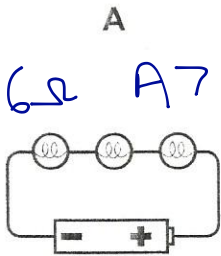


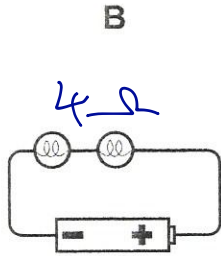
Simple Circuits—Equivalent Resistor¹⁷⁰

Rank according to the size of single resistor that would be equivalent to the given group of resistors from largest to smallest. All the bulbs are identical and you should treat them as ohmic resistors. The batteries are ideal (no internal resistance) and you should treat the wires as zero resistance connectors.

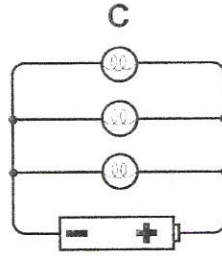
$2R$



$6R$ A > B



$4R$

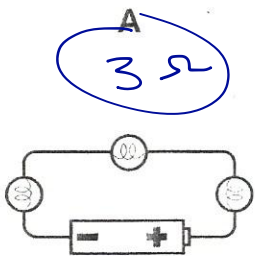


$2 \div 3 = 0.67$

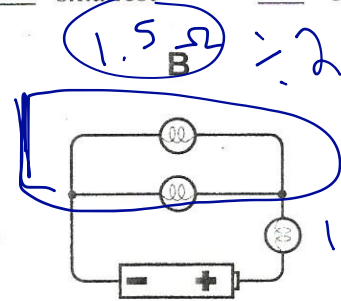
$\div 3$

1. largest A B C smallest _____ Confidence Level (1 low-10 high)

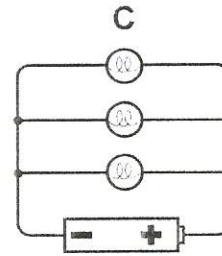
$1R$



$3R$

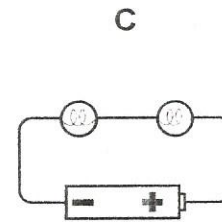
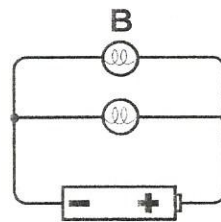
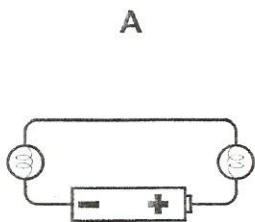


$1.5R \div 2$



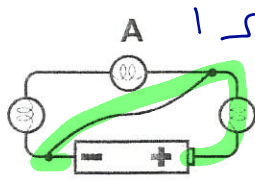
$\frac{1}{3} = 0.33$

2. largest A B C smallest _____ Confidence Level (1 low-10 high)

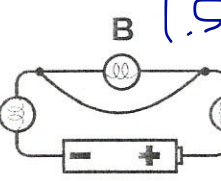


3. largest AC B smallest _____ Confidence Level (1 low-10 high)

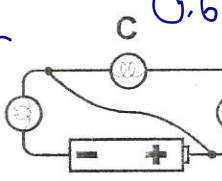
$1R$



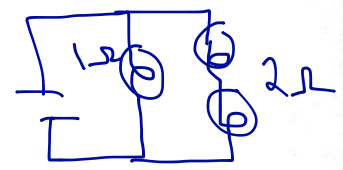
$1R$



$1.5R$

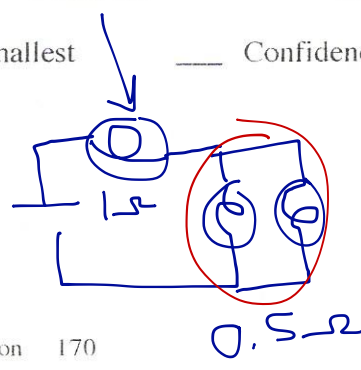


$0.67R$



4. largest B A C smallest _____ Confidence Level (1 low-10 high)

Please carefully explain your reasoning.



$$\frac{1}{R_{eq}} = \frac{1}{1} + \frac{1}{2}$$

$$\frac{1}{R_{eq}} = \frac{2}{2} + \frac{1}{2}$$

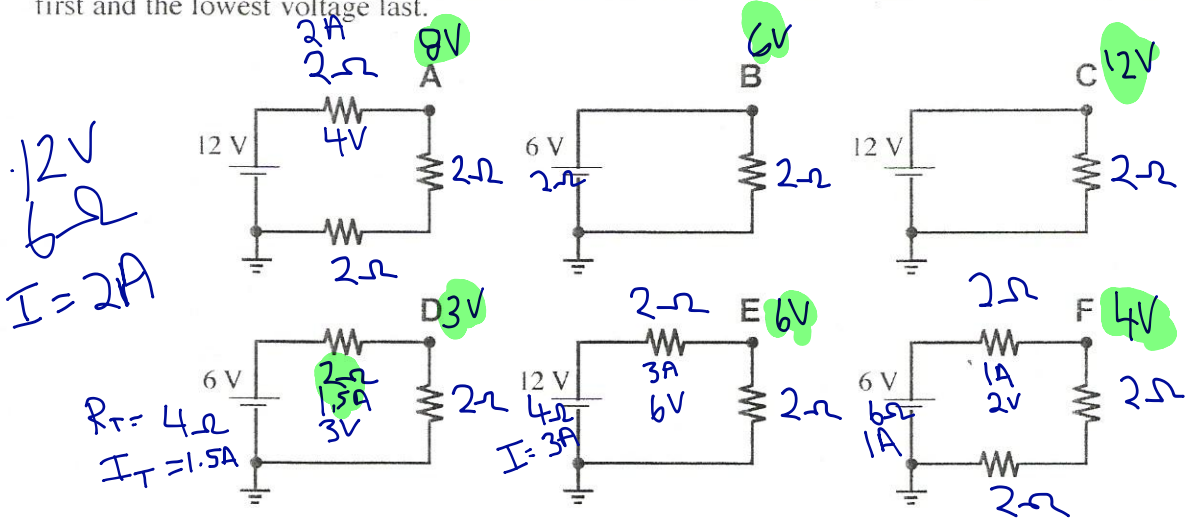
$$R_{eq} = \frac{2}{3} = 0.67$$

$$\frac{1}{R_{eq}} = \frac{3}{2}$$

Simple Resistor Circuits—Voltage Drop¹⁷²

All the resistors in the circuits below are identical at $2\ \Omega$ each. The batteries are ideal with voltages of 6 or 12 volts as shown. All connecting wires have negligible resistance.

Rank the voltage at the upper right-hand corner relative to the ground. Place the highest voltage first and the lowest voltage last.



$12V$
 $6\ \Omega$
 $I = 2A$

$R_T = 4\ \Omega$
 $I_T = 1.5A$

$I = 3A$

Highest 1 C 2 A 3 B E 4 F 5 D 6 _____ Lowest

Or, all of the voltages are the same. _____

Please carefully explain your reasoning.

How sure were you of your ranking? (circle one)

Basically Gessed 1 2 3 4 5 6 7 8 9 10 Very Sure