Consider the closed surface shown above.

Since the net number of magnetic field lines crossing any closed surface is zero, then the net magnetic flux through any closed surface must be zero:

$$\boxed{\oint \vec{B} \bullet d\vec{A} = 0}$$ Gauss's Law for Magnetism

This result is based on the experimental fact that there are NO magnetic monopoles!