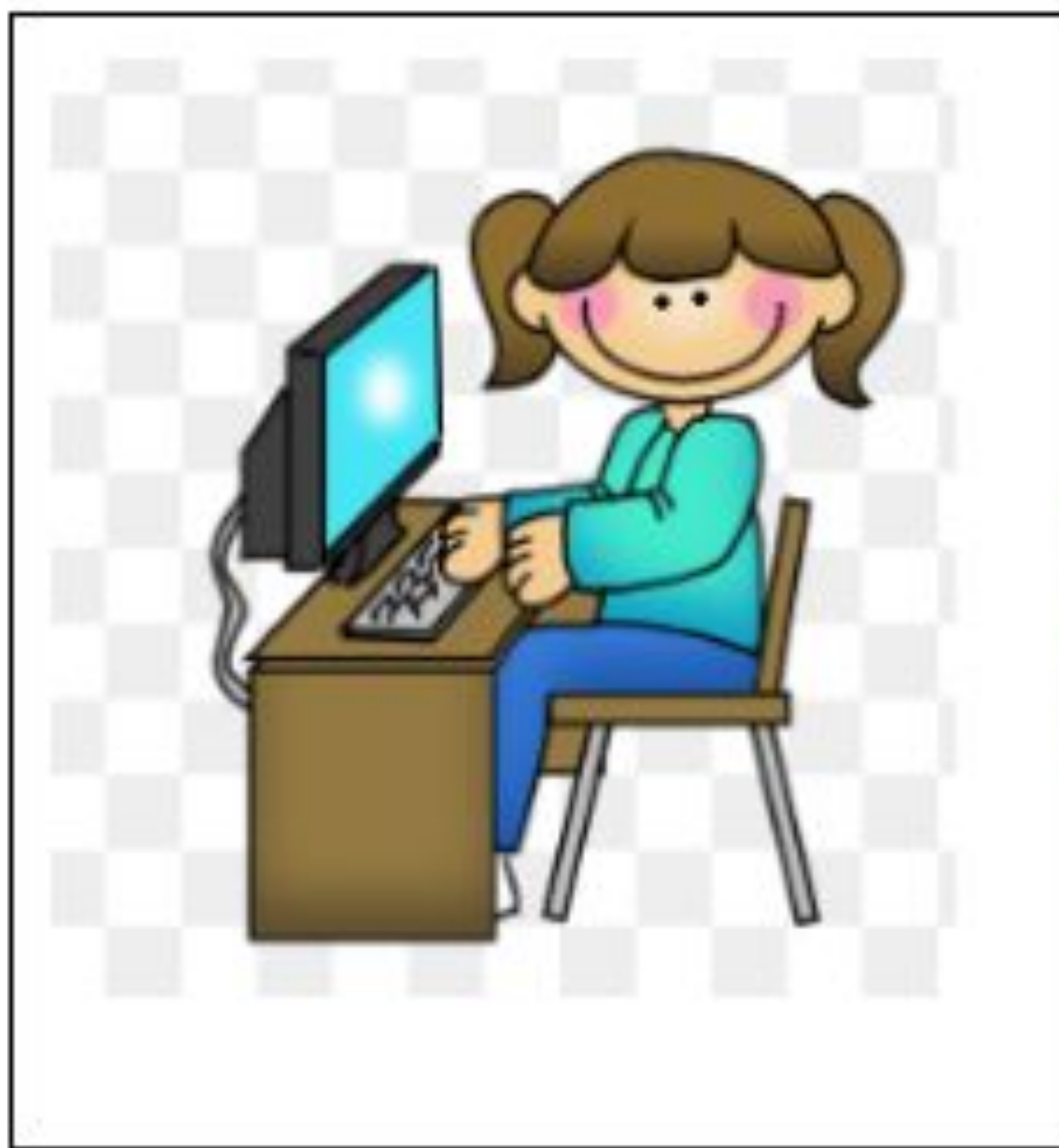


# RECOMMENDED STEPS for Participating in the Riverside County Science Fair, 2024

1. Student creates board using ppt template (slide 3 or slide 5)
2. Print poster size of ppt slide to fit board
3. Attach printed poster on board

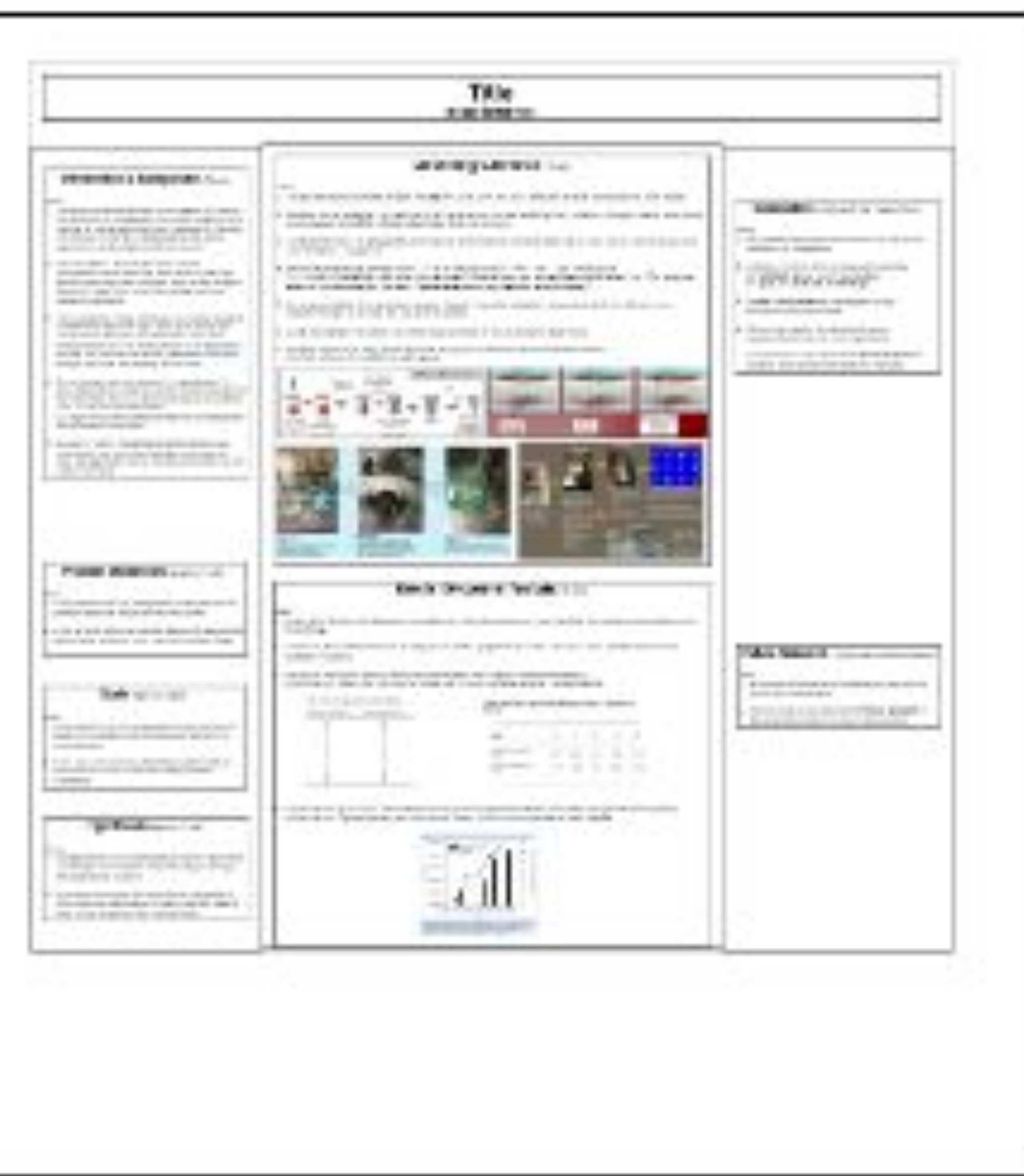
## STEP 1



## STEP 2



## STEP 3



## ● DISPLAY REGULATIONS

### Maximum Size of Project

Depth (front to back): 30 inches or 76 centimeters

Width (side to side): 48 inches or 122 centimeters

Height (floor to top): 108 inches or 274 centimeters

**TEMPLATE**  
**Student Research Poster**  
**Elementary Division and Junior Division**

# Title

Do NOT include the name of your school, mentor, the location of research, logos or QR codes anywhere on your poster

## Introduction & Background (15 pts)

Hints:

- Entire poster should be made up of bulleted text and not full sentences or paragraphs. Remember the poster is an "outline" of your project that you will teach with. It should not look like or read like a paragraph based, written paper that is broken up into different sections
- This should be a "funnel" that starts with the general/basic information and leads down to the more specific information that ultimately leads to the "Problem Statement" (gap in the current knowledge that your research addressed)
- This should also include references to previous research or information about the topic. Be sure to include the actual citation for where the information came from, however do not list it as an active link. If it is **blue** then it is a link. You can remove this by highlighting it and then going to the menu and clicking "remove link"
- Do not include such citations as [www.google.com](http://www.google.com) or [www.Wikipedia.com](http://www.Wikipedia.com) as those are not the actual source of the information. You must list the full citation in small font (size 10-14) near the information.  
Ex.  
<https://www.instructables.com/id/How-to-Make-Small-Wind-Turbine-Home-made/>
- Be sure to "teach" the background information in an enthusiastic way that helps the judge understand the topic and appreciate what is already known and what still needs to be done.

## Problem Statements (approx. 5 pts)

Hints:

- Using bulleted text (not paragraphs), clearly explain the problem (gap/void) left by the previous studies
- If you list more than one Problem Statement then number each of them and have them match the multiple Goals

## Goals (approx. 5 pts)

Hints:

- Using bulleted text (not paragraphs), clearly explain the goals of the research and the possible impact on the overall problem
- If you have more than one Goal then number each of them and have them match the multiple Problem Statements

## Hypothesis (approx. 5 pts)

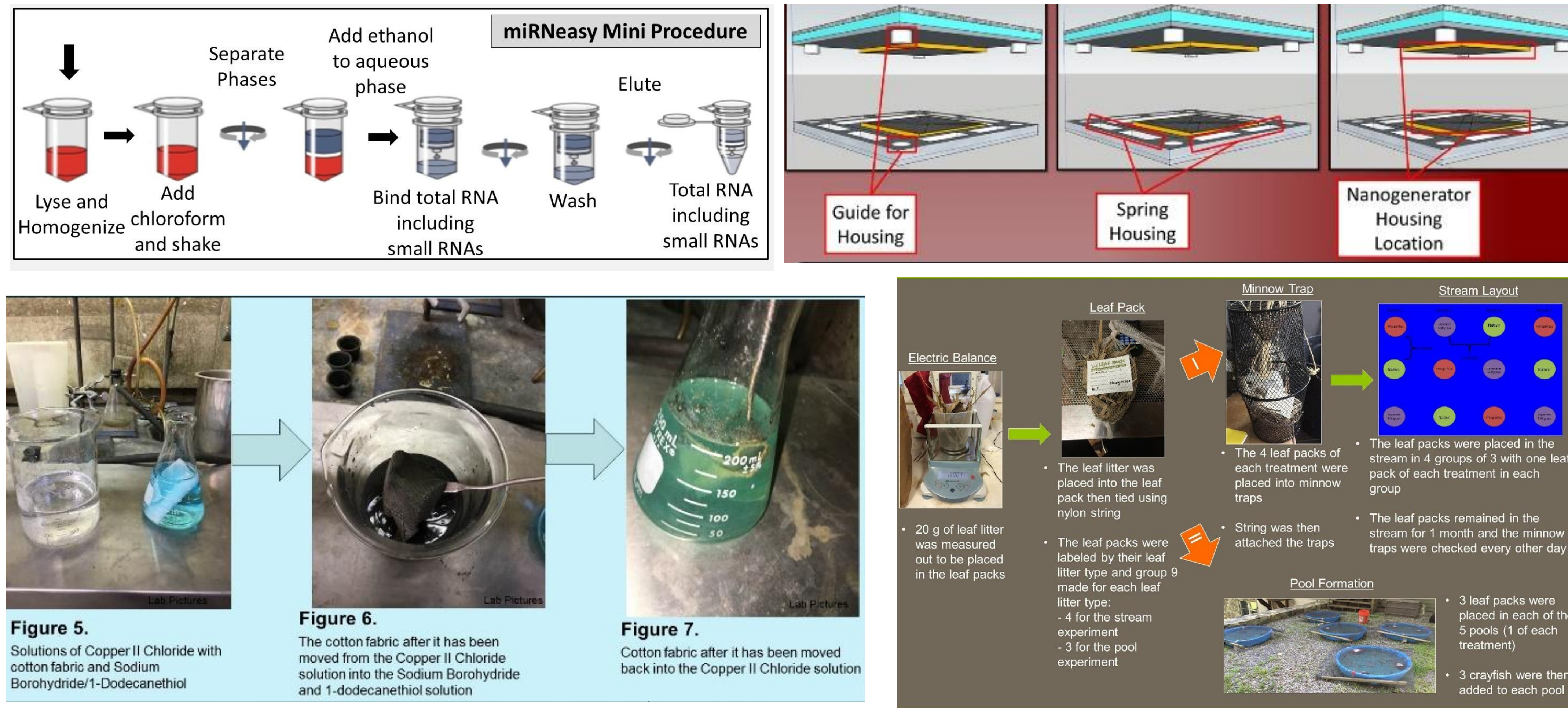
Hints:

- Using bulleted text (not paragraphs), clearly explain what you thought would happen and justify why you thought this might be the outcome.
- If you have more than one Goal then you should have more than one Hypotheses. Be sure to number each of them so that they match the multiple Goals.

## Methodology & Materials (15 pts)

Hints:

- Clearly differentiate between the parts you did versus the work you had assistance on (from your parents or other adults)
- Break up the Methodology into subsections with clear and concise sub headings. This will help the judge to follow along better as you explain each of the different subsections of the methodology
- Use bulleted format, not paragraphs, but Include sufficient detail for someone to be able to carry out the experiment just from your directions on the poster.
- Write all bulleted text in "passive voice". Try not to use words like "I", "We", "Me", "Our" on the poster.  
Ex. instead of *"I added the soda to the coins and then I checked every day to see the amount of decay"* say *"The soda was added to the coins and then the coins were observed every day to see the amount of decay"*
- Do not post a full list of the materials you used. Instead, include the materials and amounts, within the different steps. Include the length of time that you spent on the project
- Justify and explain why certain steps were taken in relation to the Goals and/or Hypotheses
- Samples of pictures to help "teach" the methodology (source: previous YHS Science Research posters)  
Note: Each of these is from a different student's poster



## Results / Discussion / Analysis (15 pts)

Hints:

