

11-5-13
Possible particles
① Storms and climate change
using Reynolds

LAW: IF pressure

is low, fluid (air)

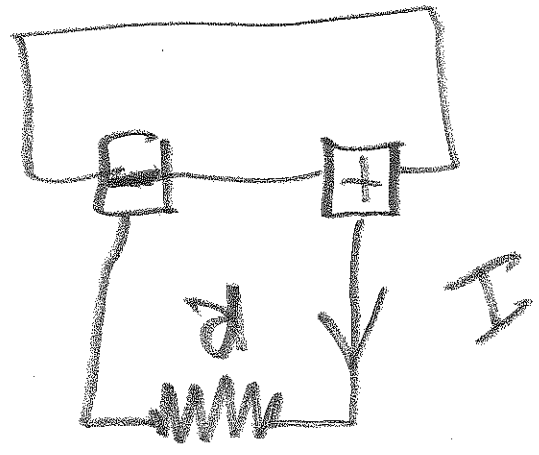
speeds is
high and

can produce

destruction

② Hydraulic "fracking"

$$I = \frac{\text{charge}}{\text{time}}$$

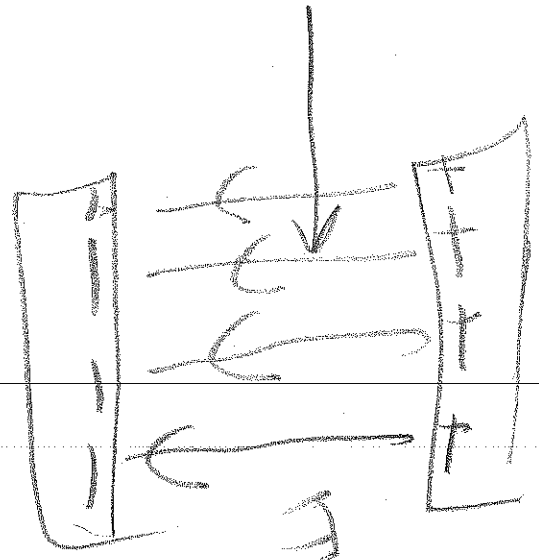


CH23: moves from + to -

CH23: current (electrons)

between plates
in space
Energy

Fig 22.7



CH22

11-5-13

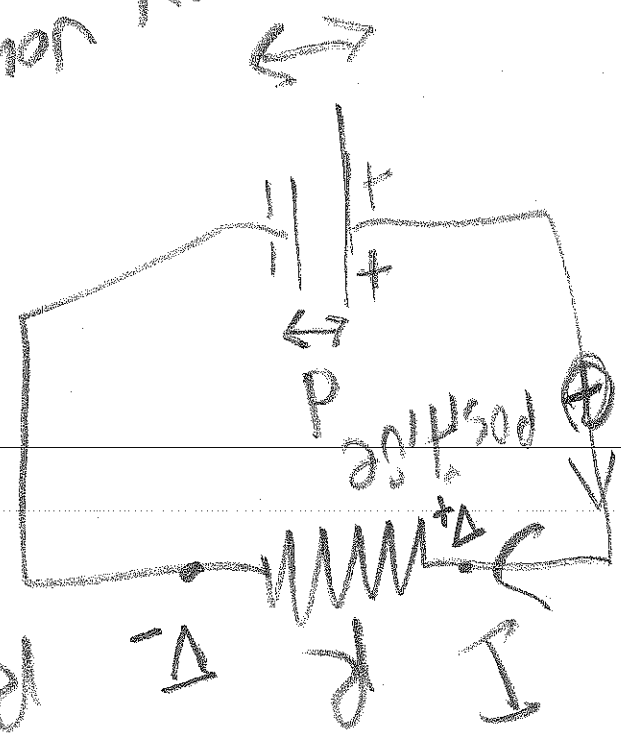
page 408

Ohm's Law: $I = \frac{V + - V -}{R}$

⊕ pretend ⊕ flows
 ⊖ actually flow

Battery voltage $= V + - V -$
 (E_{Ed})

$I = \frac{\text{CHARGE}}{\text{TIME}}$



R = RESISTOR

amperes

$$I = \frac{V}{R} = \frac{5}{5}$$

$$I = \frac{12(V)}{60\Omega} = \frac{1}{5} = 0.2A$$

check point

p408

)

