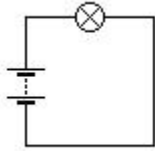


## Designing a voltmeter

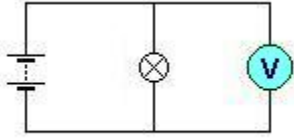
Your table has been asked to design a circuit to determine the potential difference across the light bulb in the circuit below.



Your boss has a few ideas but still has some questions. She's asked each group at your table to look at part of the problem. Check below to see your group's assignment:

## Group 1:

One **possible** way to measure the potential difference across the bulb is to hook up a voltmeter in **parallel** with the bulb (as shown below):



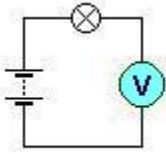
The questions your boss has about this design are:

- How does the potential difference across the meter compare to the potential difference across the bulb?
- Is this a good way to measure the potential difference across the light bulb? Why or why not?

Once your group is satisfied with the answers to these questions, confer with the other groups at your table to prepare the [final report](#) to your boss.

## Group 2:

One **possible** way to measure the potential difference across the bulb is to hook up a voltmeter in **series** with the bulb (as shown below):



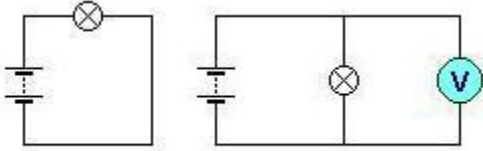
The questions your boss has about this design are:

- How does the potential difference across the meter compare to the potential difference across the bulb?
- Is this a good way to measure the potential difference across the light bulb? Why or why not?

Once your group is satisfied with the answers to these questions, confer with the other groups at your table to prepare the [final report](#) to your boss.

### Group 3:

Your boss is worried that adding a meter to the circuit might significantly change the behavior of the circuit. Look at the two circuits below:



The questions your boss has are:

- What effect does adding the meter to the circuit have?
- How can the meter be designed so that this effect is minimized?

Once your group is satisfied with the answers to these questions, confer with the other groups at your table to prepare the [final report](#) to your boss.

### The Final Report

Write a memo to your boss that explains how the voltmeter should be used to measure the potential difference across the bulb. Make sure that your memo addresses all of her questions.