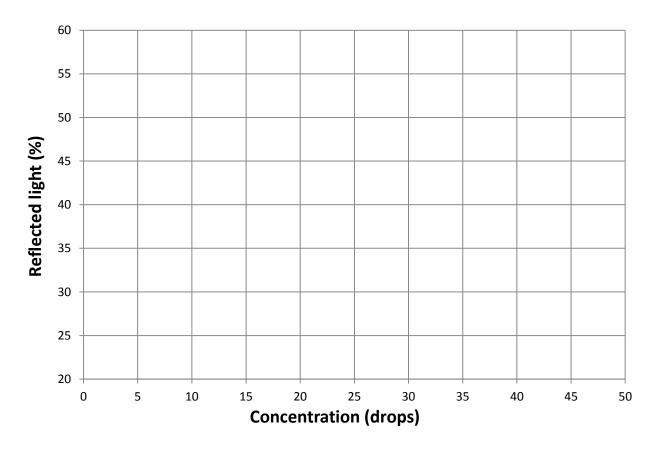# Determining Concentration Worksheet

Fill in this table with the reflected light values for standards A-G and the two unknown samples.

	Sample	Concentration (drops/20 ml)	Reflected light (%)
Standards	A	50	
	B	30	
	C	20	
	D	10	
	E	5	
	F	1	
	G	0	
Unknowns	1	?	
	2	?	

Plot the reflected light values for the standards versus the concentration below.

Name: _____ **Date:** _____ **Class:** _____

Instructions for determining the concentrations of your unknown solutions:

1. Plot a straight line through as many of the points that you plotted for the standards as you can. Use a ruler to draw a line that best fits the data. Look at all the points and line up the ruler so that some of the points fall above the line, and some below. Draw a single line that that passes through the *middle* of the points.

2. Locate the reflected light value for Unknown 1 on the y-axis. Match it to the location on the standards line; then see what the corresponding concentration is.

   Concentration of Unknown 1: _____ drops/vial

   Repeat for Unknown 2.

   Concentration of Unknown 2: _____ drops/vial

Answer the following questions.

1. Determine the percent change between the reflected light value of Standard A and Standard D.

$$percent\ change = \left(\frac{|Reflected\ light_{\ Standard\ A} - Reflected\ light_{Standard\ D}|}{Reflected\ light_{\ Standard\ A}} \right) x\ 100$$

2. Determine the percent change between the concentration of Standard A and Standard D.

$$percent\ change = \left(\frac{|Concentration_{\ Standard\ A} - Concentration_{Standard\ D}|}{Concentration_{\ Standard\ A}} \right) x\ 100$$

3. Compare your answers to questions 1 and 2. What do you notice?

4. The actual concentration for Unknown 1 is **15 drops/cuvette**, and the actual concentration for Unknown 2 is **40 drops/cuvette**.

Calculate the *percent error* for the concentration you determined for your Unknowns. Use the following formula:

$$percent\ error = \left(\frac{|experimental - actual|}{actual}\right) x\ 100$$

Unknown 1

Unknown 2