Worksheet 2: Interference and Diffraction of Light

Name:_____   Lab Date:_____

Partner:_____

You will not write on this sheet with a pen. You will never use a calculator for any reason while preparing any worksheet. Every number written on every worksheet will be copied directly from a cell in Excel. It will be easy to locate that cell in Excel. The units will be apparent in Excel. On any worksheet, when units are provided, you will use those units. If these units are different than you used in your initial calculation in Excel, then *both* values will be present and clearly locatable in Excel. Excel will convert the units using formulas, rather than you doing it in your head or using a calculator.

Formatting matters. You will use proper sig figs and decimals for every number you write. Numbers will never begin with a decimal point. Recall that whenever you use scientific notation, both values *share* the same exponent, and this exponent is therefore written *exactly* once, as in $(1.23 \pm 0.45) \times 10^{-4}$. When using scientific notation, recall that the first number must have *exactly* one non-zero digit to the left of the decimal. THIS is what sets the power you will use. But on this worksheet, the units were chosen so that scientific notation is not needed. When units are given in any row label, you will not copy the units when you write the values.

You will carefully consider your answer to the last (text) question *before you even begin to write*, so that your answer will not exceed the space given. Your answer will be in grammatically correct English. You will not do calculations or other scribbled work anywhere on this worksheet.

Part I: Single Slit	
Quantity	*Value*
D (m)	$\pm$
a (μm)	$\pm$
Slope of y vs n graph (mm)	$\pm$
Computed λ from slope (nm)	$\pm$
Part II: Double Slit	
D (m)	$\pm$
d (μm)	$\pm$
Slope of y vs m graph (mm)	$\pm$
Computed λ from slope (nm)	$\pm$

You now have two measurements of λ, neither of which is perfect. Based on these, what do *you* think λ really is? Justify your answer; also, be quantitative, and include an uncertainty.