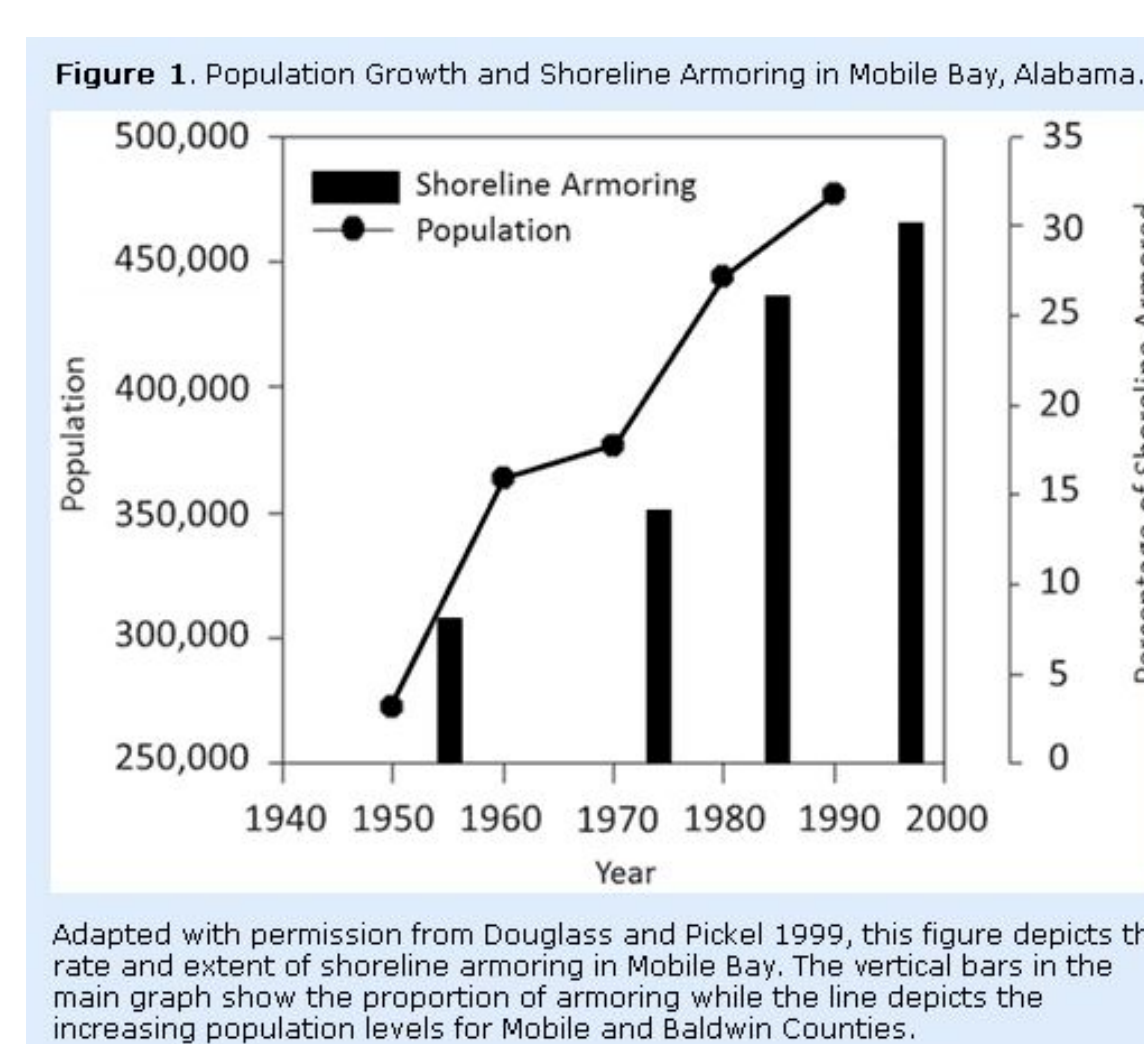
- Break up the Results and Discussion into subsections with clear and concise sub headings that match the subsections of the Methodology
- Present the data and/or observations using charts, tables, graphics that include descriptive titles, labeled axis and clear, explanatory captions
- Samples of data tables (charts) (source: <https://writingcenter.unc.edu/tips-and-tools/scientific-reports/>)  
Notice that with Tables, the title and information is on the top and there are only 3 horizontal lines
- Sample of data figure (chart) (source: <https://www.editage.com/insights/tips-on-effective-use-of-tables-and-figures-in-research-papers>)  
Notice that with Figures (graphs), the title and information is on the bottom and all parts are labeled

Table 1. Effect of Temperature on Rate of Solubility.

| Temperature of solvent (°C) | Rate of Solubility (g/sec) |
|-----------------------------|----------------------------|
| -20                         | 0.0                        |
| -10                         | 0.0                        |
| 0                           | 0.0                        |
| 10                          | 0.0                        |
| 20                          | 0.0                        |
| 30                          | 0.0                        |
| 40                          | 0.0                        |
| 50                          | 5.3                        |
| 60                          | 6.7                        |
| 70                          | 8.8                        |
| 80                          | 11.4                       |

Table 1. Boyle's Law Experiment: Measuring Volume as a Function of Pressure.

| Trial                     | 1     | 2     | 3     | 4     | 5     |
|---------------------------|-------|-------|-------|-------|-------|
| Length of air sample (mm) | 122.5 | 116.2 | 114.4 | 106.2 | 103.6 |
| Hg height difference (mm) | 51.0  | 94.4  | 126.7 | 174.3 | 197.9 |



## Conclusion (15 pts with the Future Res.)

Hints:

- All material is presented with bulleted text and not full sentences or paragraphs.
- Includes a reviews of the entire project including; the **problem** (gap in current knowledge), the **goal**, the **methods**, the **findings**.
- Sound conclusions** are made based on the data/observations presented.
- Shows and explains how data/observations support/refute the one or more hypotheses

Demonstrates a clear direction for **future research** in this area (what needs to be done next and why)

## Future Research (15 pts with the Conclusion)

Hints:

- All material is presented with bulleted text and not full sentences or paragraphs.
- Demonstrates a clear direction for **future research** in this area (what needs to be done next and why)

**TEMPLATE**

**Student Research Poster Format  
Senior Division**

# Title Do NOT include the name of your school, mentor, the location of research, logos or QR codes anywhere on your poster

## Font sizes for the entire poster....

- Headings of the main sections should be size 60-80
- Main bullet font size 24-32.
- Sub bullet font size 18-24 (sub bullet font must be smaller than main bullet)

Entire poster should be made up of bulleted text and not full sentences or paragraphs. Remember the poster is an "outline" of your project, broken up into different sections that you will use to TEACH about your project. It should not look like or read like a paragraph based, written paper.

