Lab 13: The DIY Inductor

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Table 1: Sizes	
Copper wire length l	
Diameter of pen d	
Number of windings N	
Length of the inductor a	

Table 2: First Approximation for R_{int}						
$f(Hz)$	s/DIV	$V_{RL}(V)$	V/DIV for V_{RL}	$V_L(V)$	V/DIV for V_L	$R_{int}(\Omega)$
1000						

Table 2: First Approximation for L									
$f(Hz)$	s/DIV	$V_{RL}(V)$	V/DIV for V_{RL}	$V_L(V)$	V/DIV for V_L	$I_R(A)$	$Z_{L,eff}(\Omega)$	$X_L(\Omega)$	$L(H)$
65000									

Table 3: The Impedance of an Inductor					
$f(Hz)$	s/DIV	$V_{RL}(V)$	V/DIV for V_{RL}	$V_L(V)$	V/DIV for V_L
1000					
22000					
32000					
39000					
45000					
50000					
55000					
60000					
65000					

Setup

setup

Graph 1

graph 1

Calculation

Calculation

- Compare the obtained value to that predicted for an ideal long inductor made of a wire of length l and taking up length a along the toothpick, $L = \frac{l^2}{a} \times 10^{-7} H$