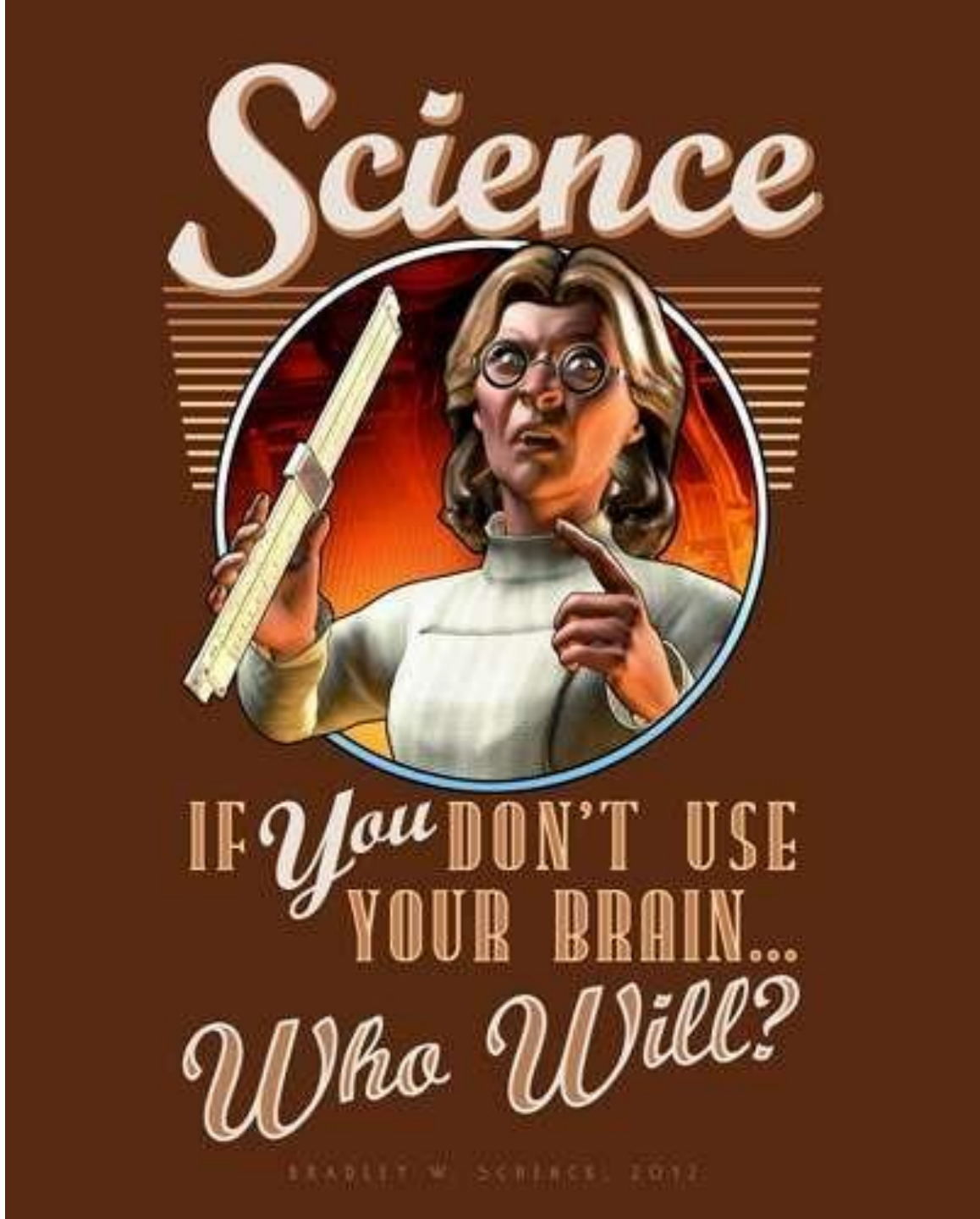
Welcome to Biology

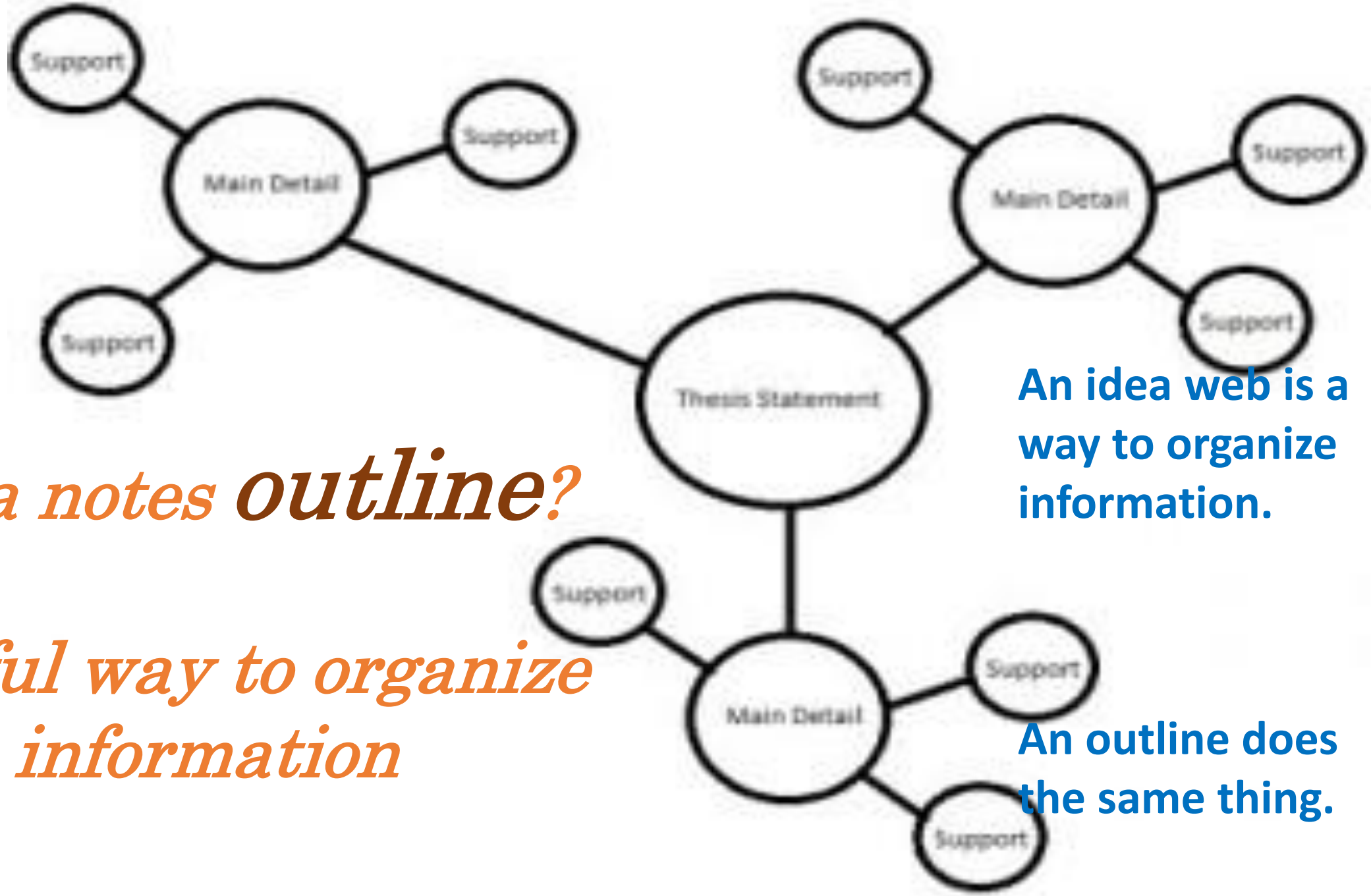
Tuesday 8/31/21

Phones away and things out of ears please -
Masks covering face holes
Thank you!!

Daily Agenda

1. Unit 1: Science and the Experiment
   - Fill-in-Blank Notes
2. Unit 1: Science and the Experiment
   - Lecture Notes





What is a notes ***outline****?*

A powerful way to organize lecture information

An idea web is a way to organize information.

An outline does the same thing.

