

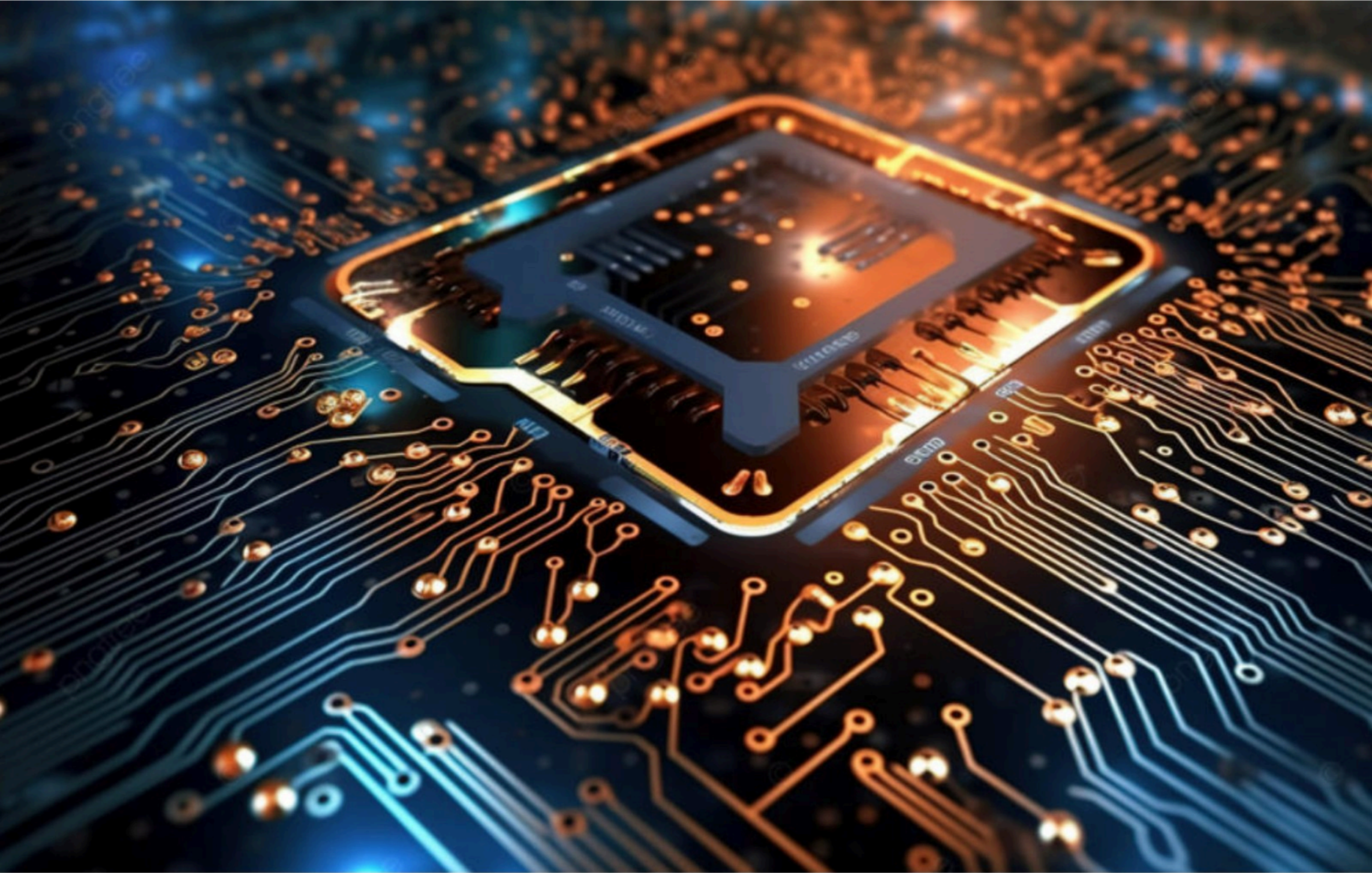
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GEN12ERAL

