

# Solenoids

Magnitude

- A solenoid consists of  $N$  loops of wire  
 $B$  is uniform everywhere inside of solenoid:

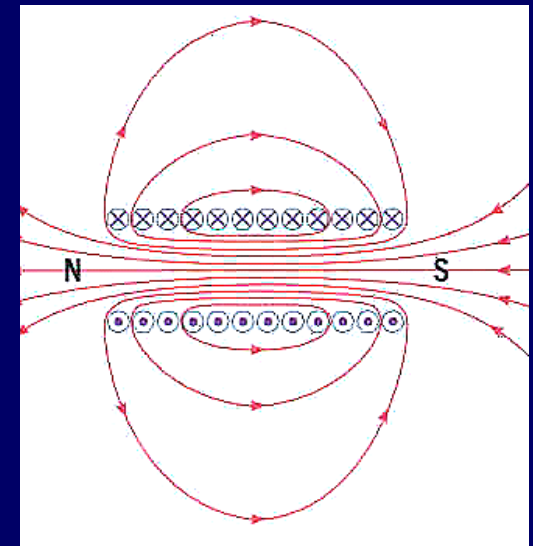
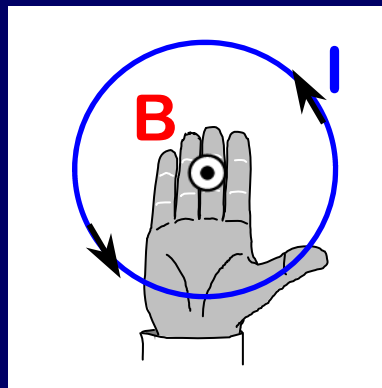
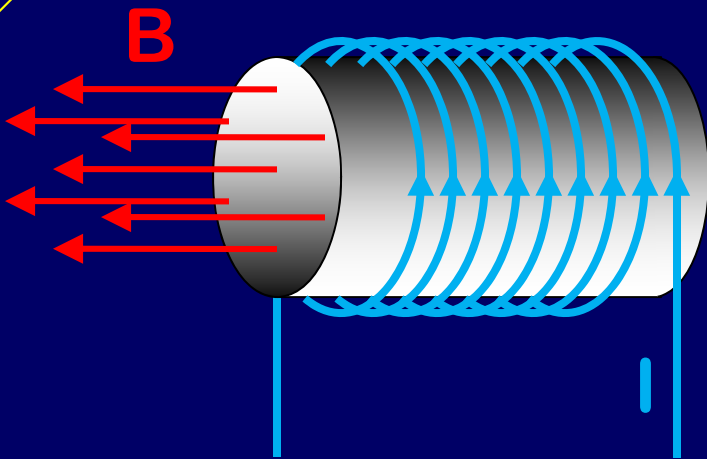
$$B = \mu_0 n I$$

$$\mu_0 = 4\pi \times 10^{-7} \text{ Tm/A}$$

$n$  is the number of turns of wire/meter ( $n = N/L$ )

Direction

- Use “Right-hand rule 2”



**B field lines look like bar magnet!  
Solenoid has N and S poles!**