I. Thesis Statement #1

A. Main Detail #1

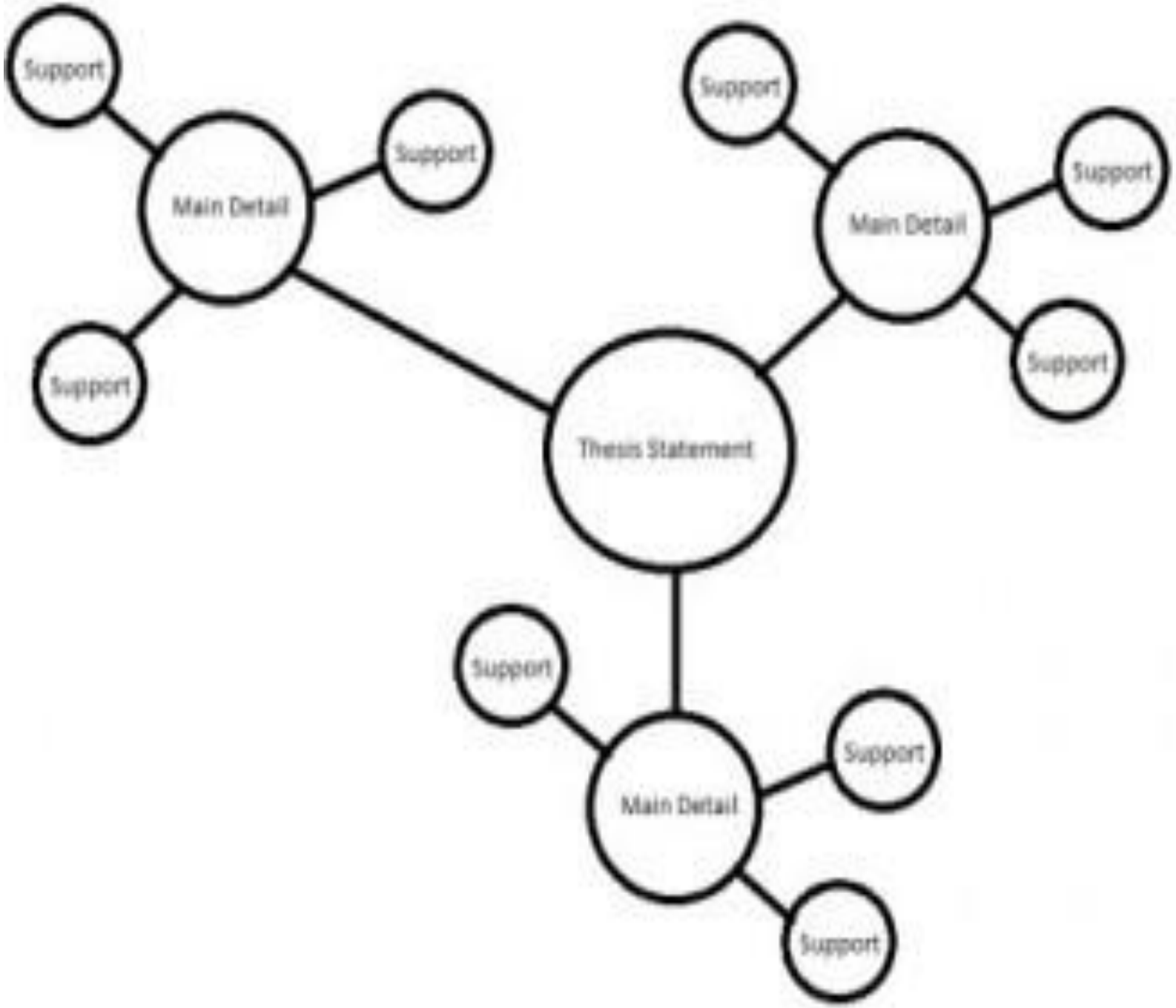
1. Support #1
2. Support #2
3. Support #3

B. Main Detail #2

1. Support #1
2. Support #2
3. Support #3

C. Main Detail #3

1. Support #1
2. Support #2
3. Support #3



Title

I. This is a main point
    A. This is a major element of the main point
        1. This is a detail of the element
        2. This is detail #2
            a. This elaborates on detail #2
        3. This is detail #3 of element A
    B. This is a second major element of main point #1
        1. This is a detail of the element
            a. This elaborates on the detail
                i. More about the elaboration
                ii. More about the elaboration
II. This is a second main point
    A. This is a major element of the main point
        1. This is a detail of the element
            a. This elaborates on the detail
            b. This elaborates more on the detail

Etc.

An outline organizes information so that it can be better understood, learned, studied, communicated and so on.

An outline uses bullet points and indenting to organize information

Upper and lower case Roman numerals

I	i
II	ii
III	iii
IV	iv
etc.	

Science and the Experiment

I. Science
    A. Define science
        1. Detail
        2. Detail
II. The Experiment
    A. Define
        1. Details
III. The Controlled Experiment
    A. Define
    B. Parts
        1. Variables
            a. Independent variable
            b. Dependent variable
                i. Data
            c. Controlled variables
    C. The Hypothesis
        1. Define
        2. Why write a hypothesis

Etc.

Tips for Fill-in-the-Blank Notes

- **Use a pencil**
- **Understand and apply the organization of the outline**
- **Capitalized words/terms go at the beginning of a line**
- **Two-word terms go in two-word spaces**
- **Look in the lines above and below the line with the blank; often the word is used**
- **Skip a blank you can't figure out and come back when you have eliminated word bank choices**
- **Circle (instead of cross out) words you've used from the word bank, in case you want to reconsider**
- **Take good notes during lecture and use them as a reference when you fill in the blanks**

Put name on page!!

