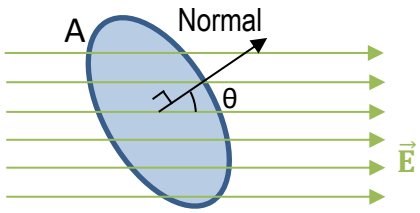
CONCEPT: MAGNETIC FLUX

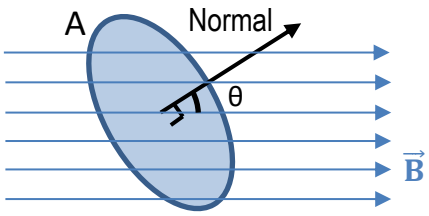
- Remember: Electric flux is just the amount of Electric Field **(E)** passing through a surface.
  - MAGNETIC FLUX is just the amount of _____ Field **(B)** passing through a surface.

Electric Flux



$\Phi_E = E\,A\cos\Theta \rightarrow$ Units: $\frac{N \cdot m^2}{C}$

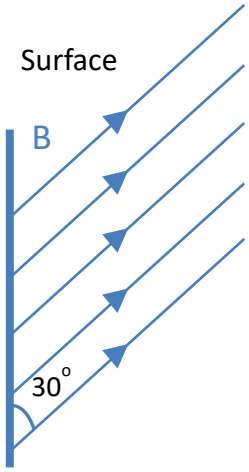
Magnetic Flux



$\Phi_B =$ _____ → Units: **1 Wb =** $T \cdot m^2$

- Remember, $\theta \rightarrow$ angle between **B** and the _____ of the surface!
- Φ_B is always *positive* (or zero).

EXAMPLE: What is the magnetic flux through the square surface depicted in the following figure, if B = 0.05 T? The side length of the square is 5 m.



PRACTICE: MAGNETIC FLUX THROUGH A RING

A ring of radius 0.5m lies in the xy-plane. If a magnetic field of magnitude 2T points at an angle of 22^{o} above the x-axis, what is the magnetic flux through the ring?

EXAMPLE: ROTATING RING

A ring of radius 2 cm is in the presence of a 0.6 T magnetic field. If the ring begins with its plane parallel to the magnetic field, and ends with the plane of the ring perpendicular to the magnetic field, what is the change in the magnetic flux?