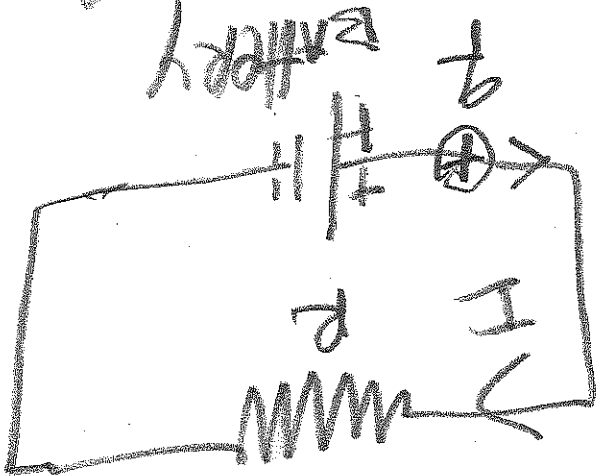
$$R = 60\Omega$$

$$V^+ - V^- = 12(V)$$

Electrical Power:

Power = current \cdot voltage

P_{heat}



Power = rate of heat production

Work = $\int \frac{1}{2} (v^+ - v^-) \cdot I \cdot dt$ BY BATTERY

rate of work $I = \frac{e}{\frac{1}{2} (v^+ - v^-)}$

part 3

$\Delta = \text{voltage across } R$

$$P =$$

$$\left(\frac{\Delta}{R}\right)^2 R = \frac{\Delta^2}{R}$$

$$= \Delta/R$$

note $I = (\Delta_+ - \Delta_-)/R$

Rate of heat production in R.

P

$$I^2 R$$

Power = P

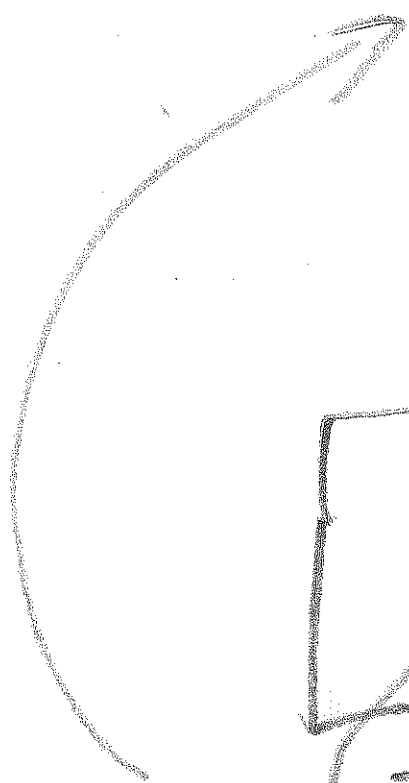
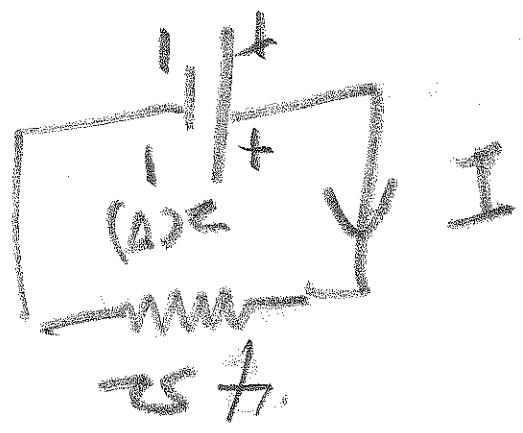
$$= I \cdot R \cdot I$$

