|  |
| --- |
| **Procedure: Dilution Calculation**  **Time: 15 minutes**  **\*This skill will be scored through multiple choice questions\*** |
| Determine the unknown (volume or concentration) |
| Convert amounts to like units if necessary (if using dimensional analysis this will be part of the equation) |
| Set up your equation with known quantities (use either C1V1 = C2 V2 where C is concentration and V is volume OR use dimensional analysis) |
| Perform calculations associated with equation canceling like units as needed. |
| If determining a portion of the final solution volume (active ingredient or solute); subtract calculated volume from total final volume. |

**Helpful video:** [**https://www.youtube.com/watch?v=832AhSK4JMA**](https://www.youtube.com/watch?v=832AhSK4JMA)

* **Important things to remember: X % drug is equivalent to X grams/100 mL**
* **Make sure the units for starting and ending concentrations and volumes are the same; e.g., mL to L or % to gram or mg (refer to the conversion charts as needed)**

**Skills Problem Example and Solution:**

You have been asked to make 500 mL of 50% lidocaine solution from a 90% lidocaine stock solution. What volume of the stock lidocaine and what volume of water do you need?

* Unknown: volume
* Equations:
  + C1V1 = C2 V2; 500 mL (50%) = X (90%) OR
  + 500 mL x 50 g/100ml x 100 mL/90 g
* Conversions: not necessary in this problem
* Calculations:
  + 500 mL x 50 % = 90%X; 25,000 mL %/90% = X; 277.8 = X
  + 500 mL x 50 g/100 mL x 100 mL/90 g; 500 mL x 50 g/100 mL x 100 mL/90 g; 2500 mL/90 = 277.8 mL
* Portion of final solution: need 277.8 mL of stock lidocaine to make final solution of 500 mL;
  + 500 mL – 277.8 mL = 222.2 mL of water