# Circuits

IB PHYSICS | ELECTRICITY

#### Circuits



#### Resistance in a Circuit



There are many different components that act as resistors when placed in a circuit





### Resistance and Electron Flow



Electrons will follow the path of least resistance

#### short circuit

#### **Combining Components**



#### **Connecting in Series**

- Components in one single pathway
- Current flows the same through everything





### Connecting in Parallel

- Separate branches
- Current splits up between the different pathways





#### Connecting in Parallel

#### Which resistor has less resistance?



#### Water Flow Model



### Measuring Circuits

# When we measure **voltage** or **current** in a circuit, we need to connect our instrumentation in the right way



#### Ammeter

Hooked up in <u>Series</u> with the component being measured



To measure the current, the current must flow through the ammeter

## Measuring Current





# Measuring Current



#### Voltmeter

# Hooked up in **parallel** with the component being measured





## Measuring Voltage





## Measuring Voltage



#### Lesson Takeaways

- □ I can describe the direction of conventional current compared to the movement of charges through a circuit
- I can identify component combinations as parallel or series
- I can describe how current flows through parallel and series resistors
- I can describe the set up to measure current and voltage in a circuit