$$\text{Heat rate} = I \cdot (\Delta_+ - \Delta_-)$$

Series: $R_{eq} = R_1 + R_2$

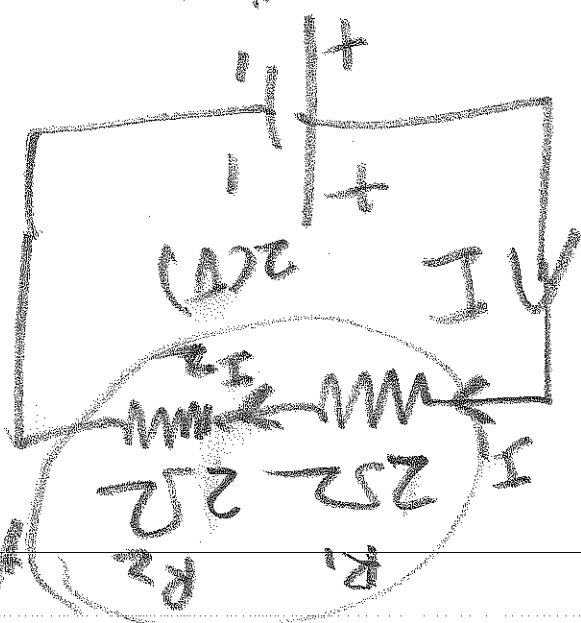
$$I = \frac{20V}{7\Omega} = 2.86(A)$$

$$I = 0.5(A)$$



Battery

$$I_2 = I$$



Series

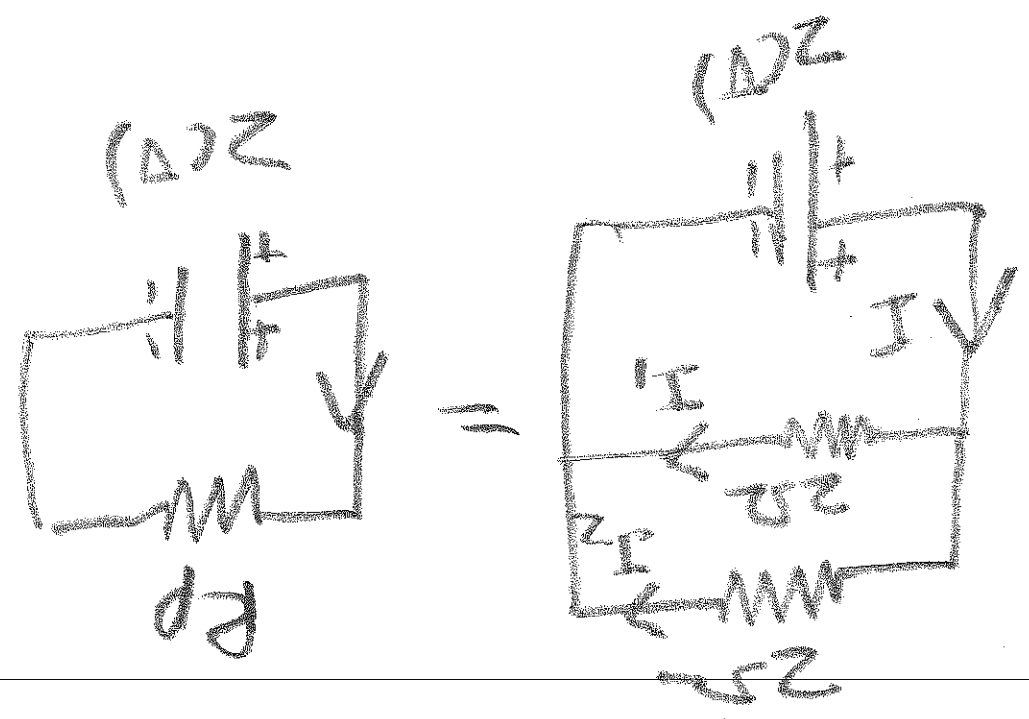
RA dipromos
ADD

$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} \Rightarrow \frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R_p} = \frac{R_2 + R_1}{R_1 R_2} \Rightarrow R_p = \frac{R_1 R_2}{R_1 + R_2}$$

$$I = I_1 + I_2$$

$$I \neq I_1 + I_2$$



parallel

Dampers of mouse-wrings
fig 23.19

parallel
springs

$$I = \frac{2(\Delta)}{1.52} = 2(A) \frac{2}{1.52}$$

parallel produces resistance
and increases current

$$= 1.52$$

$$22 + 22$$

$$\frac{(22)(22)}{(22)(22)}$$

$$R_p =$$

parallel

$$\frac{R_1 \cdot R_2}{R_1 + R_2}$$

note $R_p =$

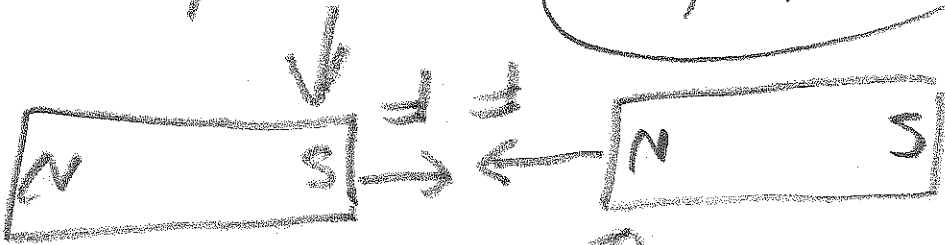
NOTE: N and S always go together
 can't be isolated N or S DOES NOT EXIST.

sep opposite
 opposite

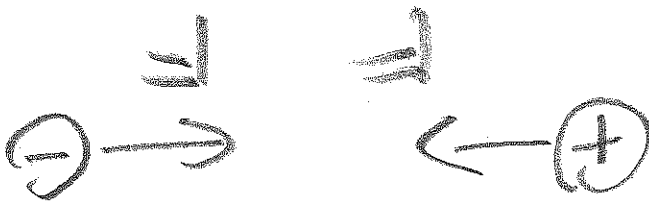
"negative"
 "magnetic"
 "change"

N attracts S

N repels N
 S repels S



"positive magnetic"
 "change"



CH 24

CH 22

MAGNETISM

CH 24

SUMMARY

1. magnetic fields

are caused by

moving charges

2

charges moving

in a magnetic

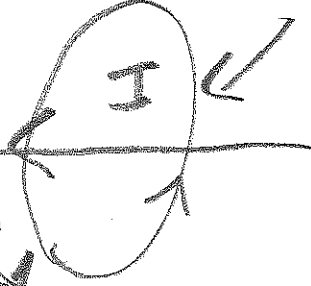
field feel a force

1.