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CHAPTER 4

Series and Parallel Circuits

SECTIONS

1 Simple Circuits

الدوائر الكهربائية البسيطة

2 Applications of Circuits

تطبيقات الدوائر الكهربائية

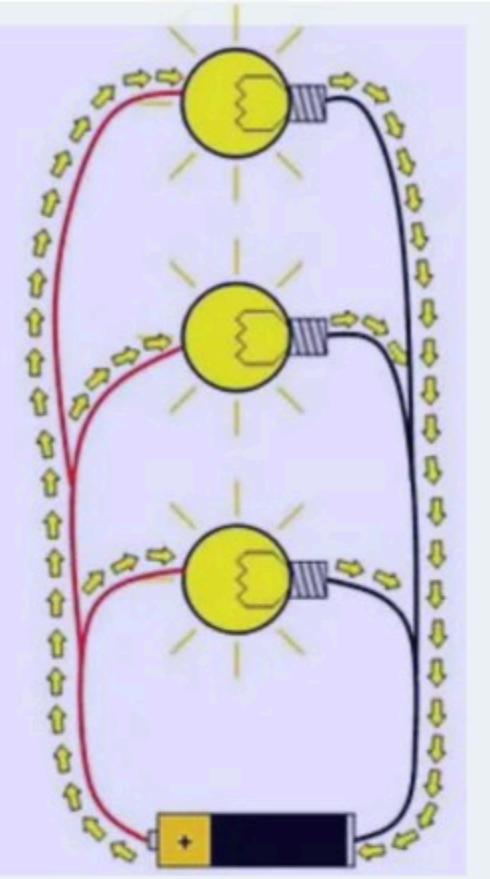
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Parallel Circuits

دوائر التوازي



what dose **parallel connection** mean ?

ماذا نعني بالتوصيل على التوازي ؟
(اهم مميزات التوصيل على التوازي)

1

The Current



2

POTENTIAL DIFFERENCE



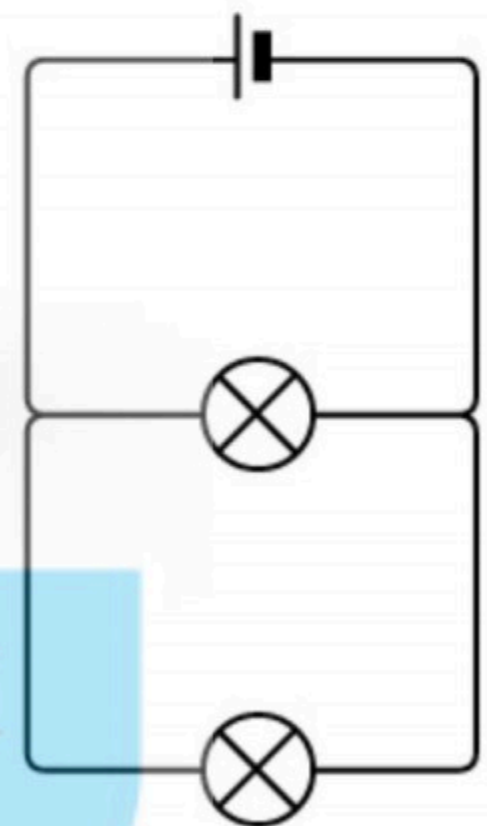
3

EquiVALENT RESISTANCE



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the equivalent resistance is **smaller than**
the smallest individual resistance in the circuit

المقاومة المكافئة تكون اصغر
من اصغر مقاومة في الدائرة



why is parallel connection used ?

لماذا يتم استخدام التوصيل على التوازي؟

Dose parallel connection have **drawbacks**?

