Student Conducted Lab: What's Sprouting Lab

Name: ..... _____/30

You WILL complete the Procedure of this Lab.

A Phase of the Lab will be started each Friday – Jan 3, 10, and 17, 2020!

Follow the Scientific Method!

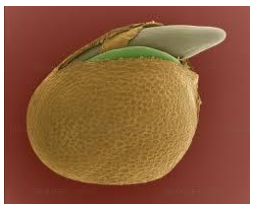
****To COMPLETE this Lab: Fill in the missing information for each step!**

1. Identify the problem ....._____/1
   - _____?

   Use the Problem (question) **provided IN CLASS on January 3!**

2. Make observations .....

Lab Prep ASYNCH Lesson



READ Background Information:

READ: How Long Does it Take for Radishes to Germinate?
https://homeguides.sfgate.com/long-radishes-germinate-68498.html

3. State the hypothesis ....._____/3
   - **H = IV + DV**
     i. **IV =**
     ii. **DV =**
     iii. **So, the Hypothesis is:**

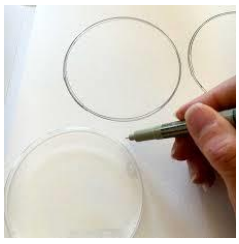
   Use the IV, DV and Hypothesis **provided IN CLASS on January 3!**

4. Test the hypothesis, in other words: *set up an* experiment:

- **Materials:**
  - **Science Kit**: Petri dish, radish seeds, thermometer
  - **From Home**: paper towel or newspaper, water, ruler, scissors, pen/marker
    - OR, Online: ruler https://www.freeonlineruler.com/

- **Procedure:**

PHASE 1 – starting on Friday, Jan 3



a. On the paper towel/newspaper, trace around the bottom of the Petri dish (smaller side) with the pen/marker. four times.
b. Cut out the FOUR (4) circles.
c. Make the circles of paper towel/newspaper wet with water. Squeeze out excess water, but you want the paper damp.
d. Put two (2) layers of the damp paper towel/newspaper in the bottom of the Petri dish.
e. Count out ten (10) radish seeds.
f. Place the ten (10) on top of the damp paper towel/newspaper.
g. **ACTION ITEM:** Data Collection
   Complete the **Day 1** section of the **Phase 1 Data Table** (below) by recording the

i. appearance of the seed (describe what it looks like)
ii. and size [measure with a ruler in millimeters (mm)] of a seed.

h. Cover with the last two (2) layers of damp paper towel/newspaper and cover the Petri dish with its lid.
i. Place the Petri dish in a cabinet or drawer where it will not be disturbed.
j. Using your thermometer, take and record the **temperature** in the cabinet/drawer.
k. **ACTION ITEM**: **EVERY DAY** Data Collection
Complete the Day section of the Data Table by recording the appearance and size of the seed with the most visible germination (growth) for seven (7) days
- **KEEP the paper towel damp!**

5. PHASE 1 - Collect data....._____/7

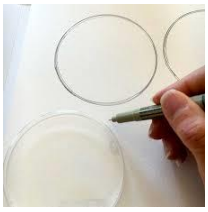
PHASE 1 - DATA TABLE: *Don't forget UNITS!*

Temperature of **cabinet/drawer**:

Observations	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
Appearance							
Size							

ACTION ITEM: On Day 7, DRAW what the largest germinated seed looks like in your Petri Dish.

PHASE 2 – starting on Friday, Jan 10



a. Remove the Phase 1 seeds and paper towel/newspaper from the Petri dish and throw away.
b. On the paper towel/newspaper, trace around the bottom of the Petri dish (smaller side) with the pen/marker. four times.
c. Cut out the FOUR (4) circles.
d. Make the circles of paper towel/newspaper wet with water. Squeeze out excess water, but you want the paper damp.
e. Put two (2) layers of the damp paper towel/newspaper in the bottom of the Petri dish.
f. Count out ten (10) radish seeds.
g. Place the ten (10) on top of the damp paper towel/newspaper.
h. **ACTION ITEM**: Data Collection
Complete the **Day 1** section of the **Phase 2 Data Table** (below) by recording the
- appearance of the seed (describe what it looks like)
- and size [measure with a ruler in millimeters (mm)] of a seed.

i. Cover with the last two (2) layers of damp paper towel/newspaper and cover the Petri dish with its lid.
j. Place the Petri dish on a window sill where it will not be disturbed.
k. Using your thermometer, take and record the **temperature** on the window sill.
l. **ACTION ITEM**: **EVERY DAY** Data Collection
Complete the Day section of the Data Table by recording the appearance and size of the seed with the most visible germination (growth) for seven (7) days
- **KEEP the paper towel damp!**

5. PHASE 2 - Collect data....._____/7

PHASE 2 - DATA TABLE: *Don't forget UNITS!*

Temperature of **window sill**:

Observations	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
Appearance							
Size							

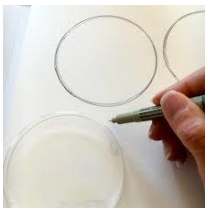
ACTION ITEM: On Day 7, DRAW what the largest germinated seed looks like in your Petri Dish.