A

long wire

right fingers



right thumb

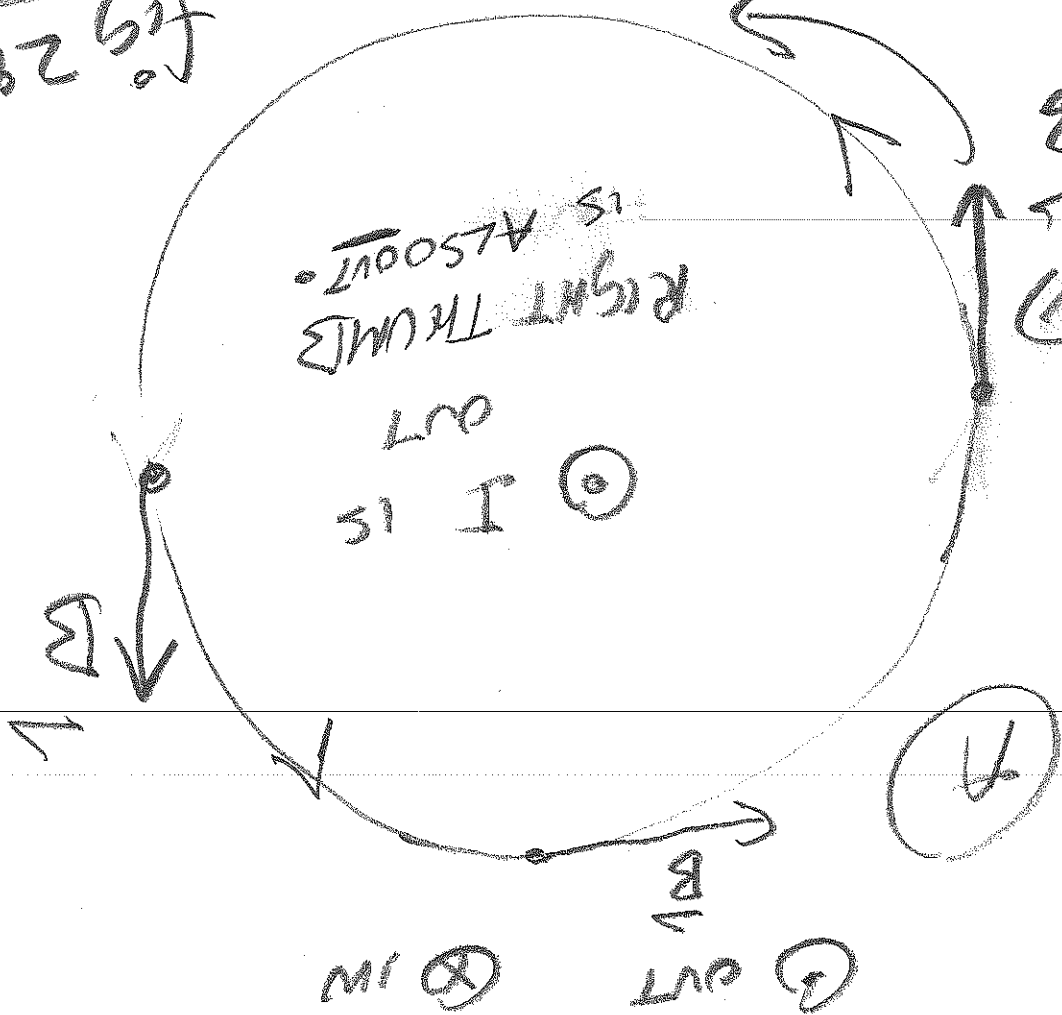
closer to you

\vec{B} -LINES
 tangent to
 at a point is
 \vec{B} VECTOR FIELD