See "Top 10 things to remember when creating poster presentations" guide for what else to include/not include. These are also listed on the 2<sup>nd</sup> slide of this presentation.

## Introduction / Background

BRIEF section should be:

- Clear and concise summary of the topic
- Approximately 4-6 text bullets plus a graphic/figure that helps to teach a brief overview of the general area/problem
- Include statistics or interesting data/trend to introduce and justify the problem (cited all sources but not general knowledge)

## Review of Literature

Select three research/journal articles that are related to your project.

For each article:

- List the full citation for the article in APA format (font size 8-12)
  - Do not list these as active links. If it is blue then it is a link. You can remove this by highlighting it and then going to the menu and clicking "remove link"
- List the Goals (font size 24-32)
- List the Results/Findings (font size 24-32)
- If you have a sub-bullet/text for either the Goal(s) or Finding(s) then use font size 18-24 (sub bullet font must be smaller than main bullet)
- Include at least one graphic/figure from each article to help (visually) teach the material from each
- Remember that this section helps you to "funnel" down from the general topic through what has been done and what has been found to what still needs to be done ("Problem Statement")

Remember:

- Be sure to "teach" the background information in an enthusiastic way that helps the judge understand the topic and appreciate what is already known and what still needs to be done.

## Problem Statements

- Using bulleted text (not paragraphs), clearly explain the problem (gap/void) left by the previous studies
- If you list more than one Problem Statement then number each of them and have them match the multiple Goals
- If you completed phase two of the same/similar project then clearly label the Prob. Goal and Hypo for each phase

## Goals

- Using bulleted text (not paragraphs), clearly explain the goals of the research and the possible impact on the overall problem
- If you have more than one Goal then number each of them and have them match the multiple Problem Statements

## Hypothesis

- Using bulleted text (not paragraphs), clearly explain what you thought would happen
  - Some engineering projects may not need a hypothesis but require clear objective(s)
- Be sure to justify/explain why you thought this might be the outcome. It is 100% ok if your hypotheses were refuted and not supported.
  - If possible, refer to previous research (ex. Smith, 2002) as part of the justification for your hypo(s)
- If you have more than one Goal then you should have more than one Hypotheses. Be sure to number each of them so that they match the multiple Goals.

If the Problem Statement(s), Goal(s) and Hypothesis(es) don't fit on the bottom of the left panel then you can put them side by side on the top of the middle panel

## Methodology & Materials

- Clearly differentiate between the parts you did versus the work you had assistance on (from your parents or other adults). You can even have a subsection called "Role of Mentor vs. Role of Student". This will help all judges to fully understand what you did vs. what your mentor did. Include the length of time that you spent on the project
- Break up the Methodology into subsections with clear and concise but descriptive sub headings. This will help the judge to follow along better as you explain each of the different subsections of the methodology
- Use bulleted format, not paragraphs, but Include sufficient detail for someone to be able to carry out the experiment just from your directions on the poster. However, you do not have to include exact dosages or amounts.
- Write all bulleted text in "passive voice". Try not to use words like "I", "We", "Me", "Our" on the poster.
  - Ex. instead of "I added the soda to the coins and then I checked every day to see the amount of decay" say "The soda was added to the coins and then the coins were observed every day to see the amount of decay"
- Justify and explain why certain steps were taken in relation to the Goals and/or Hypotheses
- Include many pictures/figures to help "teach" the methodology and refer to them in the bulleted (methodology) text.
  - Use arrows, boxes or circles to draw attention to important aspects in the figures
  - Examples below are from previous high school research posters. Each is from a different student's poster

