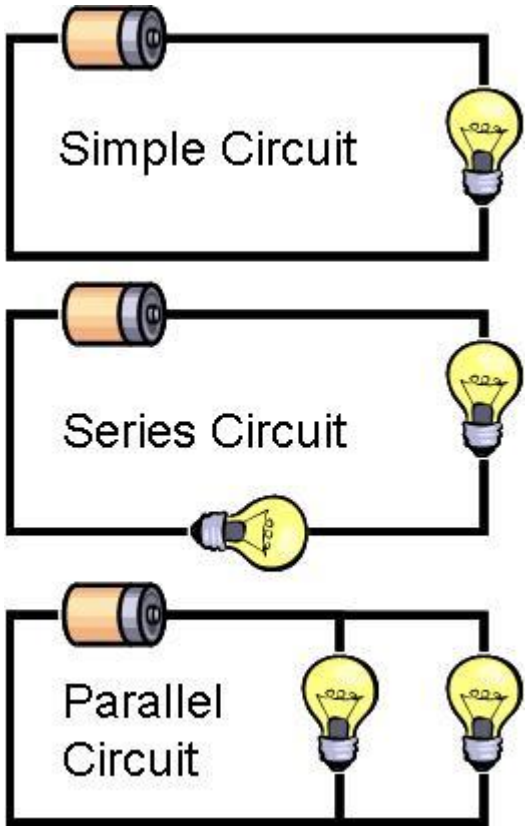
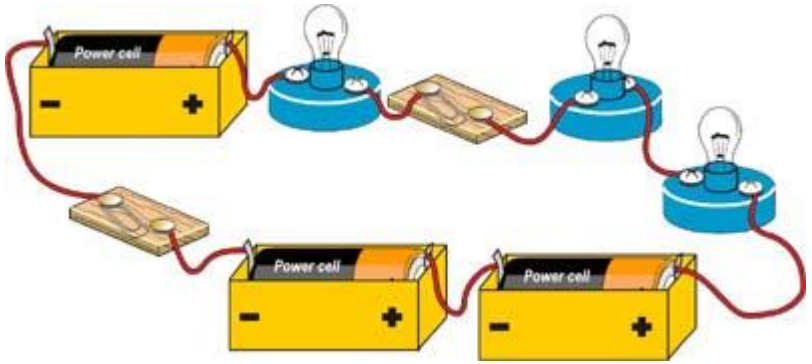
Parallel Circuits

