PHYS Lab Wave Phenomena Data Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Partner(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Go to the following website and select the simulation “Interference of light” under Chapter 36.
<http://bcs.wiley.com/he-bcs/Books?action=mininav&bcsId=5586&itemId=0470469080&assetId=211452&resourceId=20409&newwindow=true>
2. Listen to the audio introduction.
3. Write down the wavelength and Single Slit properties:
Wavelength =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Slit Width = \_\_\_\_\_\_\_\_\_\_\_Slit-Screen dist.=\_\_\_\_\_\_\_\_\_\_\_
4. Sketch the intensity curve shown for the single slit below.
5. Describe what happens to the single-slit pattern as you change the following:
1. Wavelength:

2. Slit-width:

3. Slit to screen distance:

Select double-slit and do the following: Wavelength =\_\_\_\_\_\_\_\_\_\_\_
Slit Width = \_\_\_\_\_\_\_\_\_Slit-Screen dist.=\_\_\_\_\_\_\_\_Slit-Separation =\_\_\_\_\_\_\_\_\_\_\_
Sketch the intensity curve for a double slit below:

1. Describe what happens to the double-slit pattern as you change the following:
1. Wavelength:

2. Slit-width:

3. Slit to screen distance:

4. Slit-Separation:

Purpose: Determine the wavelength of light using wave phenomena.

A. Diffraction Grating





Determine the wavelength of the laser light by measuring the appropriate quantities. Write down every data you collect and show your work below. Also calculate your %error. Assume that there 500 lines/mm in the given grating.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B. Double-Slit Interference

       

Number of fringes = N = \_\_\_\_\_\_\_\_\_

Width for the above number of fringes = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fringe-width = Y = \_\_\_\_\_\_\_\_\_\_

Double-Slit separation = d = \_\_\_\_\_\_\_\_\_

Double-Slit to Screen distance = L = \_\_\_\_\_\_\_\_\_\_

Wavelength (measured) = λ = dY/L = \_\_\_\_\_\_\_\_\_\_

Wavelength (accepted) = λ = \_\_\_\_\_\_\_\_\_\_\_

                            % Error = \_\_\_\_\_\_\_\_\_\_\_\_

C. Single-Slit Diffraction

|  |  |
| --- | --- |
| F27.23 | F27.24 |

        

Width for the central bright fringe = 2Y =  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Half-width for the central bright fringe = Y = \_\_\_\_\_\_\_\_

Single-Slit width = a = w = \_\_\_\_\_\_\_\_\_

Single-Slit to Screen distance = L = \_\_\_\_\_\_\_\_\_\_

Wavelength (measured) = λ = wY/L = \_\_\_\_\_\_\_\_\_\_

Wavelength (accepted) = λ = \_\_\_\_\_\_\_\_\_\_\_

                            % Error = \_\_\_\_\_\_\_\_\_\_\_\_

Conclusion for wave phenomena: