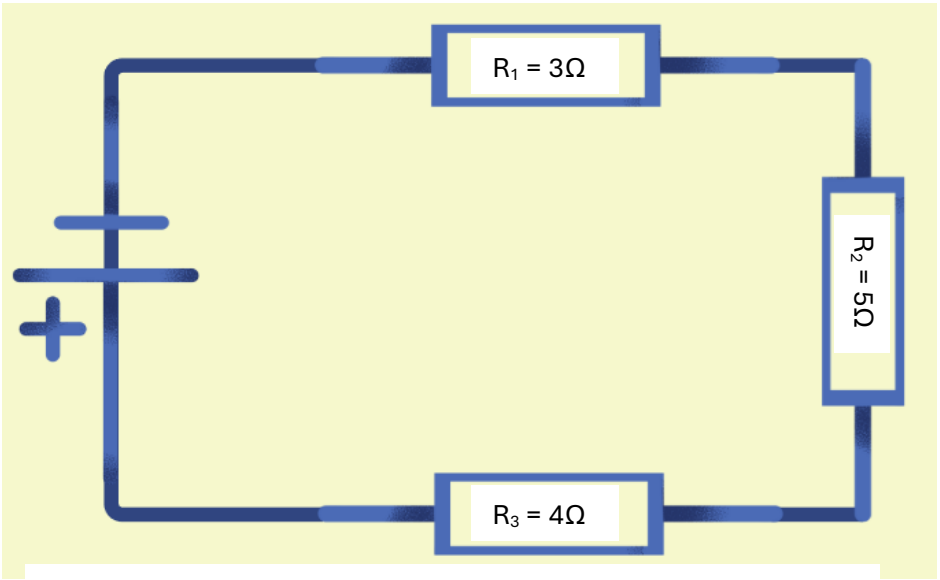
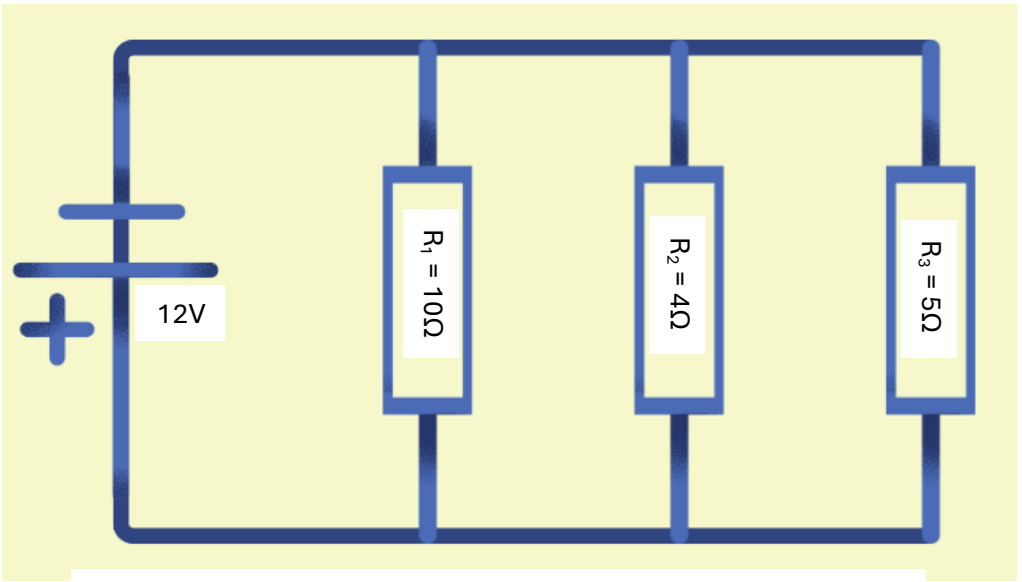


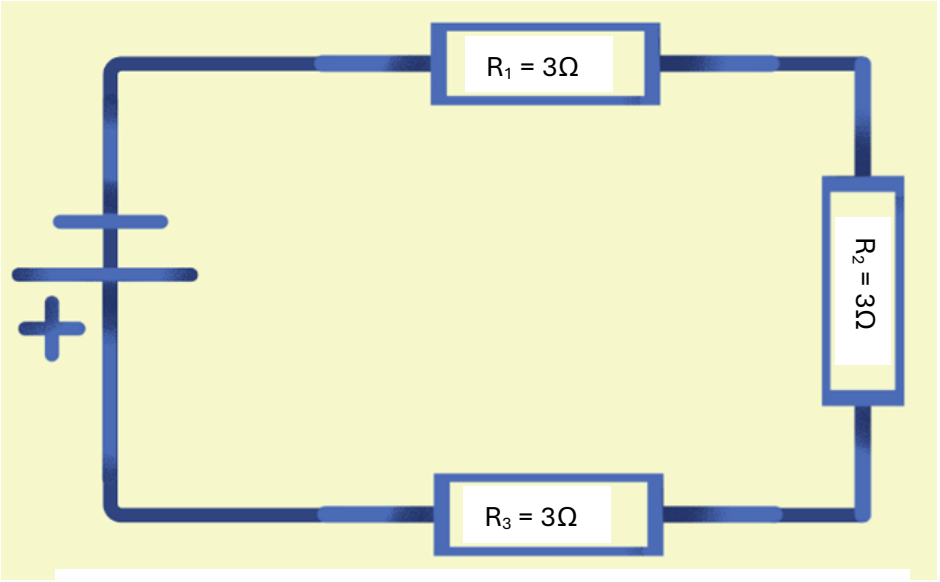
R3 gets 3V of electricity. What is the current of the whole circuit?