\vec{B} -FIELD
 IS IN LOOPS

fig 24.8
 fig 24.9

Right fingers



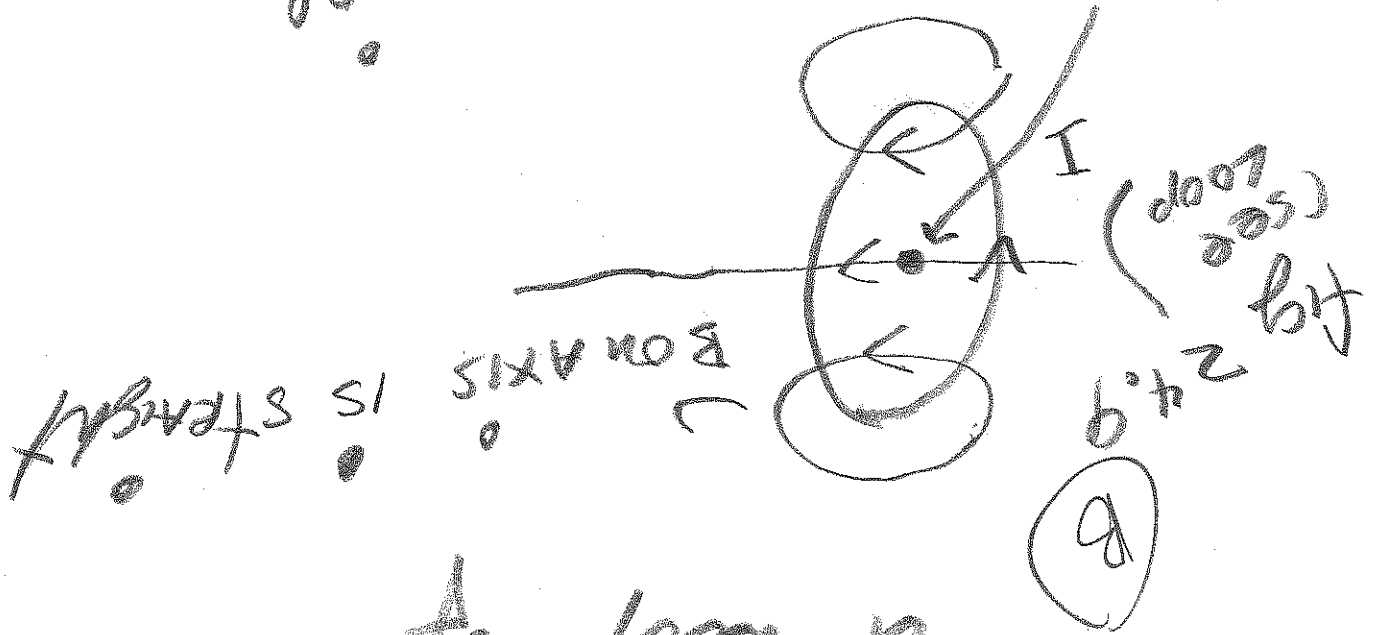
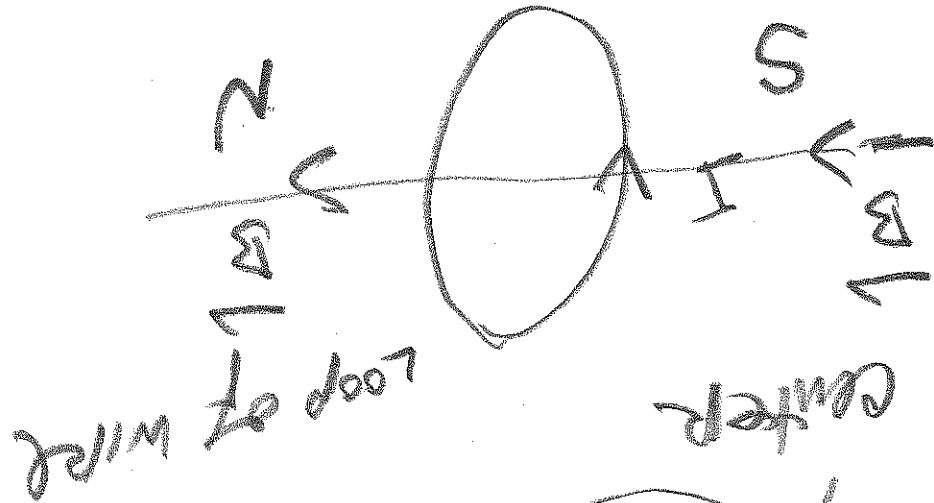
RIGHT THUMB IS ALSO OUT.

