Hypothesis Review

What is the difference between a hypothesis and a prediction? Which one is which below?

• The water will boil and turn from a liquid into a gas.
• If I put water in a pot and then heat it up on the stove, then it will boil because the molecules will speed up.
Outline of the day

• Form and practice working in your semester-long TEAMS (Ex 5 & 6)

• Ex 3 - Conducting scientific research: obs, Qs, hypos, preds, and sampling!

Lab Learning Goals

• Science process skills
• Effective and cooperative teamwork
• Communication
  • Speaking
  • Reading
  • Writing
  • Thinking
Complete Ex. 5: Moon Landing

1. Rank importance of items **individually**
2. Rank importance of items as a **team**
3. Ask TA for planning expert ranking when finished
4. Do step 7 **individually**
5. Do step 8 (questions a-e) as a **team**

**Why is effective teamwork important?**
Why is effective teamwork important?

The value of teamwork for premiere scientific publishing (Aug-Dec 2007)

<table>
<thead>
<tr>
<th>Number of authors</th>
<th># of Research Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 author</td>
<td>0</td>
</tr>
<tr>
<td>2 authors</td>
<td>20</td>
</tr>
<tr>
<td>multiple authors</td>
<td>140</td>
</tr>
</tbody>
</table>

Science: 140 articles, Nature: 0 articles

Why is effective teamwork important?


Why do students dislike working in teams?  
*Because they are used to non-effective teams!*

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Complete Ex. 6: What Makes as Effective Team?

1. Complete the front **individually**
2. Pool your answers to the front as a **team**
3. Do the back as a **lab**
How will your team work together?
Complete Ex 3b: Observing Patterns in Nature

Sampling Overview

• What is a census?
• Why do we sample?
Sampling Overview: Sedentary Organisms

1. Quadrats
   - Measurements (Ex: Species and abundance) are recorded within randomly selected plots/quadrats in a particular area
   - Plot size is pre-determined and dependent on the subject organism and question of interest
   - Grid placed on sample area and random number generator (Excel) used to select plots/quadrats for sampling

Quadrat Sampling Example
2. Transects

– Measurements (Ex: Species and abundance) are recorded at randomly selected locations along a transect through a selected area
– Transect length is pre-determined and dependent of the subject organisms and question of interest
– Transect placed through sample area and random number generator (Excel) used to select locations for sampling (or coordinates laid over an area map)
**Sampling Overview**

- Why is sample size important?
- Why select sample locations randomly?
- Why replicate our sampling?
Ex 3b:
1. Assign team roles (p 24)
2. Formulate team hypos/preds
3. Do the field exercise

Turn in one per team

What is an herb? Shrub? Tree?

Homework
- Carefully Read: c-pack pg 47, 53-54, 57-59, and Smith 2007 ch 3 (2nd ch in the handout)
- Complete: Ex 10 individually
- Pre-read: Ex 4, Ex 7, Ex 8

Exercise 1 due November 14