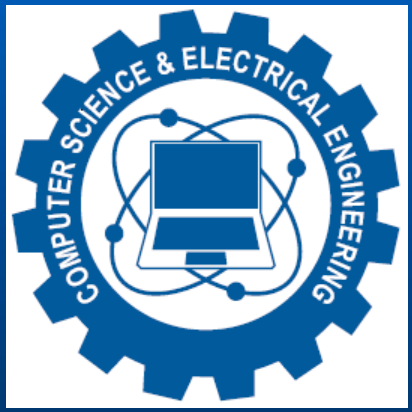
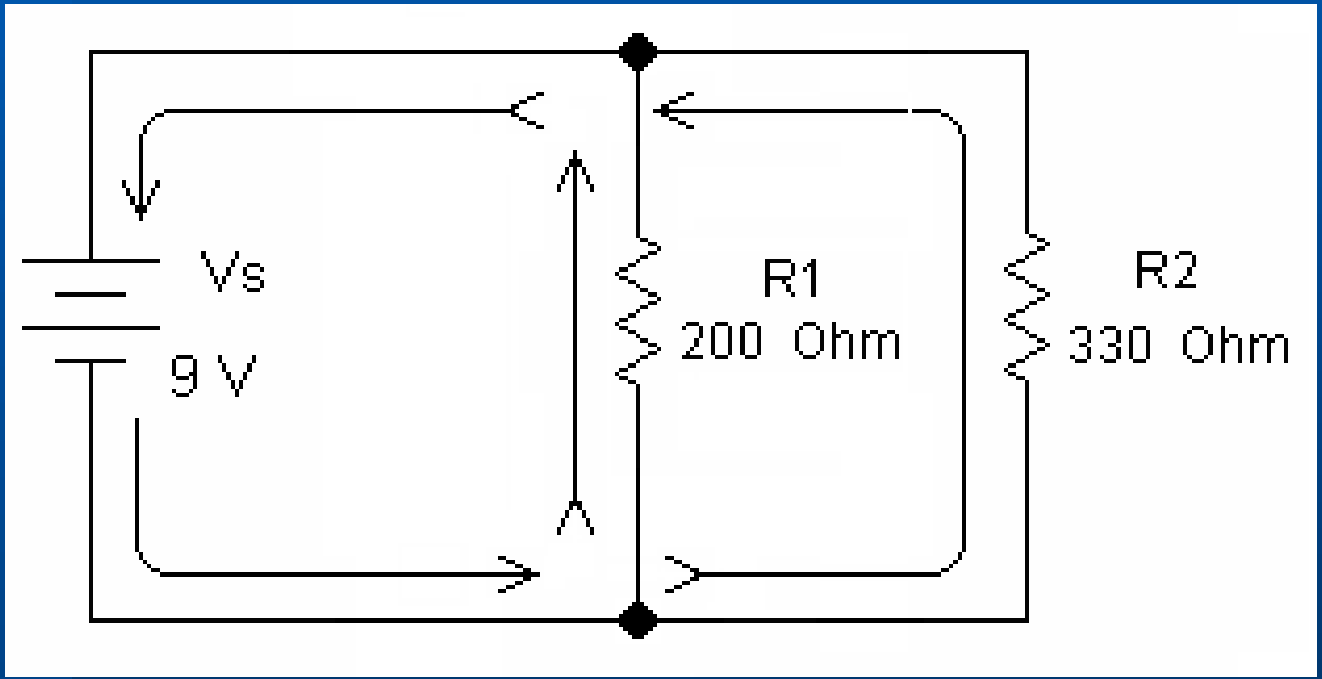
Basic Parallel Circuits/Networks



