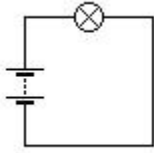# Designing a current meter

Your table has been asked to design a circuit to determine the current through 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 current through the bulb is to hook up a meter in **parallel** with the bulb (as shown below):
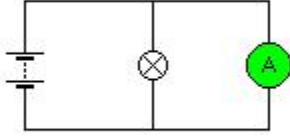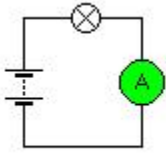

The questions your boss has about this design are:

- How does the current through the meter compare to the current through the bulb?
- Is this a good way to measure the current through 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 current through the bulb is to hook up a meter in **series** with the bulb (as shown below):
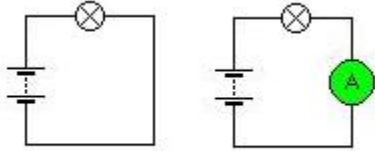

The questions your boss has about this design are:

- How does the current through the meter compare to the current through the bulb?
- Is this a good way to measure the current through 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 ammeter should used to measure the current through the bulb. Make sure that your memo addresses all of her questions.