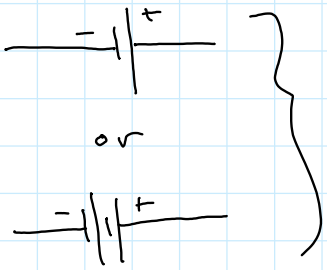
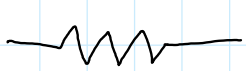
Phy 2B 1/26

Monday, January 26, 2015 9:53 AM

DC Circuits
Series & Parallel
Resistors
Capacitors

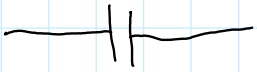


DC Power Supply
or
battery



Resistor

Zero Resistance path



Worksheet p. 93

A) 1) Same in both

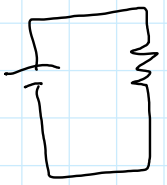
2) No

3) No

2 bulbs in series

B) 1) more current in single bulb

2) Single bub battery has more current



single bulb

C) 1) increases total R

2) Total current decreases as more resistors are added in series

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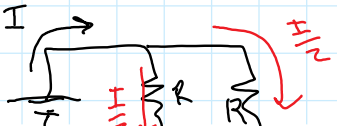
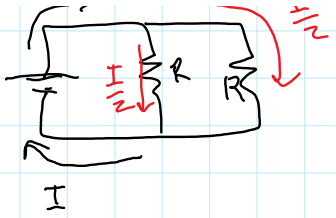
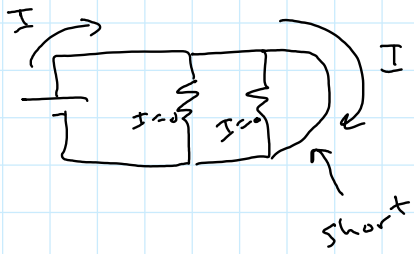
III A) 1) Same



III #1) 1) same



2)



B) about the same

current through battery for single bulb is half that of 2 bulb circuit

C) current through battery increase with more bulbs in parallel

D) yes

E) No

Application of the day:

Sawstop

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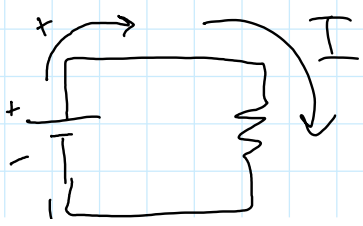
current

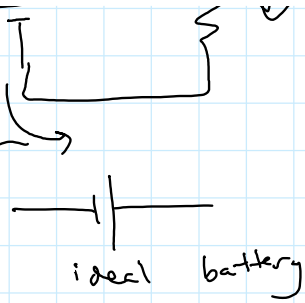
$$I = \frac{\Delta Q}{\Delta t}$$

units: A ampere

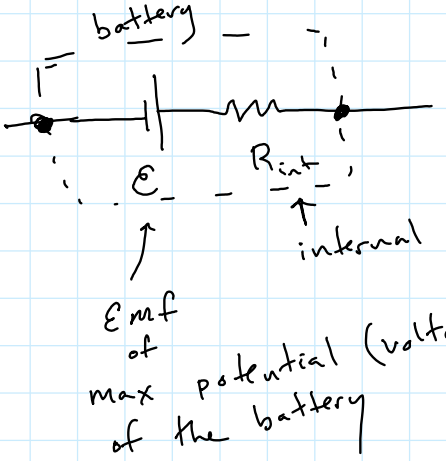
$$1\ A = \frac{1\ C}{1\ s}$$



batteries:

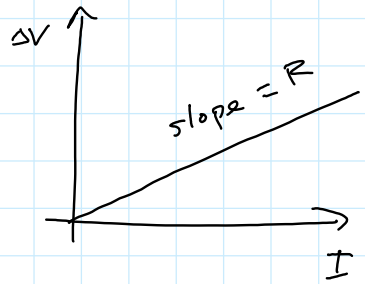


ideal battery



Resistance and Ohm's Law

Ohm's Law: $\Delta V = I R$



Resistance:

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worksheet p. 325

Top

a) increases

b) increases

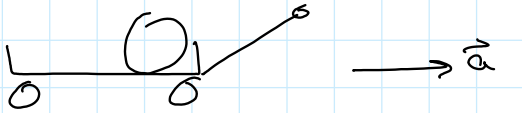
b) increases

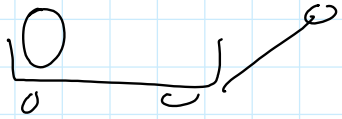
c) decreases

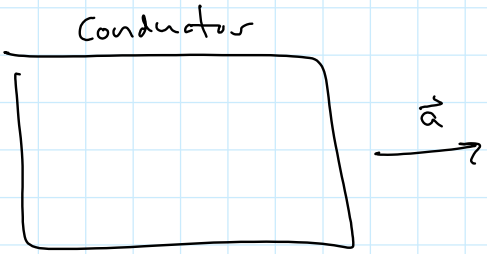
d) (iv) don't know

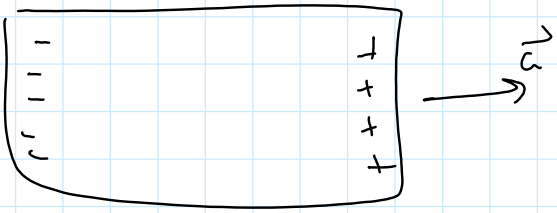
bottom same current

Which charges move?