More Background Information:

READ: 7 Factors that Affect Seed Germination

https://livingonagreenthumb.wordpress.com/2015/03/16/7-factors-that-affect-seed-germination/

PHASE 3 – starting on Friday, Jan 17



a. Remove the Phase 2 seeds and paper towel/newspaper from the Petri dish and throw away.
b. On the paper towel/newspaper, trace around the bottom of the Petri dish (smaller side) with the pen/marker. four times.
c. Cut out the FOUR (4) circles.
d. Make the circles of paper towel/newspaper wet with water. Squeeze out excess water, but you want the paper damp.
e. Put two (2) layers of the damp paper towel/newspaper in the bottom of the Petri dish.
f. Count out ten (10) radish seeds.
g. Place the ten (10) on top of the damp paper towel/newspaper.
h. **ACTION ITEM**: Data Collection
   Complete the **Day 1** section of the **Phase 3 Data Table** (below) by recording the
   - appearance of the seed (describe what it looks like)
   - and size [measure with a ruler in millimeters (mm)] of a seed.
i. Cover with the last two (2) layers of damp paper towel/newspaper and cover the Petri dish with its lid.
j. Place the Petri dish in the refrigerator where it will not be disturbed.
k. Using your thermometer, take and record the **temperature** in the refrigerator.
l. **ACTION ITEM**: **EVERY DAY** Data Collection
   Complete the Day section of the Data Table by recording the appearance and size of the seed with the most visible germination (growth) for seven (7) days

- **KEEP the paper towel damp!**

5. PHASE 3 - Collect data....._____/7

PHASE 3 - DATA TABLE: *Don't forget UNITS!*

Temperature of **refrigerator**:

Observations	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
Appearance							
Size							

ACTION ITEM: On Day 7, DRAW what the largest germinated seed looks like in your Petri Dish.

When your THREE Data Tables are complete, check THIS out:
https://www.carolina.com/teacher-resources/Video/seed-germination-time-lapse-video/tr40110.tr

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6. Analyze the data ....._____/4
   a. **Complete Graphs of your Data**
      i. **MAKE ONE line graph using:** https://nces.ed.gov/nceskids/createagraph/
         Step-by-Step directions below!
         1. **X axis = Days**
         2. **Y axis = Growth (in cm)**

      INSERT HERE the Line Graph with all Three Phases' Data ...as a JPEG

   b. **Examine the Graph of your Data:** You are looking for the most growth.

7. Form conclusions ....._____/1
   a. **Based upon the data, which environment is the best for radish seed development?** (write in complete sentences)

8. **Write and present your research.**
   a. **Make sure all sections (above) are completed and saved.**
   b. **And, SUBMIT your saved lab document through the Assignments module.**
      i. **Your PRINTED lab should have your drawings on it!**

Analysis Question: .....This will be your ASYNCH Lesson on Monday, January 27!

Complete ALL Sections/Questions above this line!

DIRECTIONS

Make a Graph to insert in your lab using: https://nces.ed.gov/nceskids/createagraph/

You will have to make ONE Line Graphs!

Select **LINE** Graph

1. On the **Design Tab**: make no changes
2. On the **Data Tab**: **ADD**
    a. Graph Title – Add a Title
        i. Radish Seed Growth in Three Environments
    b. X Axis - Days
    c. Y Axis – Growth in _____ (fill the blank with the units you used)
    d. Data Set:
        i. Items = 7
        ii. Groups = 3
    e. Group Label –
        i. Group 1: Phase 1: Cabinet
        ii. Group 2: Phase 2: Window Sill
        iii. Group 3: Phase 3: Refrigerator
    f. Item Label - Day 1, Day 2, Day 3, Day 4, Day 5, Day 6, Day 7
    g. Value - ***your data*** for each trial for that plane (**no units** – just the number values in decimal form)
    h. Min-Value - ZERO (0)
    i. Max-Value - the largest number (growth) in the three phases
3. SKIP the **Labels Tab**
4. On the **Preview Tab**
    a. **Make sure your graph has**:
        i. A Title
        ii. Label on the X axis
        iii. Label on the Y axis
        iv. Three Phases are present = three (3) lines
        v. A Key for the lines
5. On the **Print/Save Tab**
    a. Select Download (pop ups must be enabled)
        i. In the pop-up that opens:
        CHANGE the **File Format** to **JPG** (JPEG – like a picture)
        ii. **CLICK** Download
        iii. **OPEN** the downloaded file
        iv. **SAVE** to your Science folder

INSERT the Graph JPG image in the Lab Document:

1. In the Word document, CLICK where you want to insert your image in the document.
2. CLICK Insert in the Menu Bar
3. CLICK Illustrations
4. CLICK Pictures … FIND the folder and image from your desktop
5. CLICK Insert
6. It should look like the image below. (This was a sample and does not reflect actual data.)