

HW # a
1)

• kilo

$$I = \frac{\Delta V}{R}$$

~~(4kΩ) (7kΩ)~~

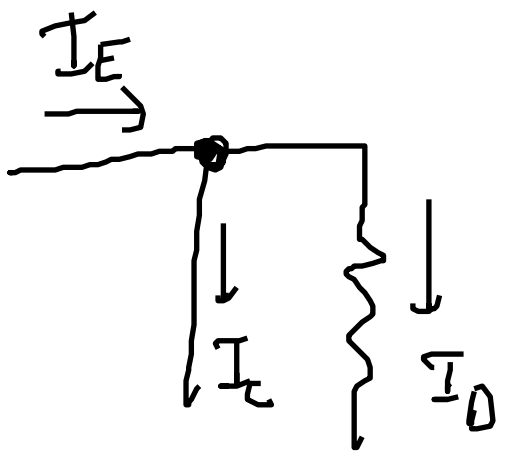
$$I = \frac{6V}{3k\Omega}$$

$$= \frac{6V}{3 \times 10^3 \Omega}$$

$$= 2 \times 10^{-3} A$$

$$= 2 mA$$

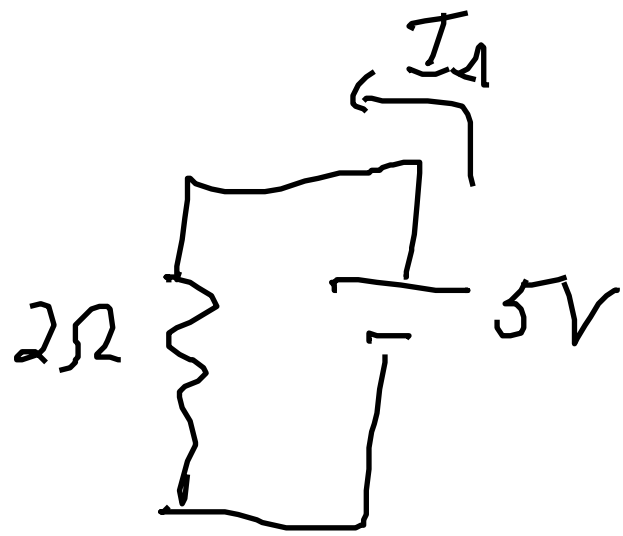
2a)



