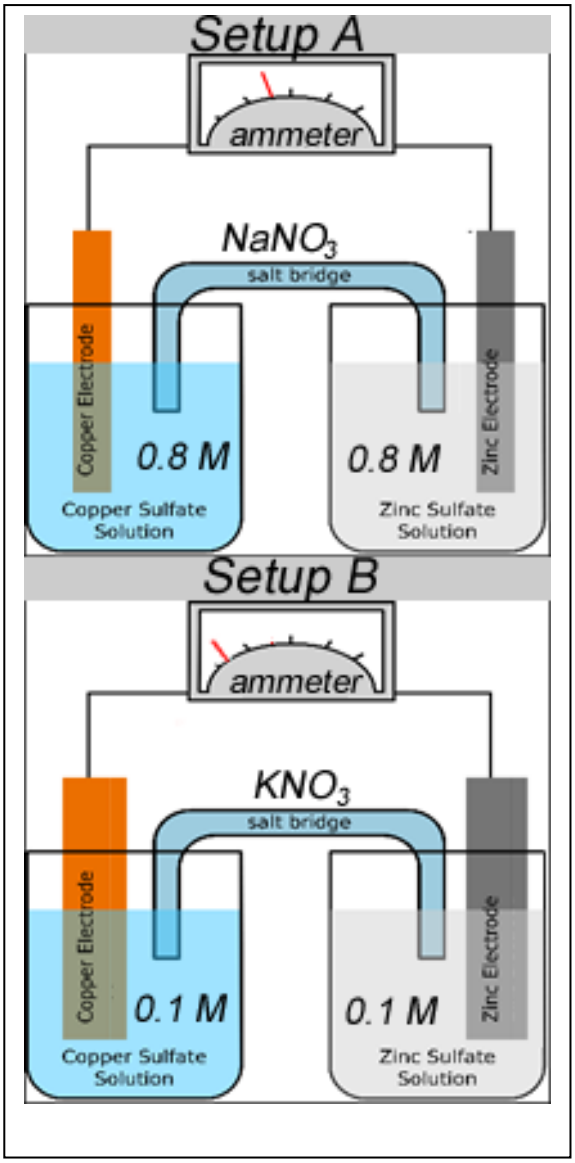
Friday Worksheet **Name: …….**

Experimental technique worksheet 1

1) A student wanted to see if increasing the concentration of the half-cell solutions increased the current created by a galvanic cell.
The student set up the two galvanic cells shown on the right.
The student concluded that higher concentrations do indeed increase the amount of current produced.

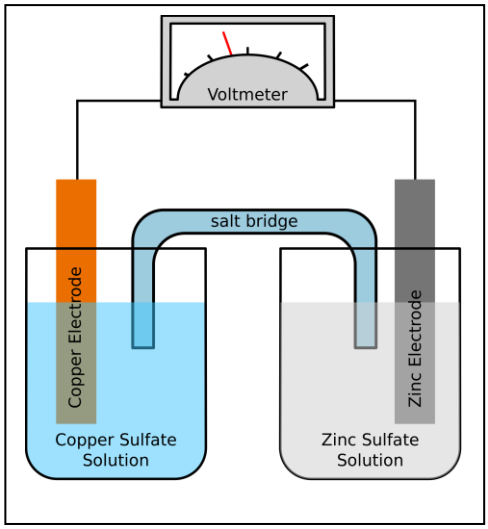


a) The student's conclusion is not valid because the experimental design is flawed.
Critically review the student's experimental design.
In your response, you should:

• identify and explain **three** improvements or modifications that you would make to the experimental design

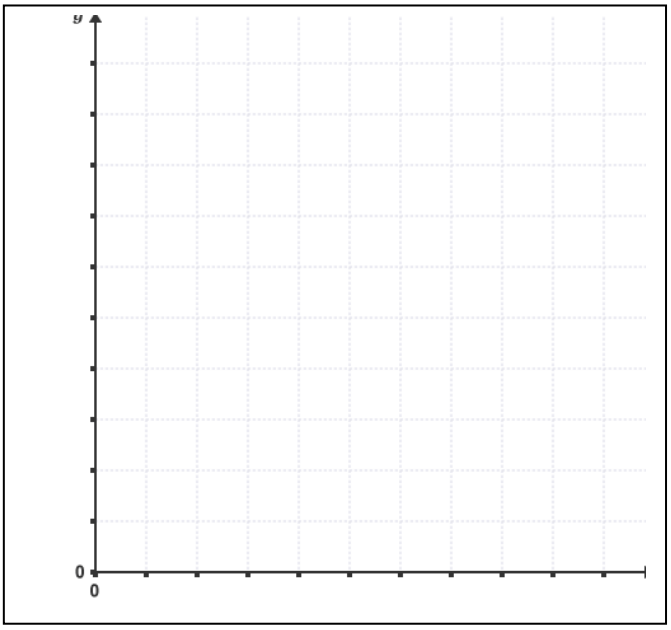
• discuss the experimental outcomes you would expect regarding the effect of different concentrations and surface area of electrodes on current output . Justify your expectations in terms of chemical ideas you have studied this year.

2) A student used the galvanic cell shown on the right to see what effect temperature has on the voltage of this cell. Below are the student's results .



Temperature (^{o}C)	Volts
12	1.11
15	1.00
20	0.90
30	0.73
40	0.55

a) Graph the results on the set of axis below. Clearly label all axis and provide a title.



b) Outline an experimental procedure that the student should follow to obtain valid results.

c) In your procedure in b) above what is the:

I. dependent variable,

II. Independent variable.

a. The following statements were found written in a student's diary.

i. *"The voltage should increase with an increase in temperature due to a greater rate of collisions"*

ii. *"Measure the change in voltage as temperature increases"*

iii. *"Voltage of the cell decreased as temperature increased"*

iv. *"Both electrodes were 2.0 cm wide, 7.0 cm long and 0.20 cm in depth"*

Which comment above can be considered to be

- a hypothesis, the aim, part of the procedure, observation.