

Name\_\_\_\_\_

Class\_\_\_\_\_Date\_\_\_\_\_

## LASER s and Red Blood Cells

### **Aim**

To observe the differences and similarities between single and double slit interference.

To use diffraction to measure the size of a red blood cell.

### **Equipment**

Prepared single and double slit slides

Diffraction grating

Prepared microscope slide of a blood smear

He-Ne LASER

Non-reflective paper to shine LASER onto

### **Method**

*Never look at the LASER beam directly, it may permanently damage your eyes.*

Set up the LASER, under the teacher's guidance, in a safe corner of the room

1. Place each of the single slit and double slit slides over the LASER beam, and observe the patterns produced.
2. Place the diffraction grating over the LASER beam, and observe the patterns produced.
3. Place the blood slide over the LASER beam, and observe the patterns. Once you have a clear pattern, measure the distance between the slide and the screen (about 30cm?), then mark on the paper the middle of the central bright, and the middle of the first bright ring.
4. Half the distance from the central bright to the first bright ring should be the first dark ring. Use this, and the wavelength of the LASER to calculate the size of the cells.

### **Interpretation**

How could you distinguish the three different effects - single slit, double slit and diffraction grating?

What have we assumed about the blood cells?

Are the results near the "accepted" value for the diameter of a blood cell?