I_E, I_C, I_D

- Ω, V, A
- $\rightarrow k\Omega, V, mA$
- $M\Omega, V, \mu A$

2b) not asked to solve
loop rule



$$I_A = \cancel{5} \times 2 = \frac{5}{2}$$

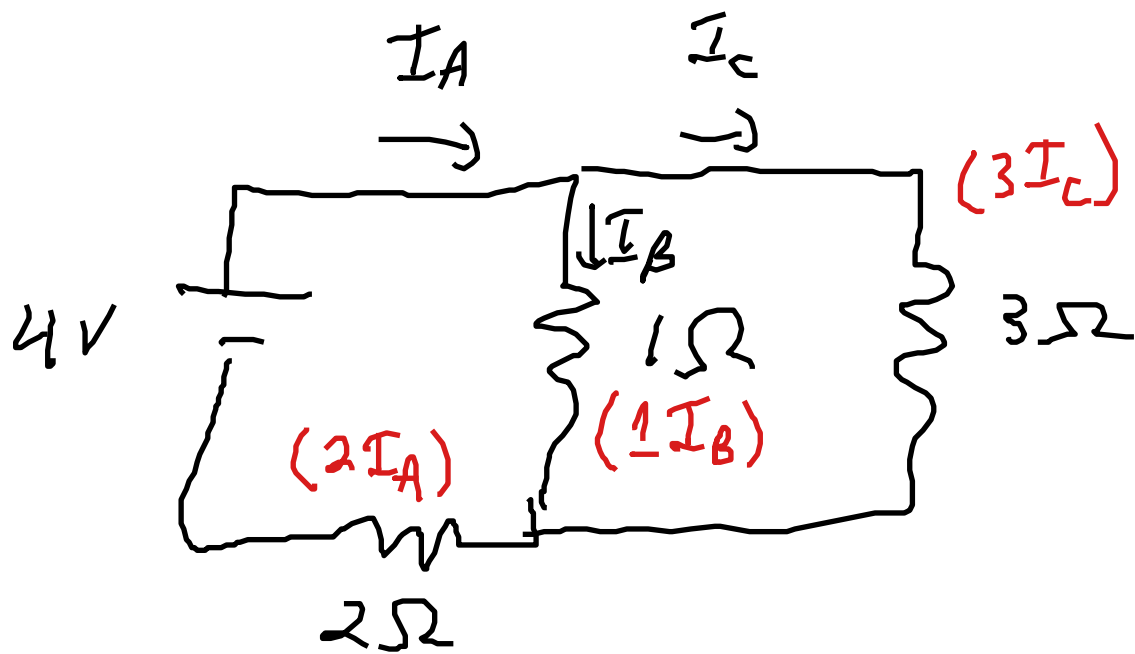
$$5 - 2I_A = 0$$

$$2I_A = 5$$

$$I_A = \frac{5}{2}$$

2c) Answer the right question

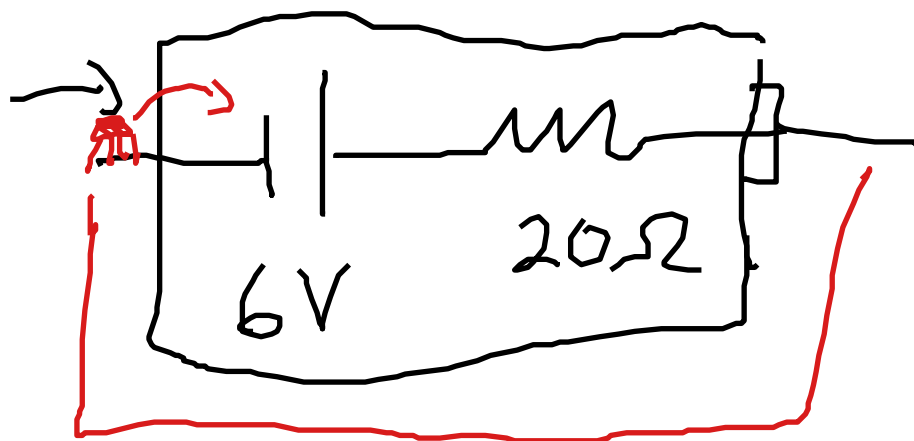
36) Loop rule = \bigcirc



$$4 - 1I_B - 2I_A = \bigcirc$$

$$4 - 3I_C - 2I_A = \bigcirc$$

4a) $I = 0.1 \text{ A}$



Keep I
as a
variable

$\Delta V = ?$

$$+6 - 20(0.1) = \Delta V$$