هل التوصيل على التوازي له **عيوب** ؟

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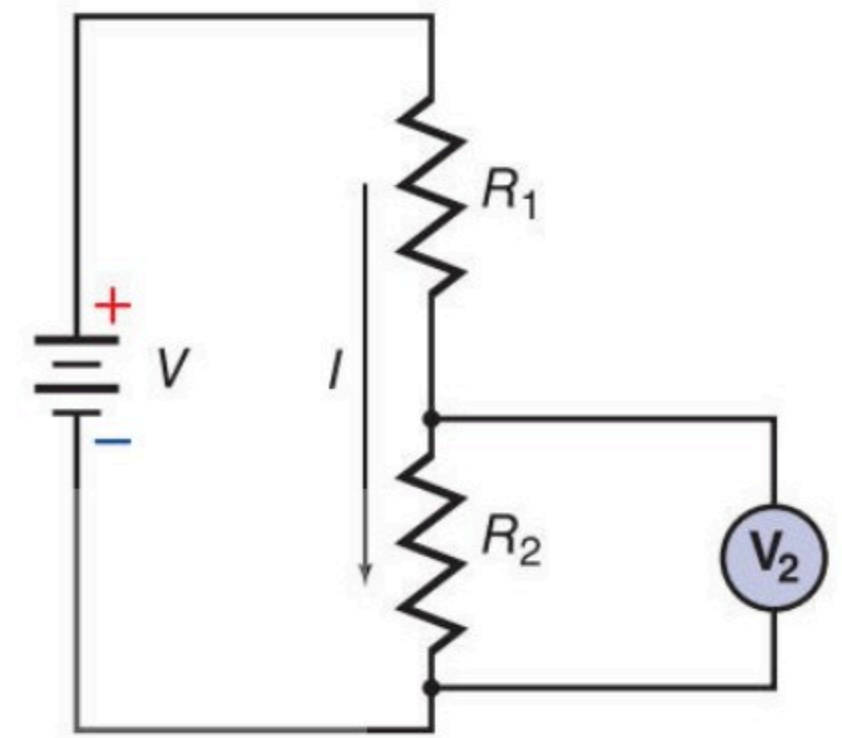
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Voltage dividers



voltage divider

produces a source of potential difference that is less than the potential difference across the battery

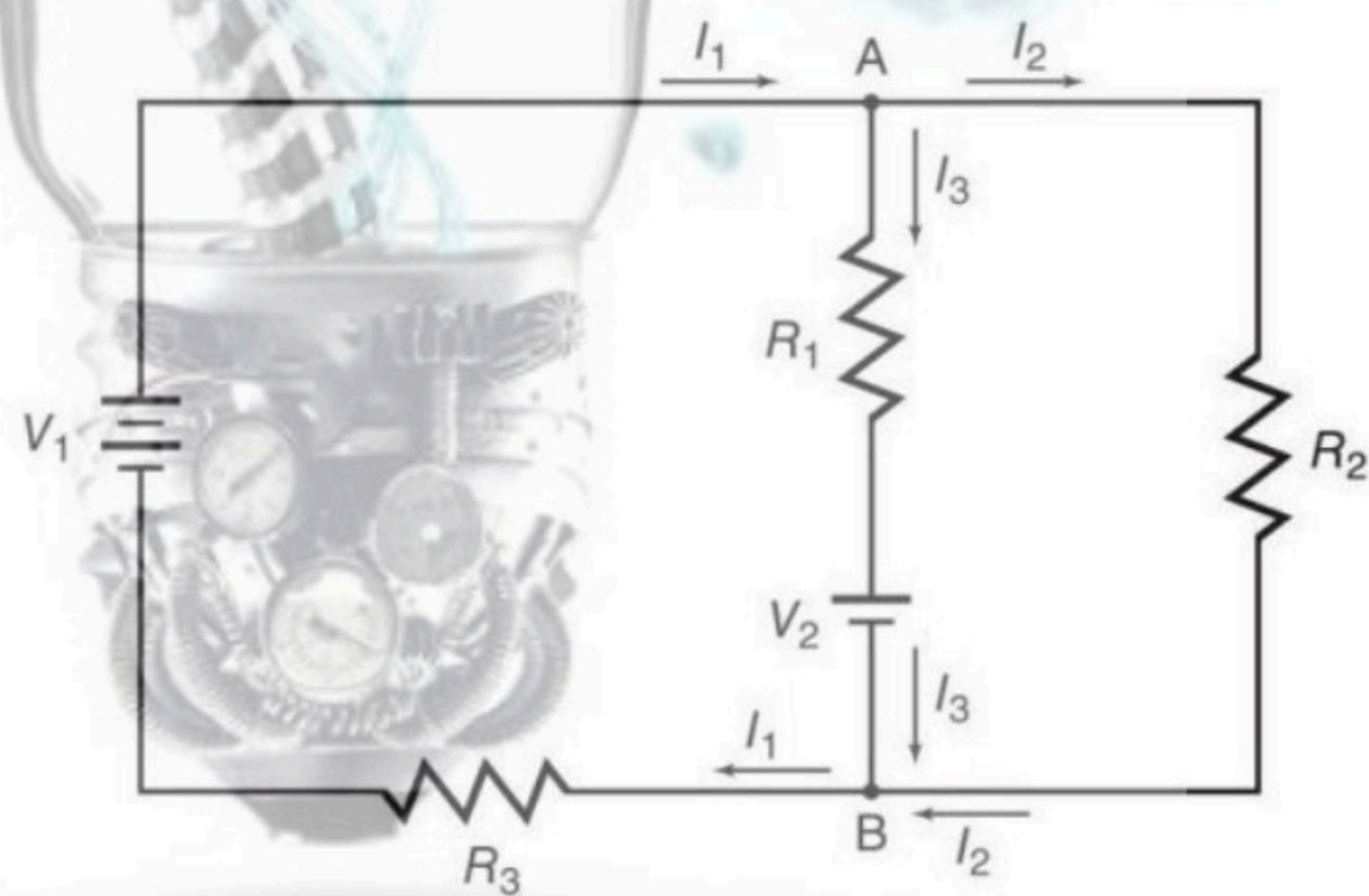


مجزئ الجهد

مصدر لفرق جهد اقل
من فرق جهد البطارية

Kirchhoff's Rules

قاعدة كيرشوف



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Series and Parallel Circuits

SECTION 1 Simple Circuits

4

parallel circuit.

Three resistors $60.0\ \Omega$, $30.0\ \Omega$, and $20.0\ \Omega$, are connected in parallel across a $90.0\ \text{V}$ battery

a. Find the current through each branch of the circuit

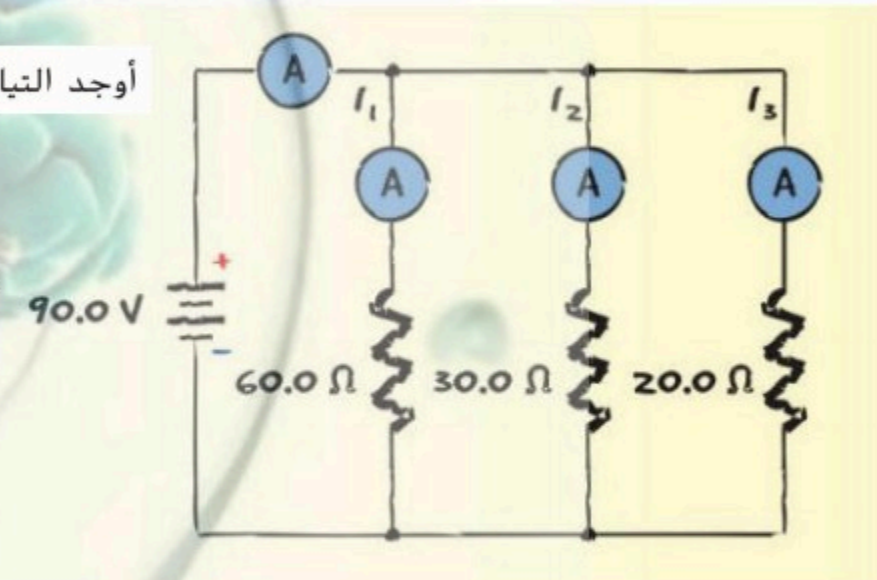
أوجد التيار المار خلال كل فرع من فروع الدائرة.

b. Find the equivalent resistance of the circuit.

أوجد المقاومة المكافئة للدائرة.

c. Find the current through the battery.

أوجد التيار المار خلال البطارية.



You connect three $15.0\ \Omega$ resistors in parallel across a $30.0\ \text{V}$ battery.

a. What is the equivalent resistance of the parallel circuit?

b. What is the current through the entire circuit?

c. What is the current through each branch of the circuit?

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Suppose you replace one of the $15.0\ \Omega$ resistors in the previous problem with a $10.0\ \Omega$ resistor.

a. How does the equivalent resistance change?

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b. How does the current through the entire circuit change?

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c. How does the current through one of the $15.0\ \Omega$ resistors change?

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You connect a $120.0\ \Omega$ resistor, a $60.0\ \Omega$ resistor, and a $40.0\ \Omega$ resistor in parallel across a $12.0\ \text{V}$ battery.

a. What is the equivalent resistance of the parallel circuit?

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b. What is the current through the entire circuit?

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c. What is the current through each branch of the circuit?

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