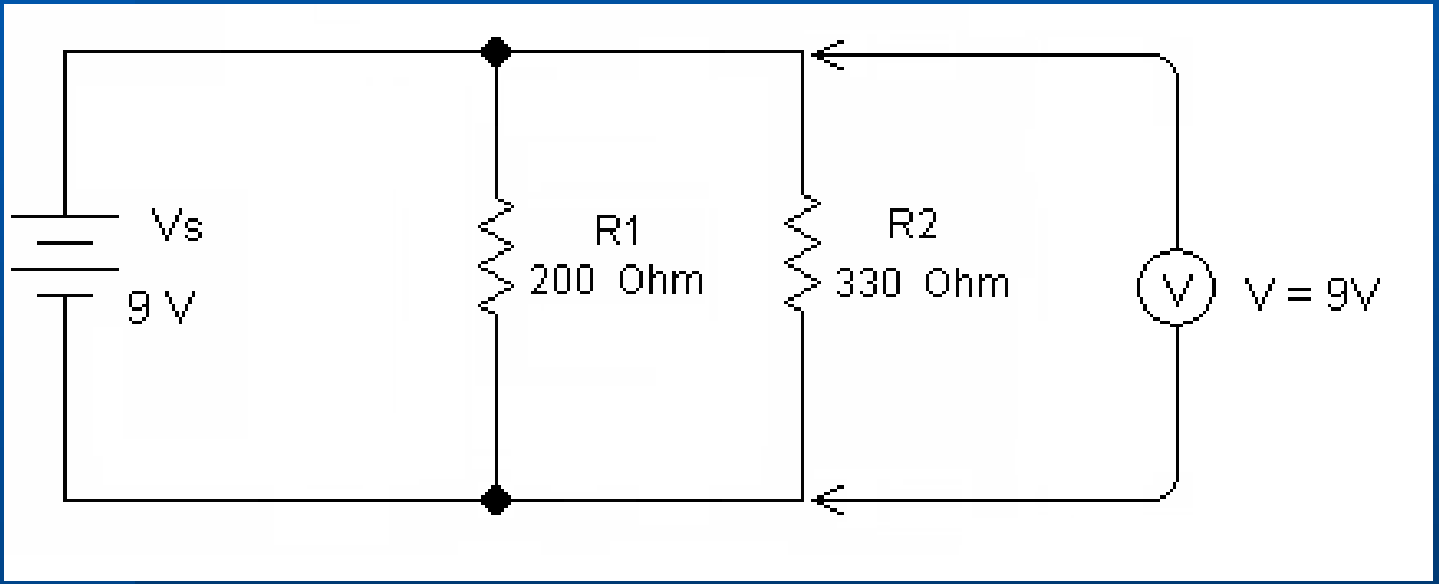
What is a Parallel Circuit?

- **circuit whose current flows along more than one path (branches)**
- **current is split up through each path (branch)**
- **voltage is the same across the same path (branch)**
- **combined resistance is equal to a fraction of the individual resistors**

Multiple Path



Same Voltage



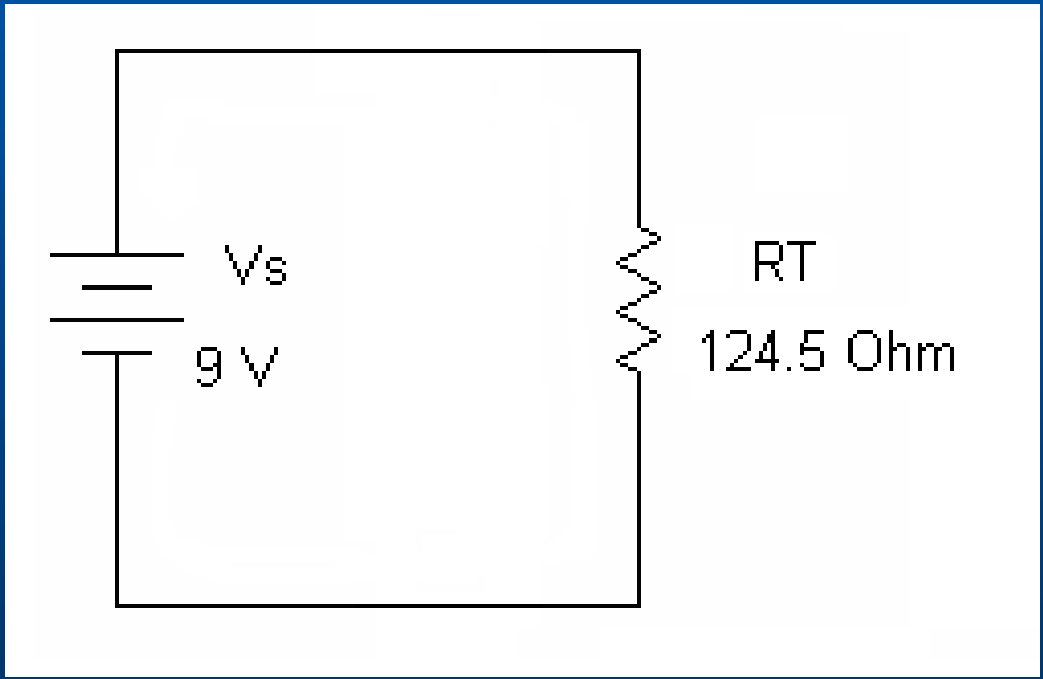
Combined Resistance (R_T)