$$6 - 2 = \Delta V$$

$$\Delta V = 4 \text{ V}$$

4b) : If ΔV drops to 0 across
battery, ~~no~~ stops working

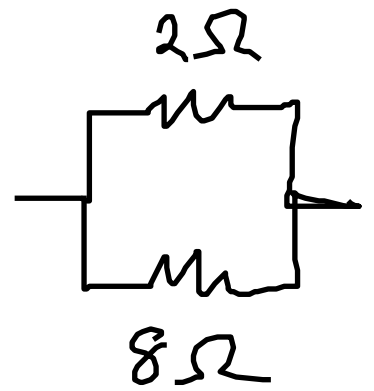
$$I \rightarrow I_{\text{max}}$$

5) Not

$$R_{eq} \neq 2 + 8$$

$$\neq \frac{1}{2} \times \frac{1}{8}$$

$$\neq \frac{1}{12} + \frac{1}{16}$$



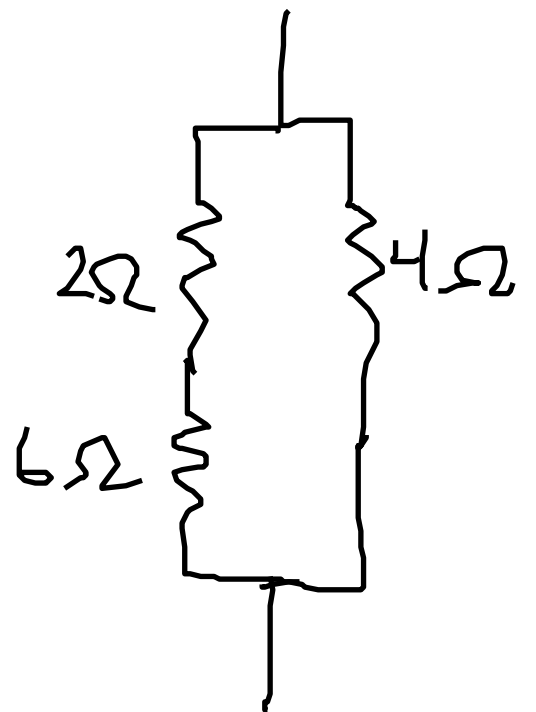
6) Not

$$R_{eq} \neq 6 + 2 + 4$$

$$\neq \frac{2 \times 4 \times 6}{2 + 4 + 6}$$

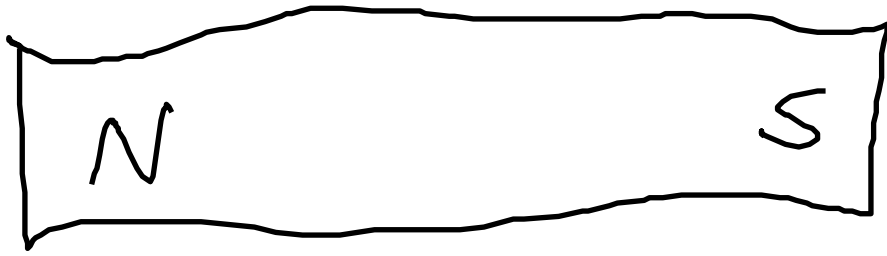
$$\neq \frac{1}{3} + \frac{1}{6} + \frac{1}{4}$$