I IS OUT

H

G OUT

G IN



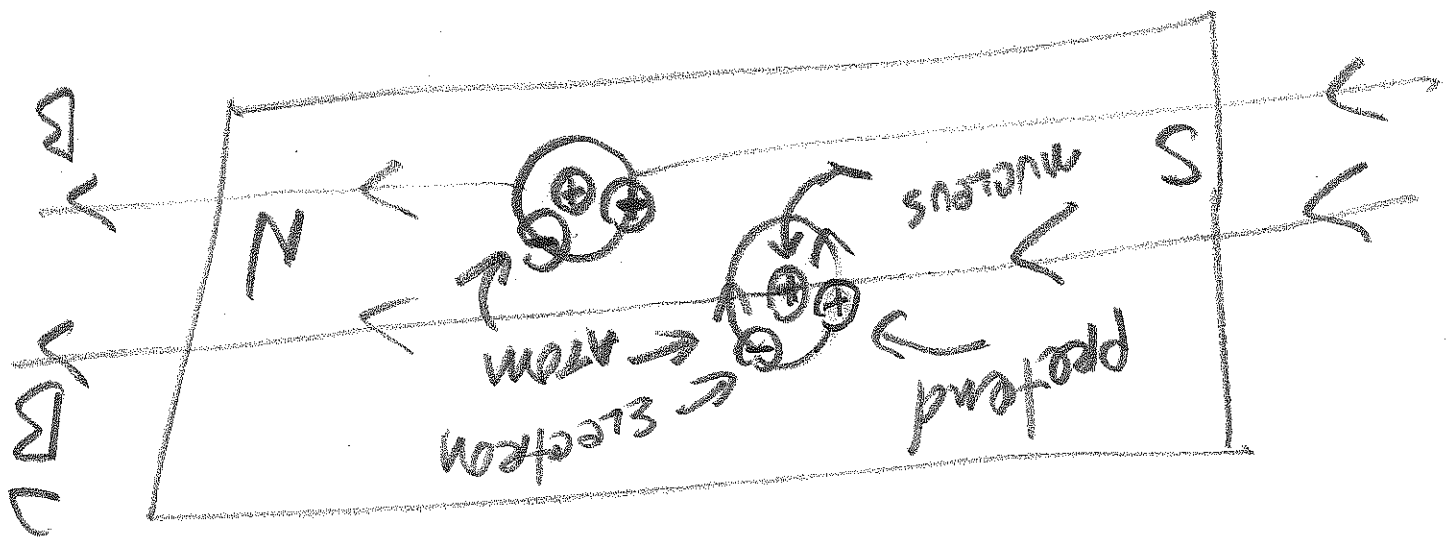
run a loop of wire

to get lines for

Use long wire idea

||

||



magnet
 of many atoms with
 magnet is composed

NOTE fig 24.13
 ELECTRON
 IS MOVING: \vec{v} IS UP.