Combined Resistance in Parallel = 1 / (1/R1) + (1/R2)

$$R_T = 1 / (.005) + (.003)$$

$$124.5\,\Omega = 1 / (.008)$$

Combined Resistance

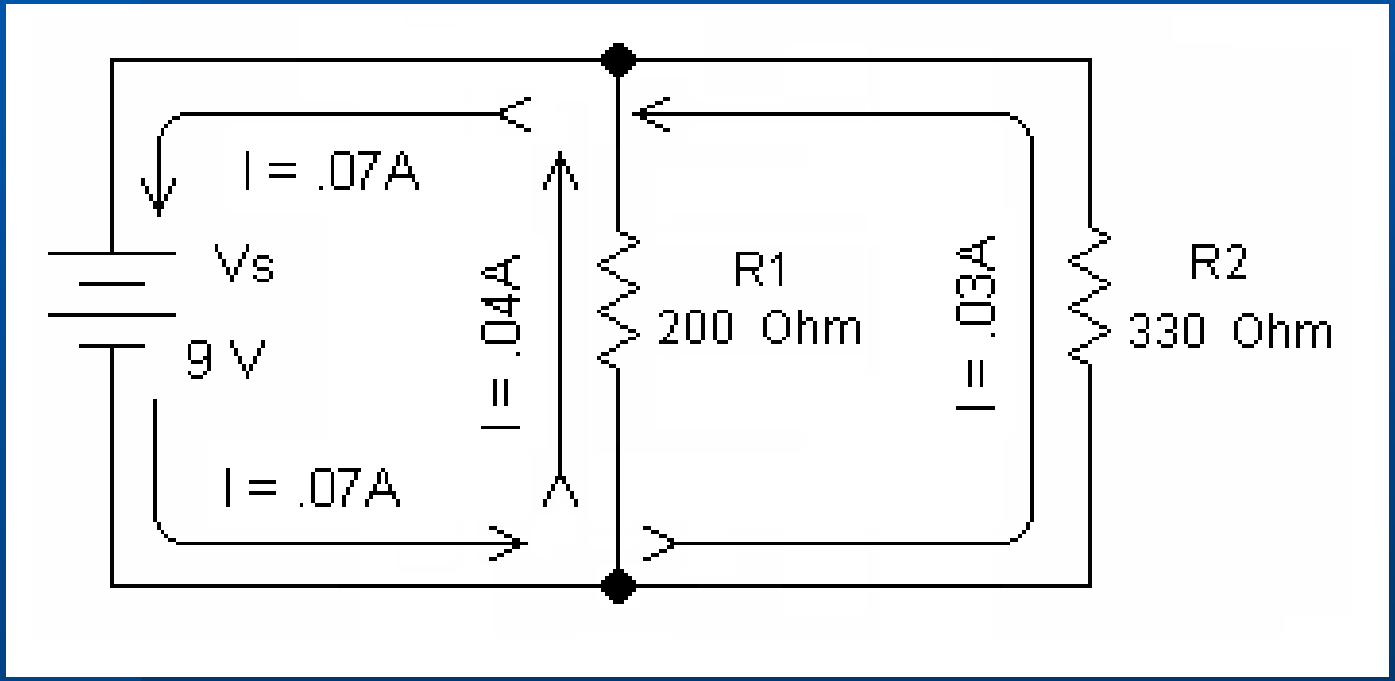


Total Current (I_T)

$$I_T = V_S \div R_T$$

$$.07A = 9V \div 124.5\Omega$$

Split Current



Split Currents (I_{R1} and I_{R2})

$$I_{R1} = V_S \div R_1$$

$$.04A = 9V \div 200\Omega$$

$$I_{R2} = V_S \div R_2$$

$$.03A = 9V \div 330\Omega$$