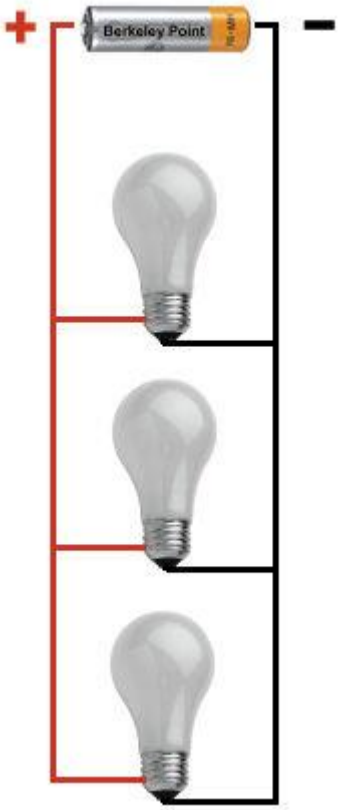
21.2

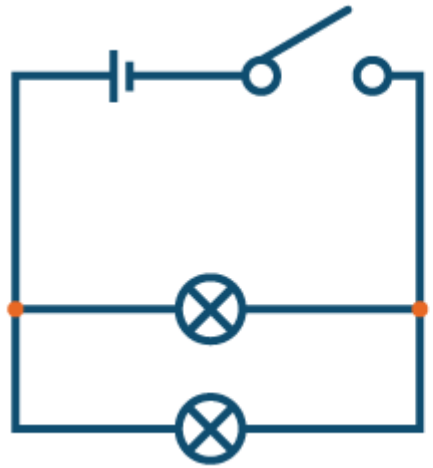
3 different kinds of circuits

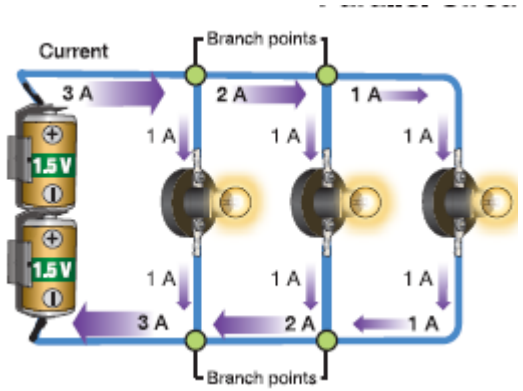


Quiz…yell out which you think…



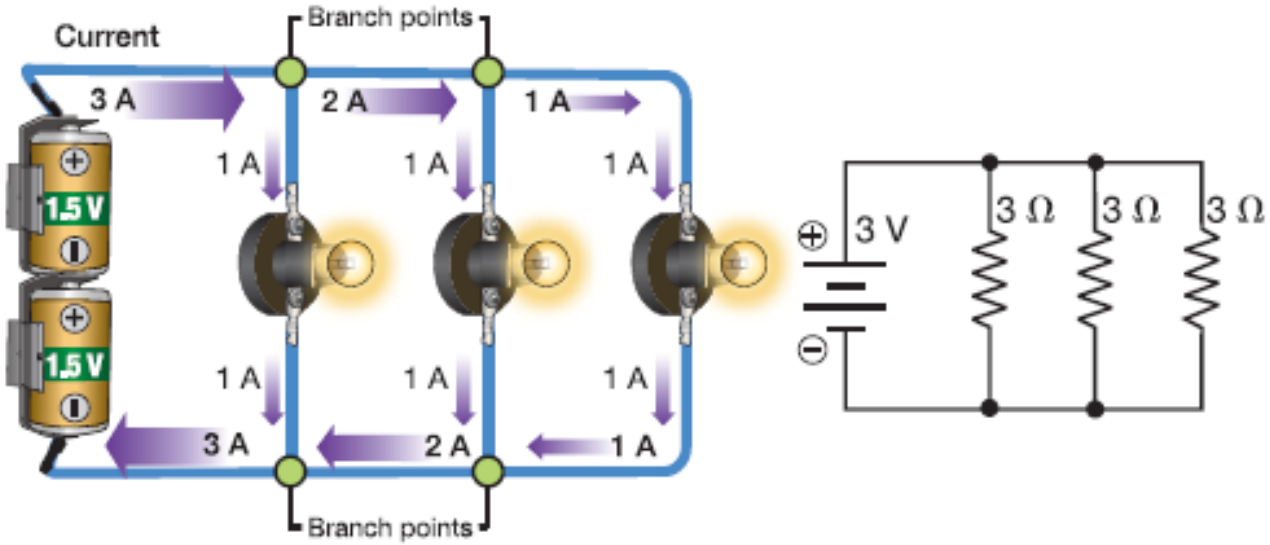






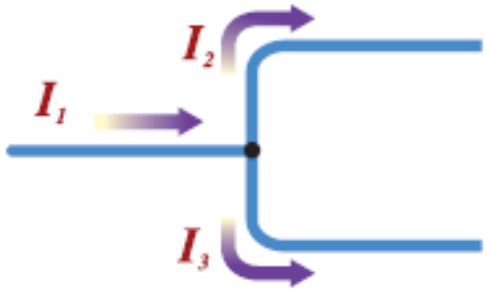
Properties of parallel circuits

- More than one path in the circuit
- Kirchhoff's Current Law: all the current entering a circuit branch must exit again



