

Forces on a Wire

As you work through the steps in the lab procedure, record your experimental values and the results on this worksheet. Use the exact values you record for your data to make later calculations.

Procedure A: Force vs. Length

CHECKPOINT 1: Ask your TA to check your circuit before proceeding.

What is the initial mass of the magnet? (Enter this value to five significant figures.)

Which part of the current loop did you measure as the length of the wire?

Complete the table below. (Enter absolute mass to five significant figures.)

Data Table 1

Loop Number	Wire Length (m)	Current (A)	Mass, absolute (kg)	Apparent change in mass (kg)	Force on wire (N)
37					
38					
39					
40					

What was the average current in the wire?

Did the current vary when using different loops? (Consider your currents in Data Table 1 and your average current exactly as you have entered them.)

What was the slope of the force versus the length graph?

What was the magnitude of the magnetic field as determined from the slope?

What is the percent uncertainty in the experimental value of B ?

CHECKPOINT 2: Ask your TA to check your table values and graph.

Procedure B: Force vs. Current

Find the value of L .

Complete the table below. (Enter absolute mass to five significant figures.)

Data Table 2

Current (A)	Mass, absolute (kg)	Apparent change in mass (kg)	Force on wire (N)

What was the slope of the force versus the current graph?

What was the magnitude of the magnetic field as determined from the slope?

What is the percent uncertainty in the experimental value of B ?

What is the percent difference in the two experimental values of B ? (Percent differences should not be rounded to one significant figure.)

Do the two values of B agree to within experimental uncertainty? (Compare your two values of B and their uncertainties exactly as you have entered them.)

CHECKPOINT 3: Ask your TA to check your table values and graph.