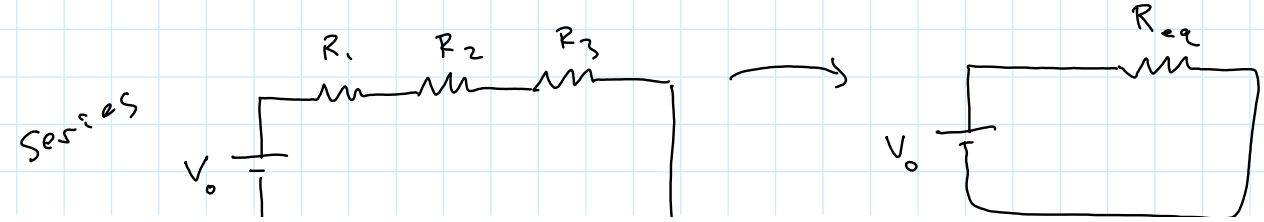




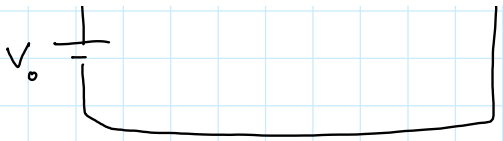


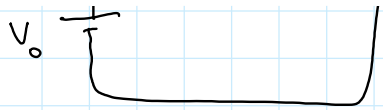
Negative charges move

Series & Parallel Resistors



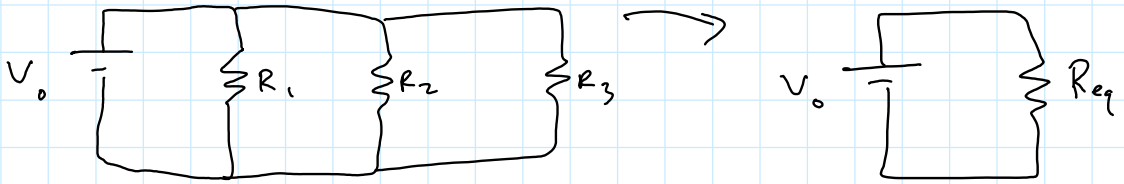
Ser





$$R_{eq} = R_1 + R_2 + R_3 + \cdots$$

Parallel



$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \cdots$$

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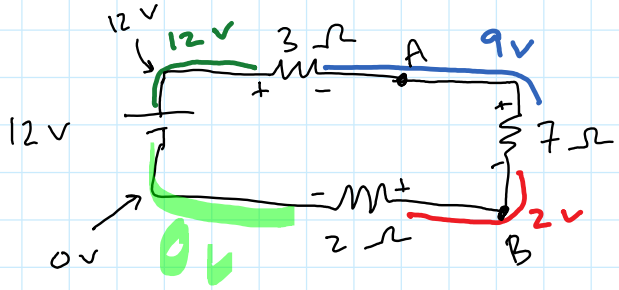
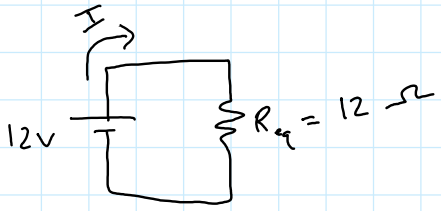
p325 bottom

Find I if $V = 12\,V$





$V = IR$

$(12\,V) = I\,(12\,\Omega)$

$I = 1\,A$

3 Ω

$V = IR$

$= (1\,A)(3\,\Omega)$

$= 3\,V$

7 Ω

$V = IR$

$= (1)(7)$

$= 7\,V$

Worksheet

b)

ΔV	I

Worksheet
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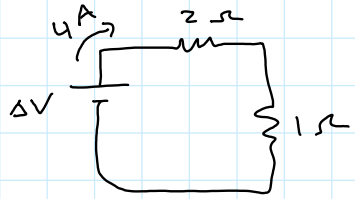
6)

	ΔV	I	R
Battery	12 V	4 A	
R_1	8 V	4 A	2 Ω
R_2	4 V	4 A	1 Ω



$V = IR$

a)

	ΔV	I	R
Battery	15	8 A	
R_1	15	3 A	5 Ω
R_2	15	5 A	3 Ω