Kirchhoff's current law

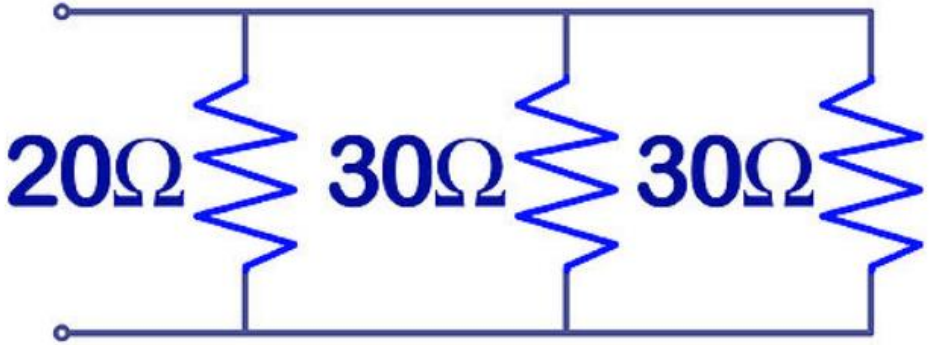
All current flowing into a branch point must flow out again.



$$I_1 = I_2 + I_3$$

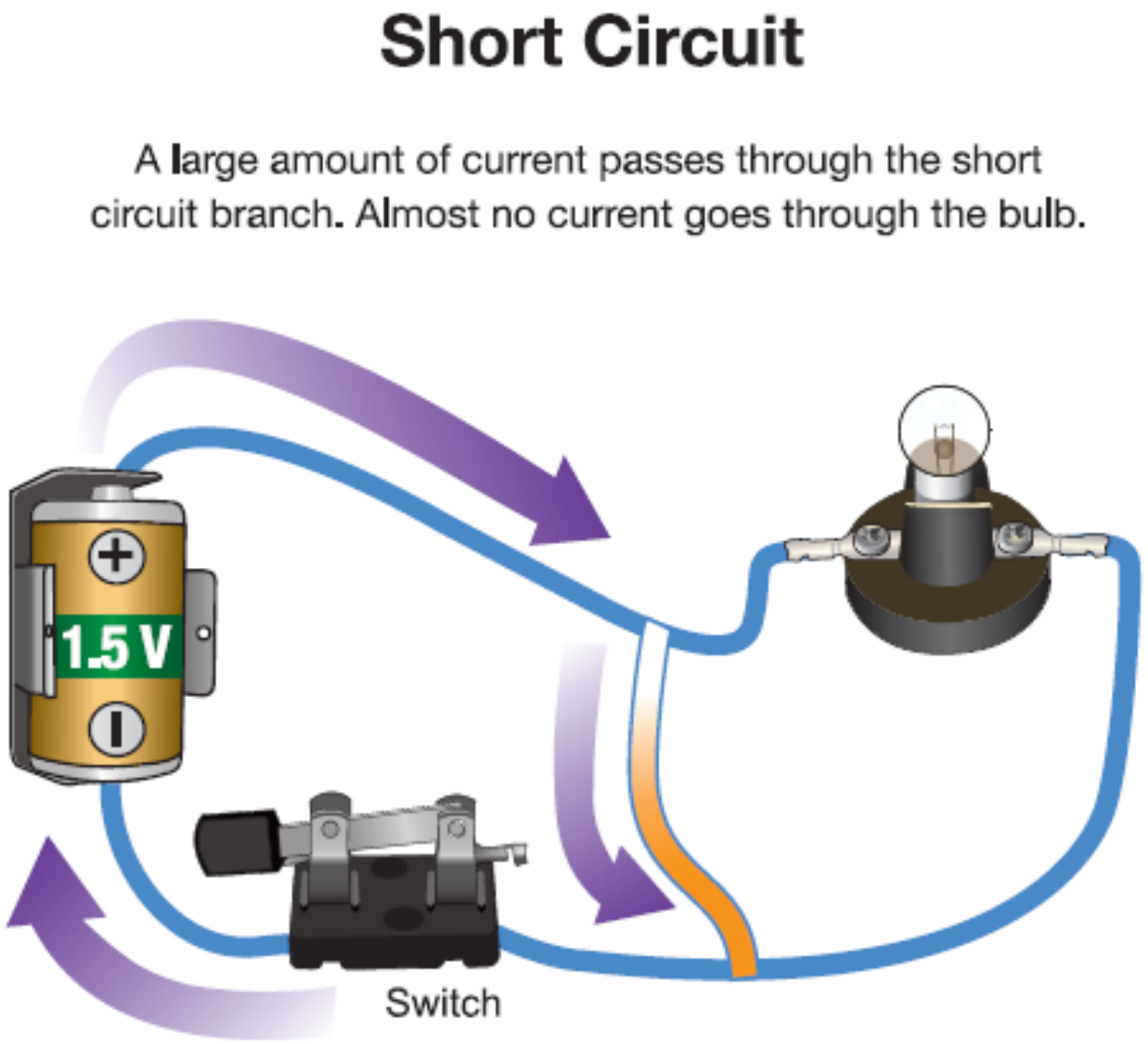
Calculating Resistance

$$R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \dots \frac{1}{R_n}}$$



$$= 8.57\Omega$$

- A branch in a circuit with zero or very low resistance

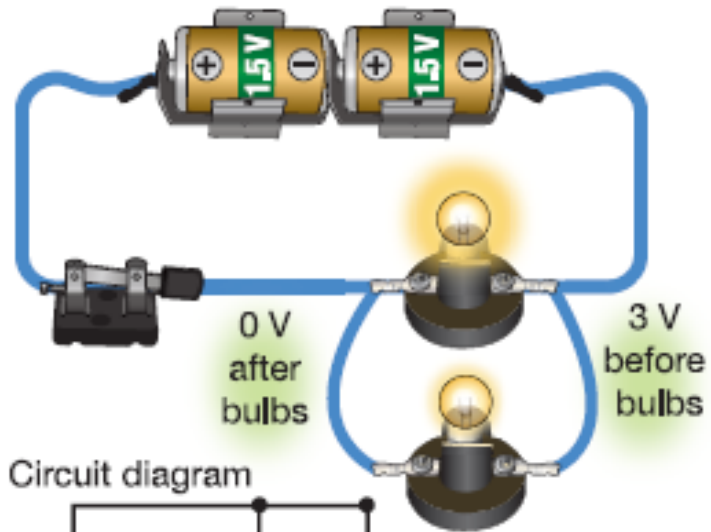


Voltage and Current in a PC

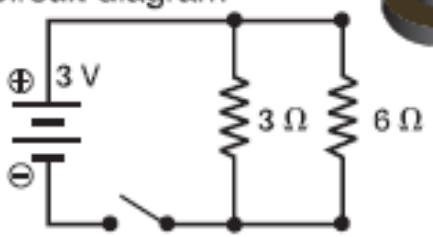
