

# Power

- |                             |   |
|-----------------------------|---|
| 1. Fuse <b>B</b>            | <b>A</b> . An independent path in a parallel circuit.                                   |
| 2. Circuit breaker <b>D</b> | <b>B</b> . A device that breaks to protect against excessive current. Must be replaced. |
| 3. Wire <b>E</b>            | <b>C</b> . Where branches joint or split.   |
| 4. Branch <b>A</b>          | <b>D</b> . Protects against high current, but can be reset.                             |
| 5. Power <b>F</b>           | <b>E</b> . Where most of the electrons in a circuit come from.                          |
| 6. Junction <b>C</b>        | <b>F</b> . The product of voltage and current.  |

Which is brighter: a 60 W or a 100 W bulb?  
 Which one uses more power?  
 100 W

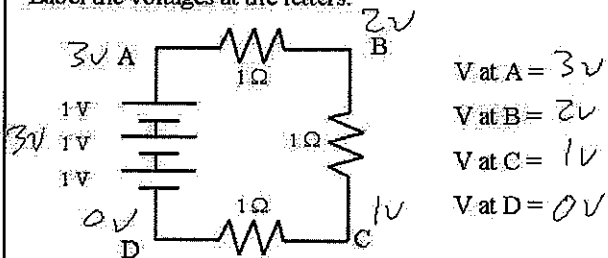
A 4 Ω and a 10 Ω light bulb are in series. Which one is brighter?

Why? in series - same current - more voltage

A 4 Ω and a 10 Ω light bulb are in parallel. Which one is brighter?

Why? same V - 4 Ω has more current, so more P

Label the voltages at the letters.



The electricity in your house is 120 volts. How many amps does a 60 watt light bulb use?

$$V = 120V \quad P = VI$$

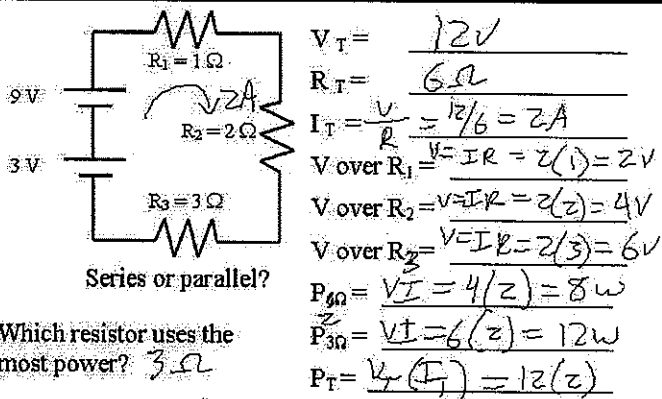
$$P = 60W \quad I = \frac{P}{V} = \frac{60}{120} = .5 A$$

How much power is used by a 120 V circuit using 6 amps?

$$V = 120V \quad P = VI$$

$$I = 6A \quad = 120(6) = 720W$$

A 240 volt circuit (like your dryer) has 20 amps flowing through it. How much power is it using?



Series or parallel?

Which resistor uses the most power? 3 Ω

Why? use most voltage

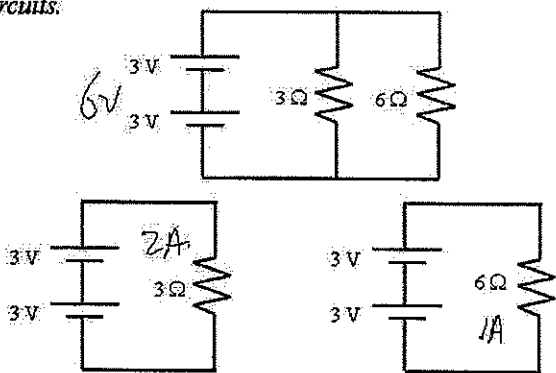
35 amps of current goes through a 40 amp fuse. What happens?

nothing - works fine

25 amps of current goes through a 15 amp fuse. What happens?

melts (blows) - have to replace

Split the following parallel circuit into two independent series circuits.



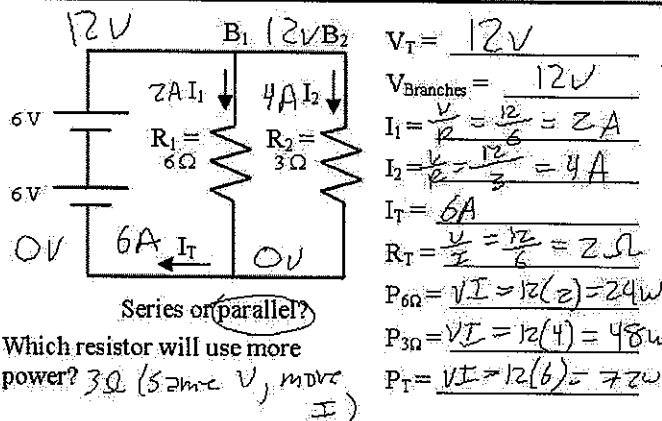
Find the current in each circuit.

Find the total current.

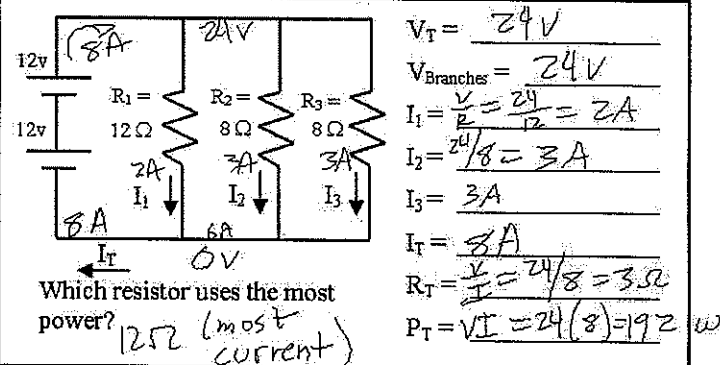
Find the total resistance.

$$I_T = 3A$$

$$R_T = \frac{V}{I} = \frac{6}{3} = 2\Omega$$



Which resistor will use more power? 3 Ω (same V, more I)



Which resistor uses the most power? 12 Ω (most current)