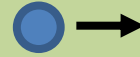


CONCEPT: MUTUAL MAGNETIC FORCE ON PARALLEL CHARGES

- Remember: Parallel currents FEEL A MUTUAL FORCE → $F =$

- Currents are just charges moving in a wire. So parallel moving charges ALSO feel a mutual Magnetic force:

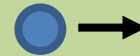
- MAGNITUDE → _____



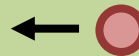
- Same Direction & Charge → _____



- Opposite Direction & Charge → _____



- All Others Combinations → _____



EXAMPLE: An electron is moving right with 1.0×10^8 m/s when a proton passes it moving left with 2.0×10^8 m/s.

- (a) What is the magnetic force between them when they pass each other, if at that moment they are $3 \mu\text{m}$ apart?
- (b) What is the electric force between them at that moment?