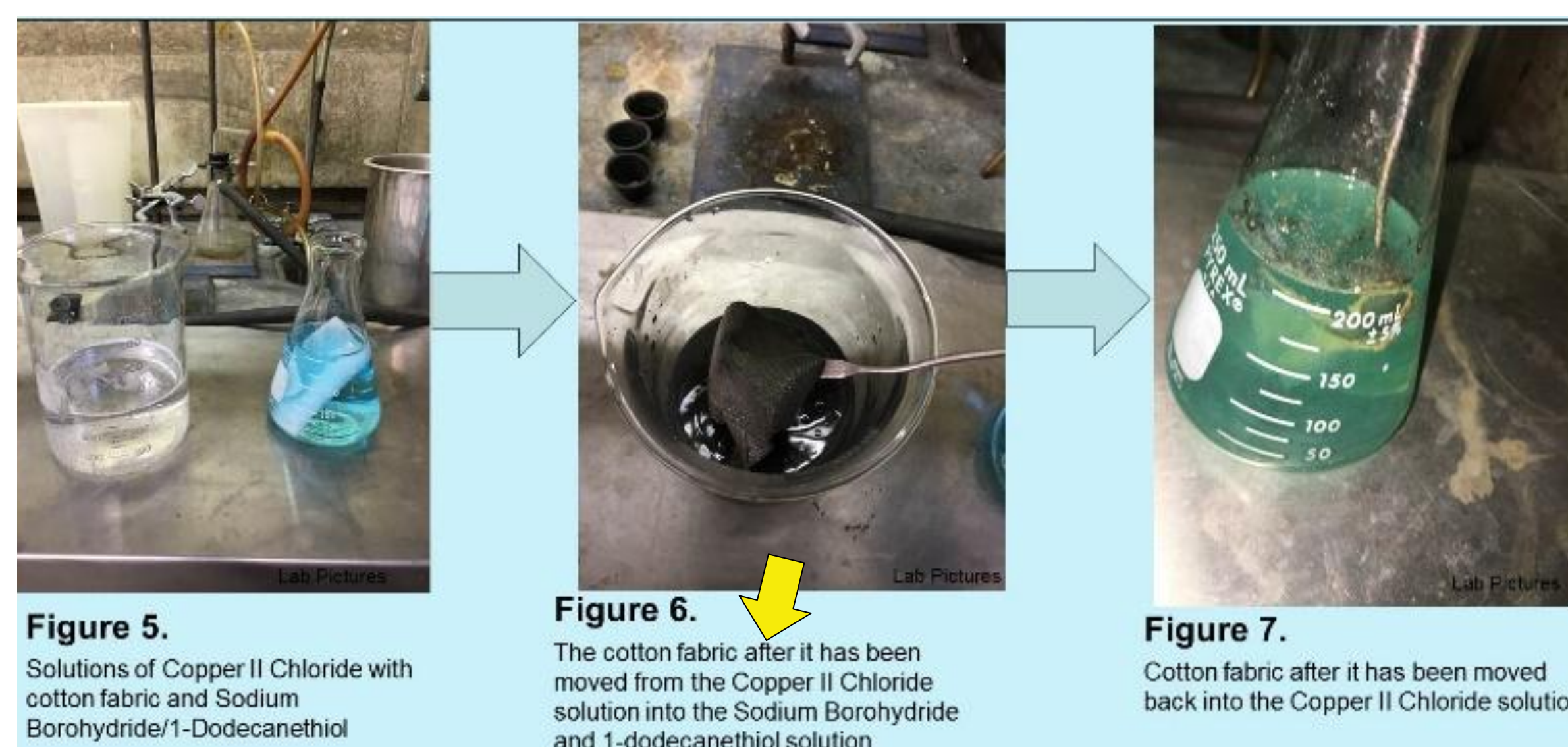
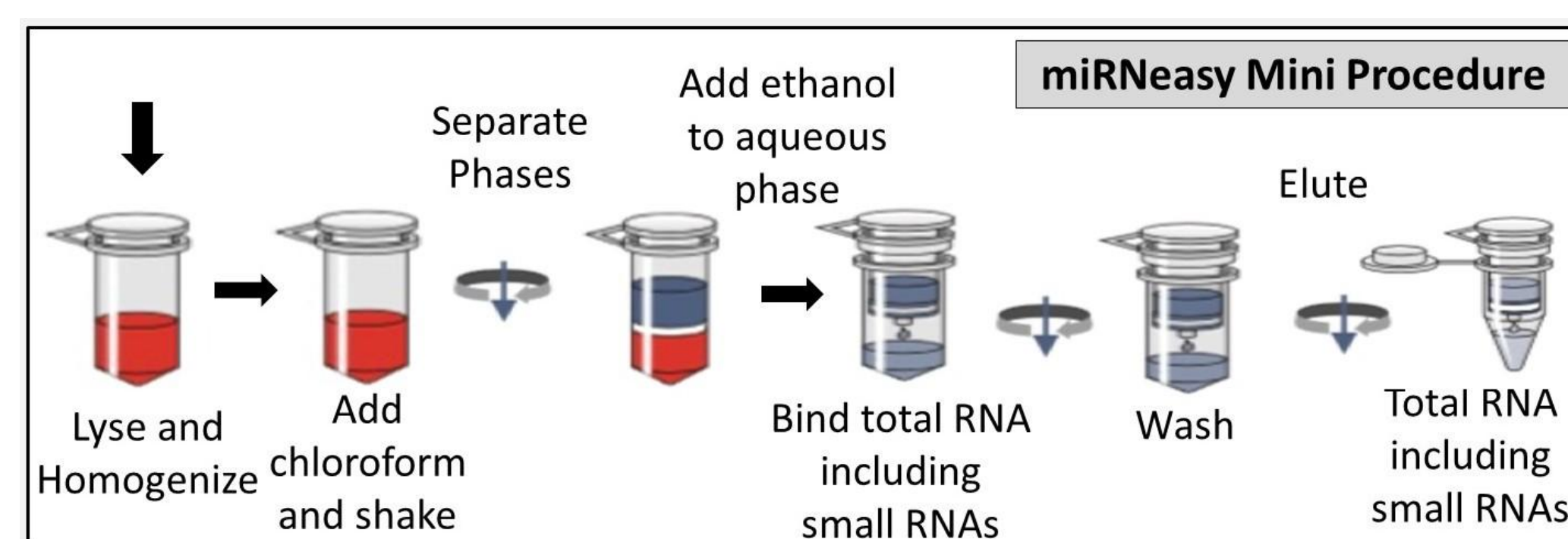
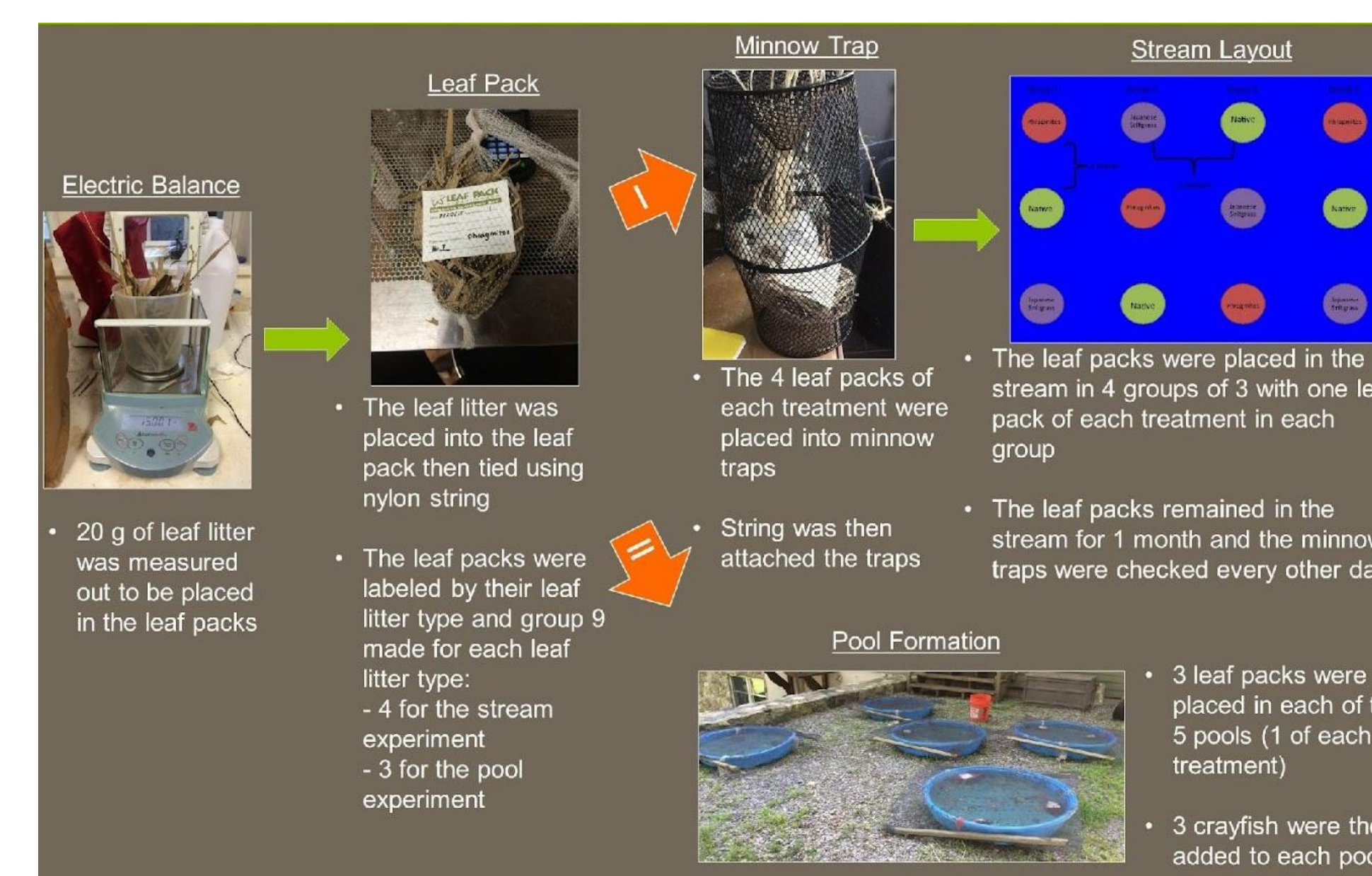