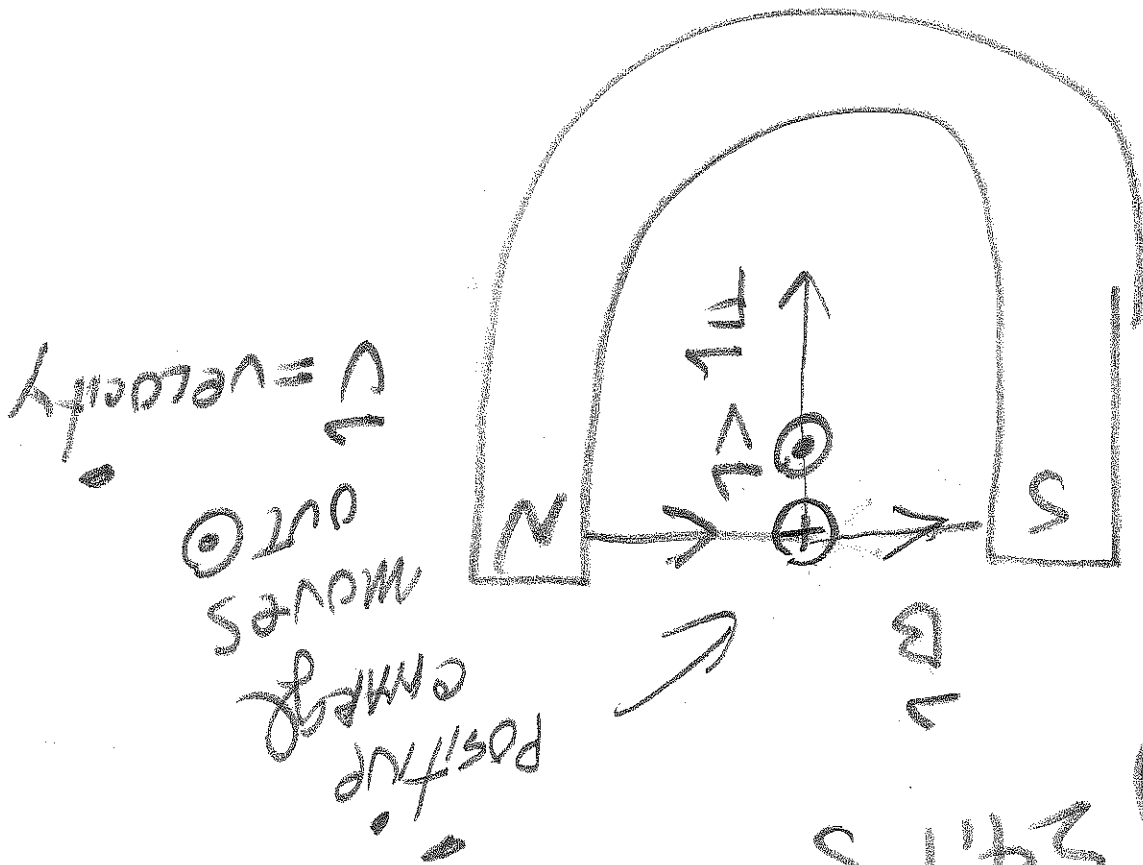


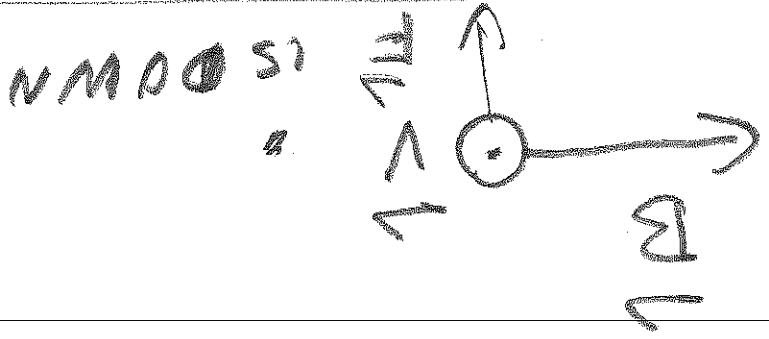
fig 24.13

moving charge

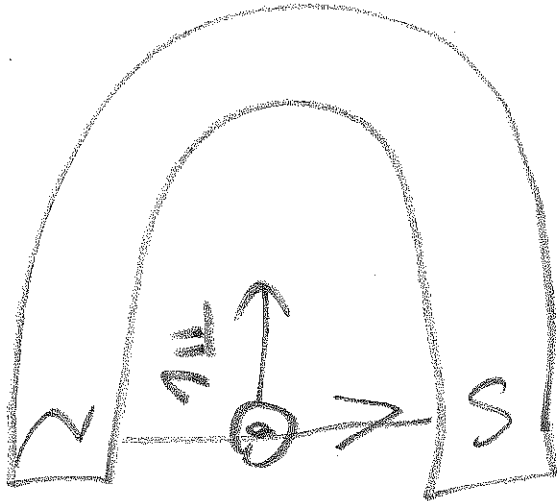
force on a

② magnetic

point of right fingers
 along V and V
 wrap V into B
 your thumb
 is in the force
 direction: THUMB
 is DOWN



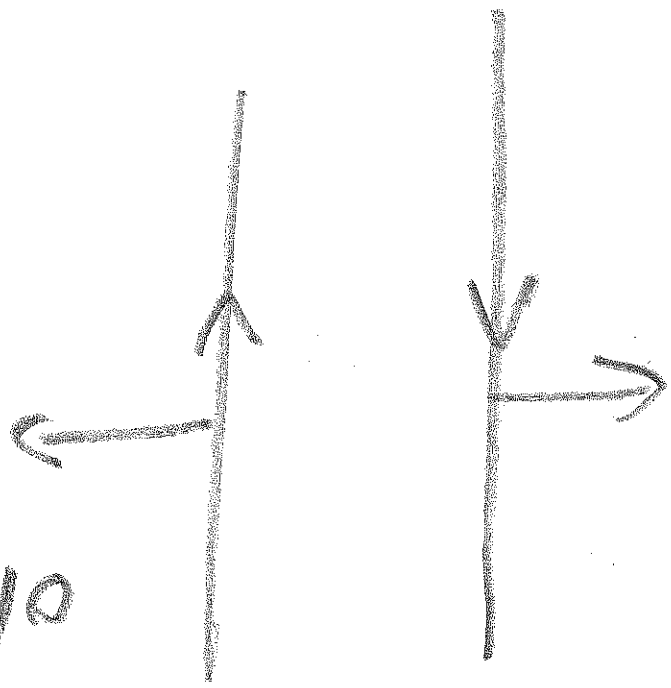
wire deflects DOWN
using some force
for moving charges



