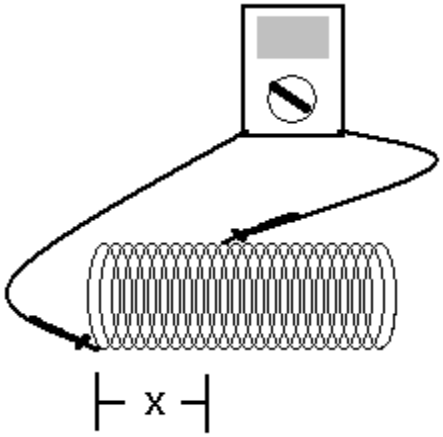
AP Physics C Test #7 Pretest Problem Name _____

Period _____

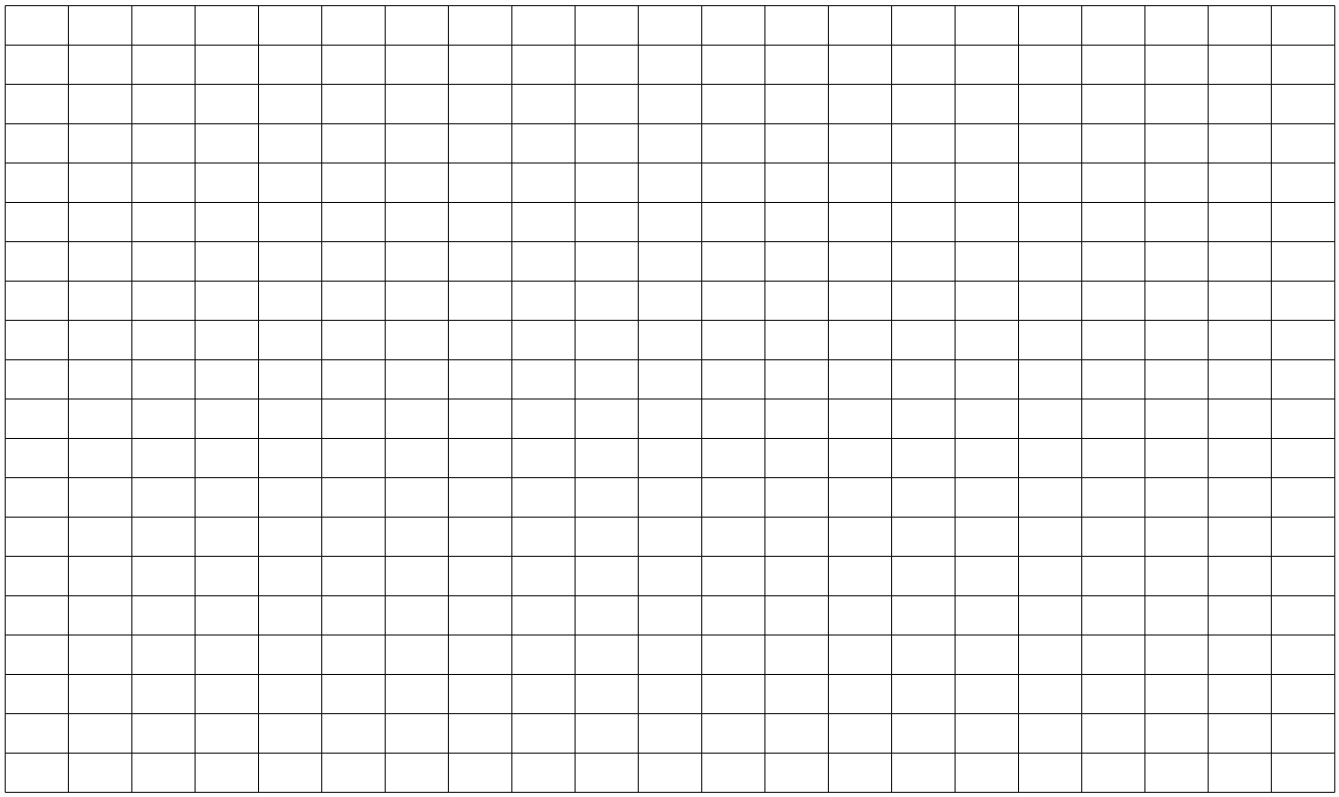


A coil of nichrome wire is used to investigate the resistivity of the material. The coil has a length of 20.0 cm and a diameter of 4.0 cm and there are 1000 turns of wire in the coil. Measurements of the resistance are made at various distances **x** along the coil, as shown in the diagram above. The results of these measurements are given in the table below.

Resistance (ohms)	**x (cm)**	$\ell\,(cm)$
2.1	4.0	
3.8	8.0	
6.0	12.0	
7.9	16.0	
9.8	20.0	

1) Assuming the turns of wire are uniformly distributed along the coil, calculate the values for ℓ, the length of the wire for each trial. Write your answers in the blank column provided in the table above.

2) Make a linear graph that will allow you to calculate the resistivity of the nichrome from the slope. Be sure to label the axes with the proper variables and units and include the appropriate numbers to indicate the scales used.



3) The diameter of the nichrome wire is measured to be 0.2 mm. What is the value of the resistivity of nichrome according to the slope of your graph?

4) After completing the experiment, it is discovered that the resistance of the probe wires attached to the ohmmeter added 0.2 Ω to the measured resistance of the nichrome. Does this mean the value of the resistivity found from the experiment is too high, too low or does it not change the value?

_____ Too high _____ Too low _____Does not change

Justify your answer.