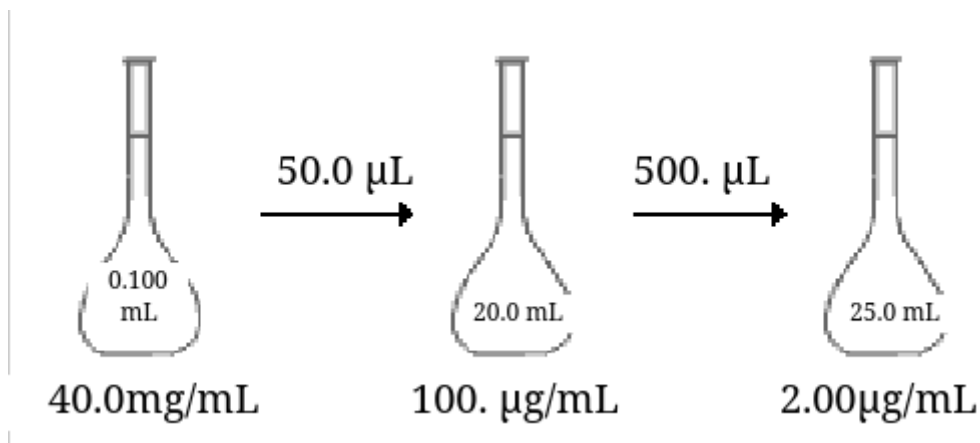


Prelab 2

- | Reagent Name | Reqd. PPE | Critical Safety Hazards | Reactivity | Disposal |
|--------------|--|-------------------------|-------------|--|
| FD&C Red 40 | Standard PPE
(gloves, eyewear,
lab coat) | None | Nonreactive | Can be disposed of
in sink since it is
food-safe |

2. Dilution Procedure



- Fill a 50 mL beaker with at least 50 mL of DI water; set aside.
 - Using a P50 micropipette, dispense 50.0 µL of the 40.0 mg/mL food coloring solution into a 20.0 mL volumetric flask.
 - Using the DI water from Step 1, fill that volumetric flask to the mark. A transfer pipette should be used when approaching the mark for finer control to avoid overshooting.
 - Cap the volumetric flask and invert 20 times to mix.
 - Using the P1000 micropipette, transfer 500 µL from the volumetric flask into a new 25.0 mL volumetric flask. Using the DI water from Step 1, fill that volumetric flask to the mark, using a transfer pipette when approaching the mark to avoid overshooting.
3. $A_{\lambda} = c\epsilon_{\lambda}l$
- $$A_{503 \text{ nm}} = (2.00 \times 10^3 \text{ ng/mL})(2.59 \times 10^4 \text{ L mol}^{-1} \text{ cm}^{-1})(1.0 \text{ cm})$$
- $$A_{503 \text{ nm}} = (2.00 \times 10^3 \text{ ng/mL})(10^{-9} \text{ g/ng})(10^3 \text{ mL/L})(2.59 \times 10^4 \text{ L mol}^{-1} \text{ cm}^{-1})(1.0 \text{ cm})$$
- $$A_{503 \text{ nm}} = (2.00 \times 10^{-3} \text{ g/L})(2.59 \times 10^4 \text{ L mol}^{-1} \text{ cm}^{-1})(1.0 \text{ cm})$$
- $$A_{503 \text{ nm}} = (20.0 \text{ g})(2.59 \text{ mol}^{-1})(1.0)$$
- $$A_{503 \text{ nm}} = (20.0 \text{ g})(2.59 \text{ mol}^{-1})(1.0) \frac{1 \text{ mol}}{496.42 \text{ g}}$$
- $$A_{503 \text{ nm}} = 0.10$$
- Question 3 describes the final solution. The absorbance of the initial solution is 2×10^3 .
 - The initial solution has an absorbance 20,000 times greater than the final solution since the final solution is diluted by a factor of 20,000 and absorbance has a linear relationship to concentration.