

What you need to do:

Work with the rest of the people at your bench as a team to solve this problem.

- A. Prepare your known concentrations of saline solutions. You are going to prepare six solutions of 0.0M, 0.025M, 0.050M, 0.075M and 0.10M concentrations. A stock solution of 0.10M NaCl is provided.
- 1) Collect 5 100 mL beakers and label them as 0.0M, 0.025M, 0.050M, 0.075M and 0.10M
 - 2) Using a graduated cylinder to measure the volume, add 50 mL of deionized (DI) water to the 0.0M NaCl beaker.
 - 3) In the 0.10M NaCl beaker, add 50 mL of the 0.10M Standard NaCl solution.
 - 4) To create the other 3 solutions of known concentration you will need to use a process called serial dilution.
 - 5) First calculate the amount of stock solution that contains the number of moles you need to make the next 50 mL solution. To do this we use an equation: $M_1V_1 = M_2V_2$ where M_1 and M_2 are the molar concentrations of the solutions that we have and we want respectively. V_2 is the volume of the solution that we want and V_1 is what we solve for since it will tell us how many mL of stock solution contain the number of moles of NaCl we need for our more dilute (less concentrated) solutions. So to prepare 50 mL of 0.025M solution :
$$M_1V_1 = M_2V_2 \rightarrow (0.10M)(V_1) = (0.025M)(50\text{mL}) \rightarrow V_1 = 12.5 \text{ mL of solution of concentration } M_1$$
 - 6) Using a graduated cylinder to measure the volumes, add 12.5 mL of stock solution and 37.5 mL of DI water to the beaker labeled 0.025M NaCl, to bring it to 50 mL total volume.
 - 7) Calculate the remaining two concentrations and add them to their respective beakers as shown in steps 6 and 7 above.
 - 8) Collect the multimeter and dip the probe ends into the beaker marked 0.0M NaCl. Record the conductivity value in your notebook.
 - 9) Rinse the probe tips well with DI water and pat it dry gently.
 - 10) Now dip the probes into the solution in the beaker marked 0.025M NaCl and record the conductivity value as above.
 - 11) Rinse the probe tips well with DI water and pat it dry gently.

- 12) Repeat steps 10 and 11 for each of the solutions of known concentration.
- 13) Take your multimeter to the front desk and place the probes into the banana.
Record the conductivity value in your lab notebook.
- 14) Now repeat step 13 for the orange and potato provided.
- 15) Record and report your findings.