Figure 5. Solutions of Copper II Chloride with cotton fabric and Sodium Borohydride/1-Dodecanethiol

Figure 6. The cotton fabric after it has been moved from the Copper II Chloride solution into the Sodium Borohydride and 1-dodecanethiol solution

Figure 7. Cotton fabric after it has been moved back into the Copper II Chloride solution



## Results / Discussion / Analysis

- You do NOT have to break up the Results from the Discussion/Analysis section. If you feel that it would help more to show the results and then incorporate the Discussion/Analysis then that is fine. However, you should call the main section "Results/Discussion/Analysis"
- Break up the Results into subsections (even if you incorporate the Discussion and Analysis with the results) with clear and concise sub headings that match the subsections of the Methodology
- Potential limitations, including confounding variables, are reviewed objectively including how different aspects may have impacted the results.
  - Do not use "Unfortunately...", "However...", etc.
- Highlight relevant failures and/or challenges that you overcame
- Explain how the data was analyzed including if statistical tests were include.
  - Why those tests were used?
  - What was the statistical significance?
- Be sure NOT to include any of the following:
  - Non-scientific statements, non-supported statements, confusing or vague statements.
- Present the data and/or observations using charts, tables, graphics that include descriptive titles, labeled axis and clear, explanatory captions. See examples below.
- Review the hypothesis/hypotheses and indicate, clearly, whether it/they were supported or refuted
  - Remember, we NEVER "Prove" or "Disprove" anything
  - Engineering projects without a hypothesis refer back to objective.
  - Each hypothesis is supported or refuted such as "The first hypothesis was supported as the data indicated that...." (include statistical support ex.  $p < .05$ )

### • Samples of data tables

Notice that with Tables, the title and information is on the top and there are only 3 horizontal lines

Table 1. Effect of Temperature on Rate of Solubility.