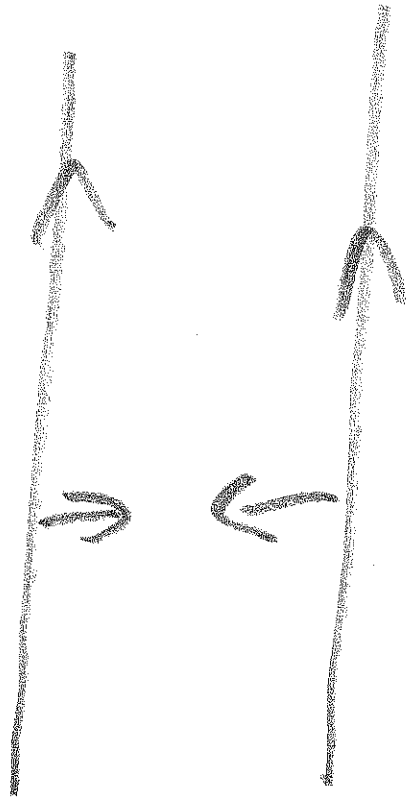
wire
with I is
out

fig 2.4.15

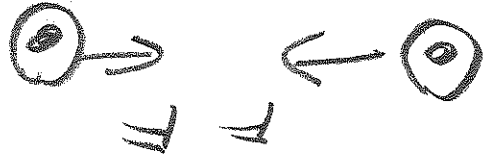
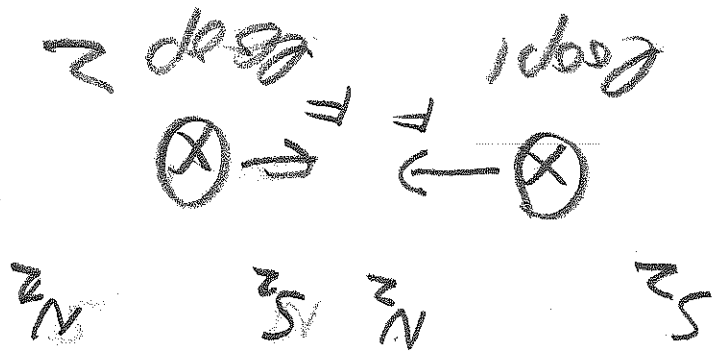
opposite
of
currents
paper
wires



parallel
currents
attract wires

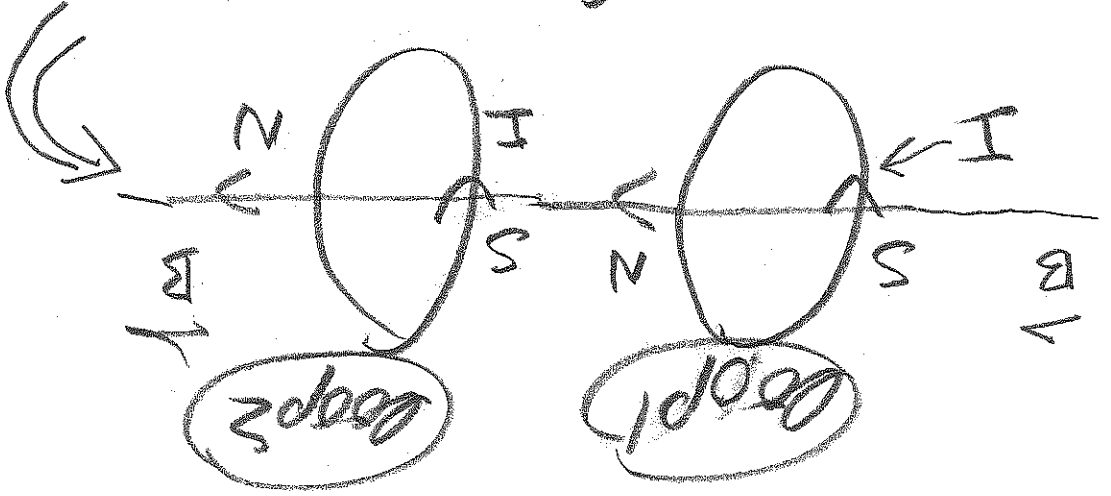


ALSO SHOW: 2 WIRES ATTRACT FOR PAPER.
TWO CURRENTS



Side view:

2 loops of current I.



SOUTH:

north effects

" " = mystery of why solve

② Writing Project 1 due Nov 12
||
||
2 || Nov 19

QA 19, 20, 22, 23

① Quiz 8
Alberts: