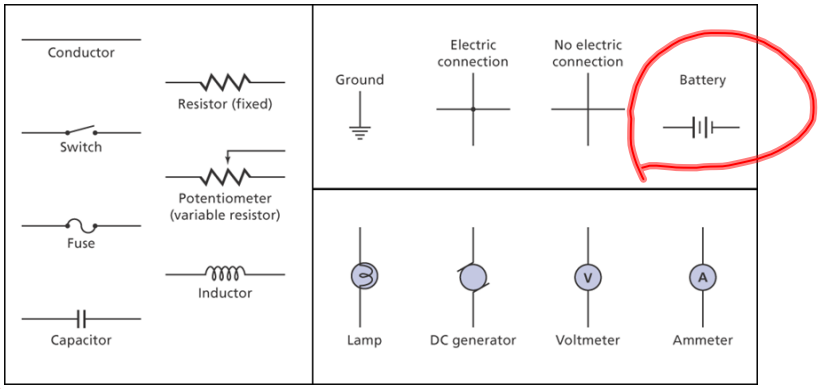
Diagramming Circuits

An electric circuit is drawn using standard symbols for the circuit elements.

Such a diagram is called a circuit schematic. Some of the symbols used in circuit schematics are shown below.



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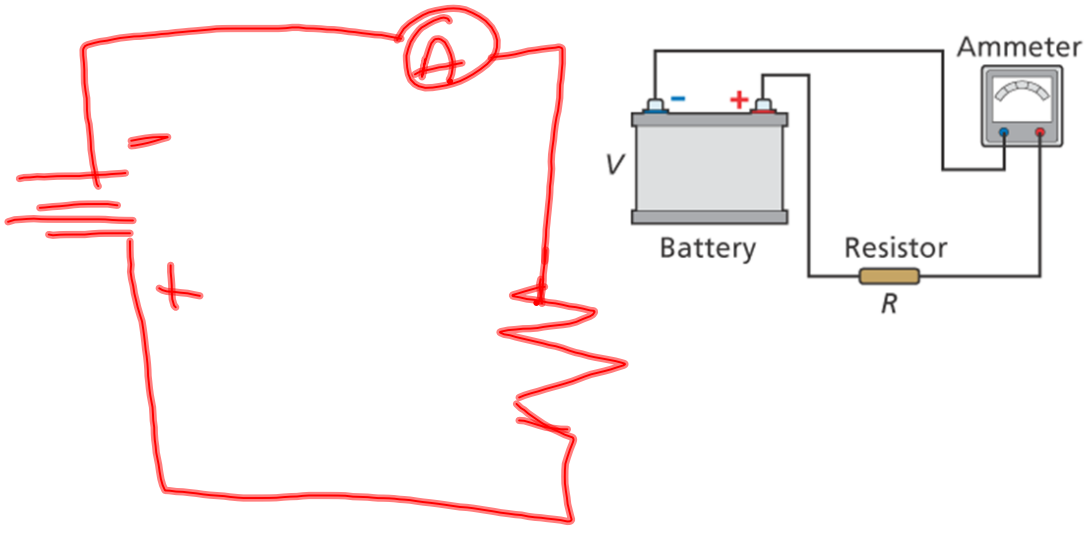
Drawing Schematic Diagrams

May 31-11:55 AM

A 30.0-V battery is connected to a 10.0-Ω resistor.

Draw a circuit containing a battery, an ammeter, and a resistor.

Show the direction of the conventional current.



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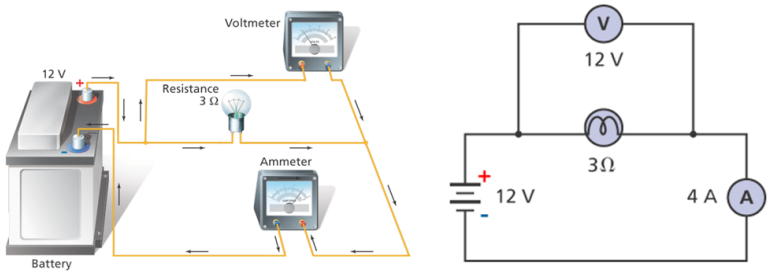
An artist's drawing and a schematic of the same circuit are shown below.



An ammeter measures current and a voltmeter measures potential differences. Each instrument has two terminals, usually labeled + and –. A voltmeter measures the potential difference across any component of a circuit. When connecting the voltmeter in a circuit, always connect the + terminal to the end of the circuit component that is closer to the positive terminal of the battery, and connect the – terminal to the other side of the component.

When a voltmeter is connected across another component, it is called a **parallel connection** because the circuit component and the voltmeter are aligned parallel to each other in the circuit, as diagrammed in the figure.

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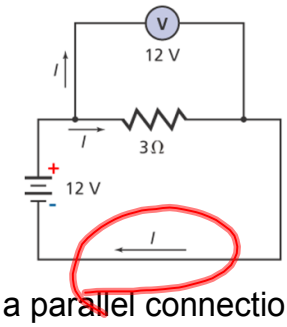
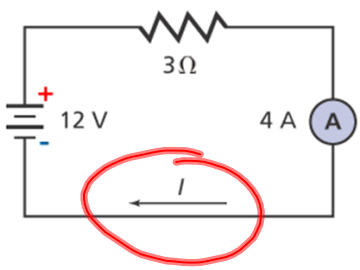
Any time the current has two or more paths to follow, the connection is labeled *parallel.* The potential difference across the voltmeter is equal to the potential difference across the circuit element.



Always associate the words *voltage across* with a parallel connection.

An ammeter measures the current through a circuit component. The same current going through the component must go through the ammeter, so there can be only one current path. A connection with only one current path is called a **series connection**.



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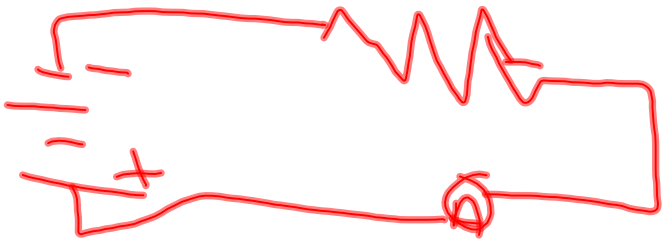
To add an ammeter to a circuit, the wire connected to the circuit component must b removed and connected to the ammeter instead.
Then, another wire is connected from the second terminal of the ammeter to the circuit component.
In a series connection, there can be only a single path through the connection.
Always associate the words *current through* with a series connection.

Ex: 1

Draw a circuit diagram with a resistor, ammeter, and battery. Connect the ammeter in series with the other two components.



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No clickers & yes calculators!!

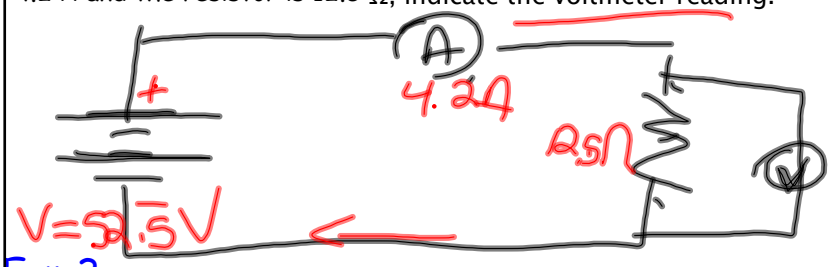
Have out the 22.1 Diagramming Circuit notes.

Do the last two examples!!

Jun 2-8:07 AM

Ex: 2

Draw a circuit diagram with a resistor, ammeter, and battery. Add a voltmete to measure potential difference across the resistors. If the ammeter reads 4.2 A and the resistor is 12.5 Ω, indicate the voltmeter reading.



Ex: 3

Draw a circuit diagram with a lamp, on-off switch, and battery. Add a voltmeter and an ammeter across the lamp.

May 31-1:05 PM

1) Study

2) Vocab Quiz

3) Pg. 600
12-1 bell

4) 22.1 Study Guide

Jun 2-12:15 PM