$$\neq \frac{1}{2} + \frac{1}{6} + \frac{1}{4}$$



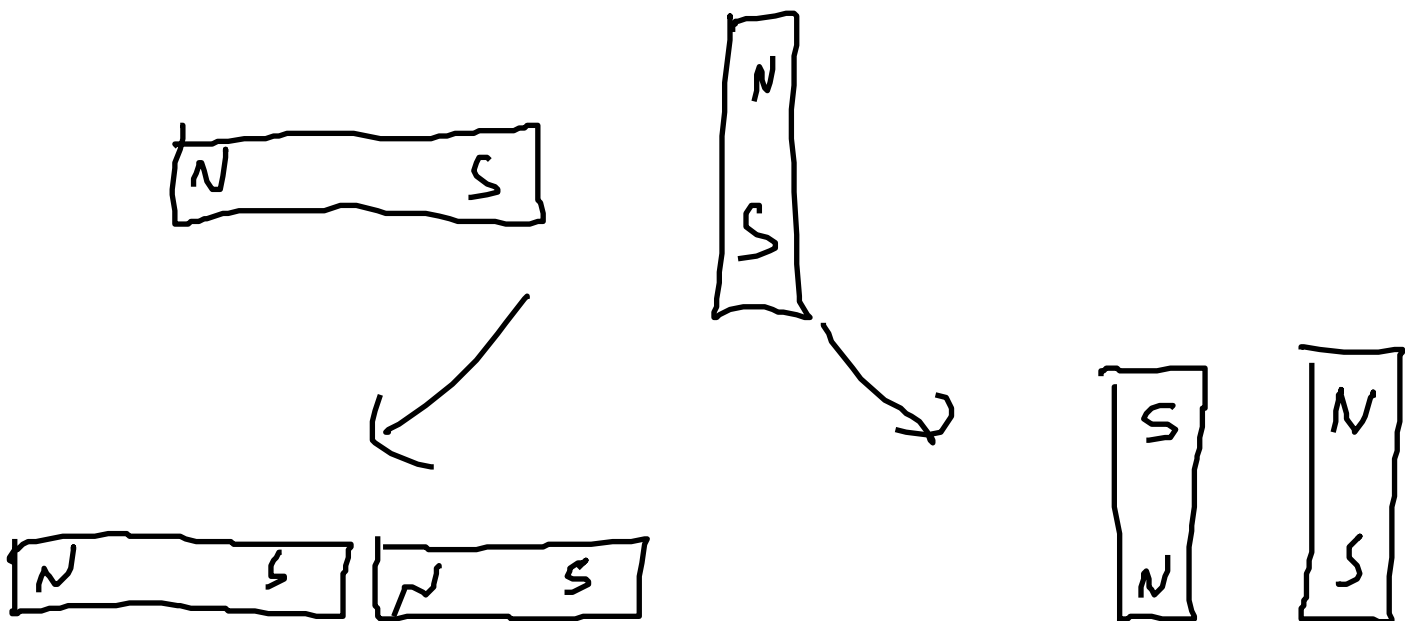
$$2 < R_{eq} < 6$$

Magnetism

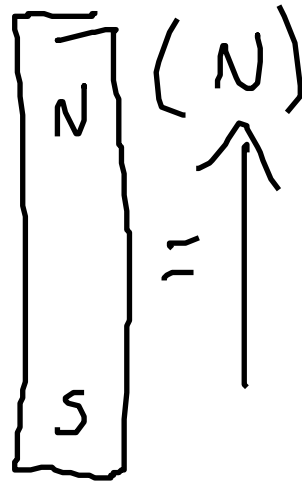
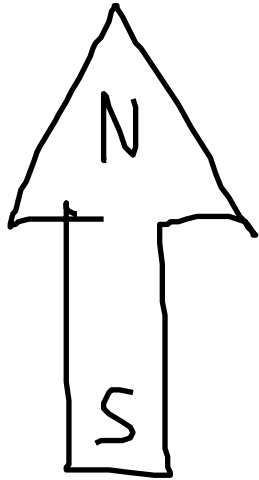


Opposite poles attract
like poles repel

N & S poles always
come in pairs (maybe?)



Compass needle is a bar magnet



stable configs



Earth's Magnetism

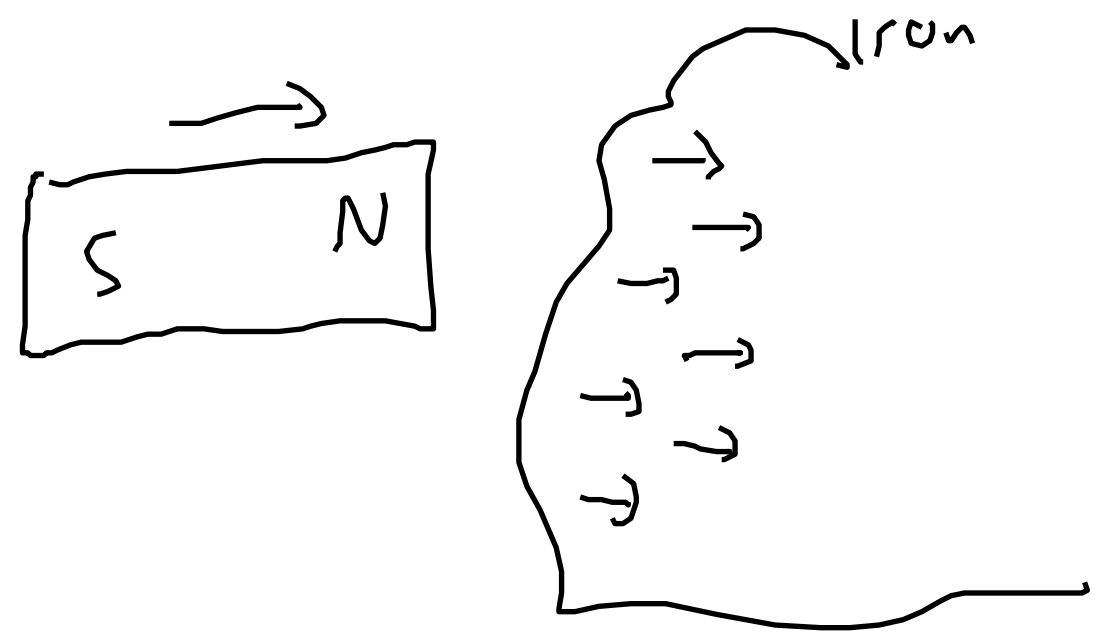


"N" poles
&
"S" poles

"Ferromagnetic materials"
are attracted to magnets

(iron, some steel, nickel, cobalt)

become magnetized



9
Magnetic force is a
non-contact force

like gravity & electric force

Magnetic Field \vec{B}

- exists everywhere in space (like \vec{E})
- created by magnets (& other things)
- reacted to by magnets " " " "

- points in direction a
compass would point

e.g. in this room, \vec{B} mostly
points to the north