What is the Equivalent Resistance of the Circuit?



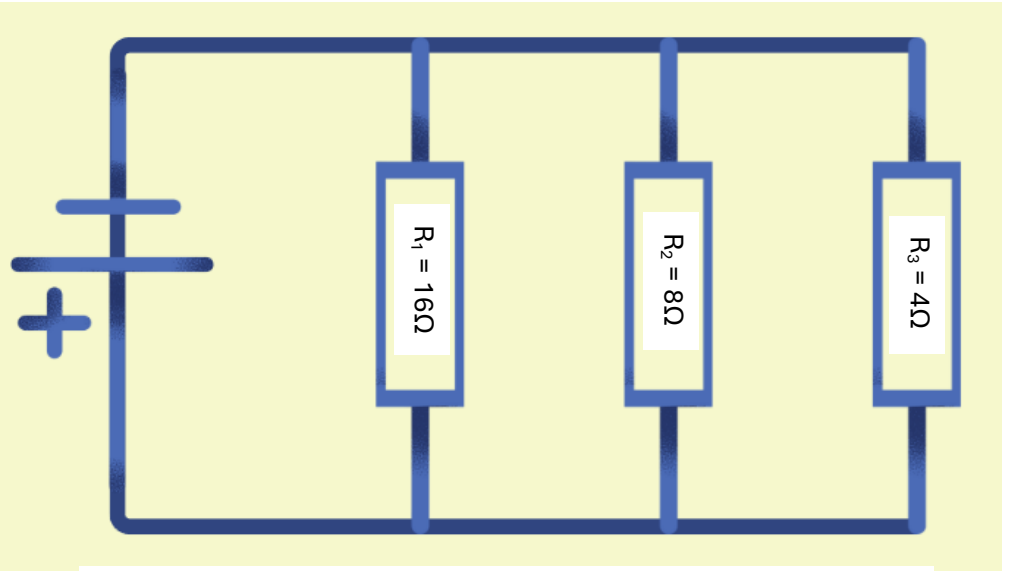
What is the equivalent resistance?

What is the total current of the circuit?



The current in the circuit is 1A. What is the voltage of the battery?

What is the Equivalent Resistance of the Circuit?



What is the equivalent resistance?

The current of through R1 is 0.75A. What voltage is the battery?

Top Left:

Series circuit, current is same through the whole thing, current for 1 resistor = current for the whole circuit

$I=V/R = 3V/4\Omega = 0.75A$

$Req = R1+R2+R3 = 3+5+4 = 12\Omega$

Top Right:

Parallel Circuit, each branch gets different current, total current is sum of each branch's current OR use Req

$1/Req = 1/R1 + 1/R2 + 1/R3 = 1/10 + 1/4 + 1/5 = 11/20 \mid Req = 20/11 = 1.81\Omega$

$I_{total} = V/Req = 12V/1.81\Omega = 6.6A$ OR $I_{total}=V/R1 + V/R2 + V/R3 = 12V/10\Omega + 12V/4\Omega + 12V/5\Omega = 6.6A$

Bottom Left:

Series circuit, each resistor has different voltage, total voltage is sum of each resistors voltage OR use Req

$Req = R1+R2+R3 = 3\Omega + 3\Omega + 3\Omega = 9\Omega$

$V_{total} = Req \times I = 9\Omega \times 1A = 9V$ OR $V_{total} = R1xI + R2xI + R3xI = 3\Omega x1A + 3\Omega x1A + 3\Omega x1A = 9V$

Bottom Right:

Parallel Circuit, each branch has the same voltage it doesn't split, each gets the full voltage from the battery

$1/Req = 1/R1 + 1/R2 + 1/R3 = 1/16 + 1/8 + 1/4 = 7/16 \mid Req = 16/7 = 2.3\Omega$

$V_{total} = V1 = I \times R1 = 0.75A \times 16\Omega = 12V$