| Temperature of solvent (°C) | Rate of Solubility (g/sec) |
|-----------------------------|----------------------------|
| -20                         | 0.0                        |
| -10                         | 0.0                        |
| 0                           | 0.0                        |
| 10                          | 0.0                        |
| 20                          | 0.0                        |
| 30                          | 0.0                        |
| 40                          | 0.0                        |
| 50                          | 5.3                        |
| 60                          | 6.7                        |
| 70                          | 8.8                        |
| 80                          | 11.4                       |

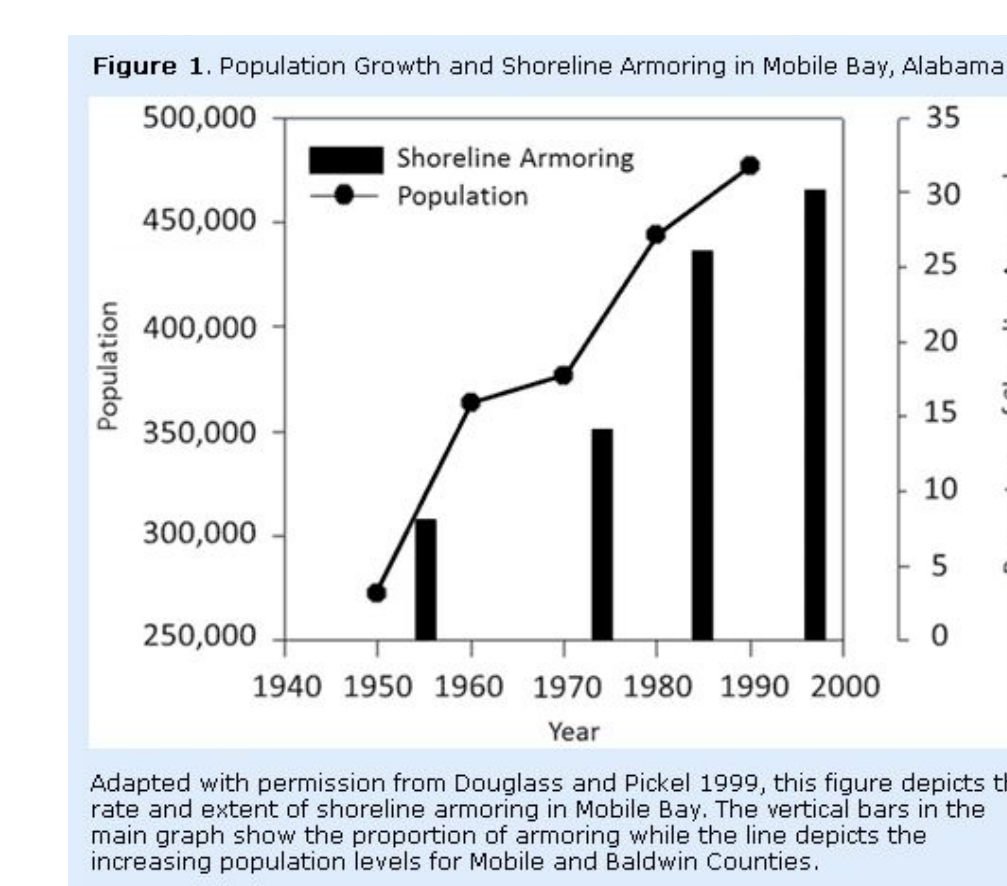
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| Hg height difference (mm) | 51.0  | 94.4  | 126.7 | 174.3 |

<https://writingcenter.unc.edu/tips-and-tools/scientific-reports/>

### • Sample of data figure

Notice that with Figures (graphs), the title and information is on the bottom and all parts are labeled



<https://www.editage.com/insights/tips-on-effective-use-of-tables-and-figures-in-research-papers>

If you need more room for the Results/Discussion/Analysis than just the bottom of the middle part, you can put some information here (top of the right panel)

## Applications/Implications

- This could be considered a subsection of the Discussion and could be titled "Discussion – Applications"
- Explain the potential impact of your findings?
  - That can be a clear "application" or it may be more of a help towards the next step of research and therefore be an "implication"
- If possible, mention past studies & how your research was different
  - Specific reference to how the results of this study were similar, different and improved upon previous studies. "Similar to Smith in 2014, ..." or "Unlike Jones in 2010, ..."
- How can your results be applied to a current situation? Who/How can they help?
- If you truly found something new, check with your mentor first and then say so: "We report a novel finding..." or "This result is heretofore unreported in the literature..."

## Future Research

- Explain what the next steps/phase of research should be AND why
  - Be sure to justify the reason WHY those future studies are important and what they may reveal

## Conclusion

- Remember, All material on poster, including the conclusion, is presented with bulleted text and not lengthy sentences or paragraphs.
- The conclusion section can be a very effective way to review the entire poster in 30 seconds helping anyone that missed a part to gain insight quickly and effectively.
- List 1-2 brief bulleted text points for each of the following:
  - **Goal (1 bullet)**
  - **Methodology (1-2 bullets)**
  - **Findings/Results (1-2 bullets)**
  - **Application/Implication 1-2 bullets)**
- Be sure to include the subtitles, in bold, so everyone can follow along and gain insight if they missed a part of the presentation.

We do NOT list a full Works Cited/Bibliography section here!! The 3 most relevant articles should have been fully cited in the "Review of Literature".

No judge is impressed because you list multiple cited sources here. However, they may be impressed that you read the background/related information/research and then addressed a gap/void in the current knowledge.