	Voltage (V)	Current (I)	Resistance (Ω)
Series	total voltage shared	The same everywhere in the circuit	Increases as you add resistors
Parallel	Each branch sees the full voltage available	Branch current can vary; add up branch currents to get total current	Decreases as you add resistors b/c current increases

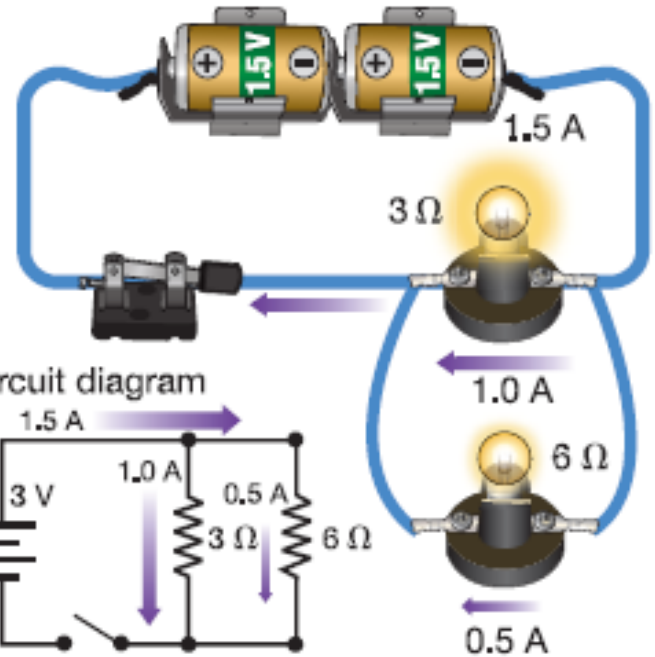
Voltage and Current in a Parallel Circuit

Parallel circuit of two bulbs with different resistances



Circuit diagram





Circuit diagram