

## Science 9 – Ch10 Current Electricity Note 2: Current

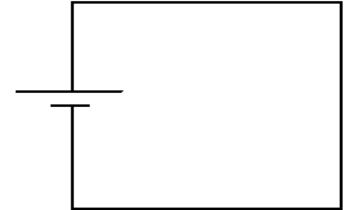
### Direction of Current (flow of electron)

An electric cell (battery) uses a chemical reaction to create a “potential difference” between the ends of the battery.

- That means that one end of the cell becomes \_\_\_\_\_ and the other becomes \_\_\_\_\_.

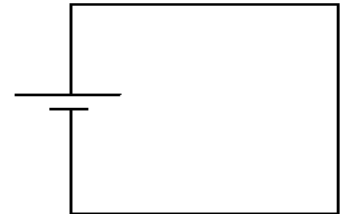
When a circuit connects the two ends of the cell, current flows through the wire.

- This is because electrons are \_\_\_\_\_ by the negative end of the cell and \_\_\_\_\_ to the positive end.



### Conventional Current

- When scientists discovered electric current, they assumed that \_\_\_\_\_ charges were moving.
- This is called conventional current
  - defined as the direction \_\_\_\_\_ charges move in a circuit
  - from positive to \_\_\_\_\_
  - we now know this isn't the way it actually works.

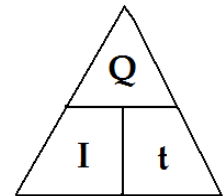


### Calculating Current

- Current (**I**) is the amount of charge (**Q**) that passes a point in a current every second (**t**):

$$I =$$

- **I**: is the symbol for \_\_\_\_\_, measured in **Amperes (A)**
- **Q**: is the symbol for charge, measured in \_\_\_\_\_ (C)
- **t**: is time, measured in **seconds (s)**



#### Example #1

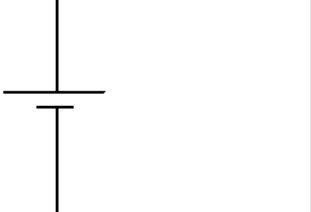
What is the current in a wire if 25 C of charge passes by a point in 5 seconds?

#### Example #2

If the current in a wire is measured to be 12 A, how much charge passes by a point in the circuit every minute

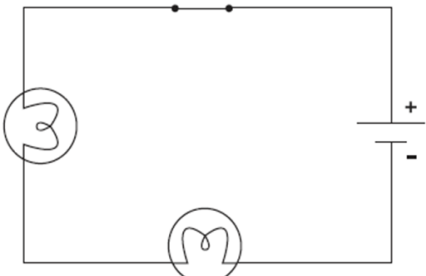
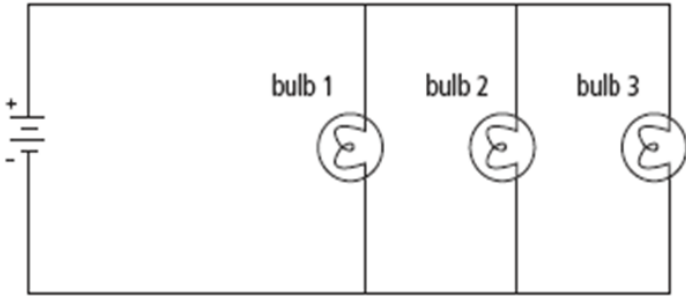
#### Example #3

A current of 64 mA is equivalent to \_\_\_\_\_ A.

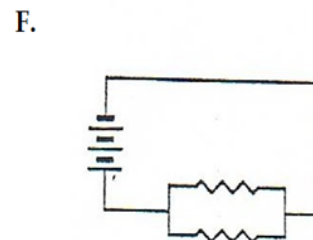
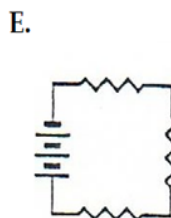
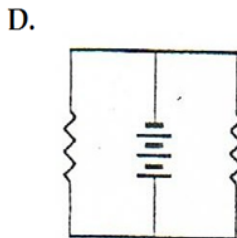
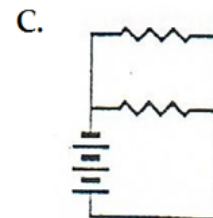
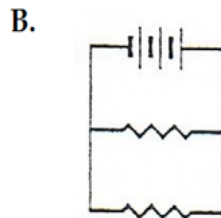
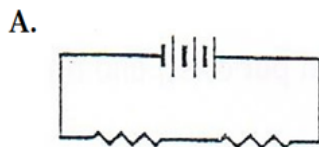
<ul style="list-style-type: none"> <li>Current is measured by a device called an _____.</li> </ul>	
<ul style="list-style-type: none"> <li>Typical amounts of current:             <ul style="list-style-type: none"> <li>In a light bulb is 1A</li> <li>In a TV is 4A</li> <li>In a car starter is 500 A</li> </ul> </li> </ul>	

### Series vs. Parallel

In a circuit, devices (such as light bulbs or batteries) can be placed in two different ways.

SERIES	PARALLEL
<ul style="list-style-type: none"> <li>When devices are placed in series, the current goes through a _____ through all devices.</li> <li>In this circuit, there is only <b>one path</b> and the _____ goes through the two light bulbs in the series.</li> </ul> 	<ul style="list-style-type: none"> <li>When devices are placed in parallel, there are 2 or _____ that the current can take</li> <li>it _____ and some of it goes through one device, and some of it goes through the other(s).</li> </ul> 

Decide whether each circuit is Series, Parallel, or a Combination of the two.

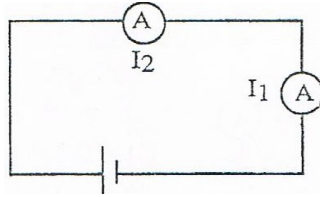


### Calculating Current in SERIES

- **Current (I)**
  - Measured in Amperes (A)
  - When you place an Ammeter in SERIES (SIDE BY SIDE) the current \_\_\_\_\_

- **Series:**

$$I_{Total} =$$

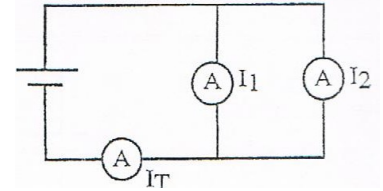


### Calculating Current in PARALLEL

- **Current (I)**
  - Measured in Amperes (A)
  - When you place an Ammeter in PARALLEL (OPPOSITE FROM EACHOTHER), you \_\_\_\_\_ the current to find a total.

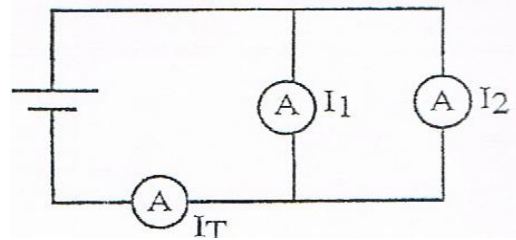
- **Parallel:**

$$I_{Total} =$$



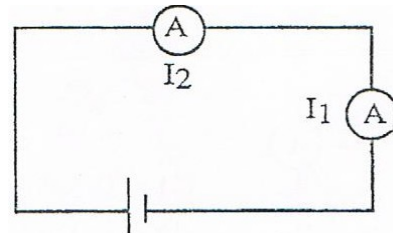
#### Example #4

Find the total current for the following circuit.



#### Example #5

Find the total current for the following circuit.



#### Example #6

How long does it take 40 C of charge to pass by a point if the current in the circuit is 0.76 A ?