Notes 1 Science and The Experiment (pages 4 – 15) Biology/Fletcher

I. _____

A. A way of learning about and manipulating the _____ _____

B. Recognizes that the universe works according to certain rules, with _____ leading to effect

C. Conclusions are public and supported by demonstrable, physical _____

II. The Experiment

A. _____ is often collected using the experiment

B. Experiments have in common…

1. A series of steps with observable _____

2. Investigates cause and _____ question (does the suspected cause bring about the suspected effect?)

3. _____ and demonstrable in procedure and outcome

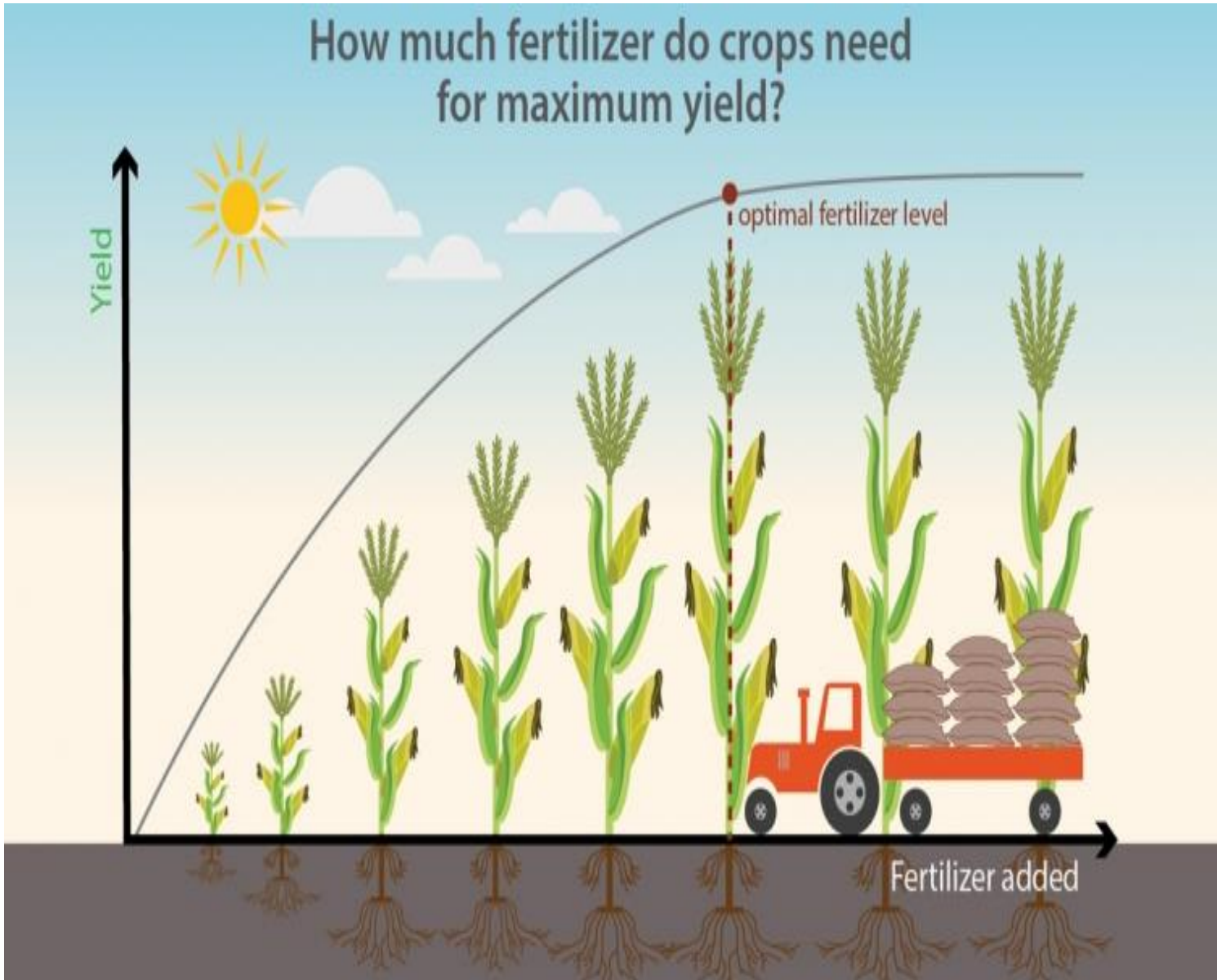
C. There are different kinds of _____; (three described here – see III, III F and IV below)

The Comparative Controlled Experiment 8/31/21

How does the dependent variable respond across a changing range of the independent variable?

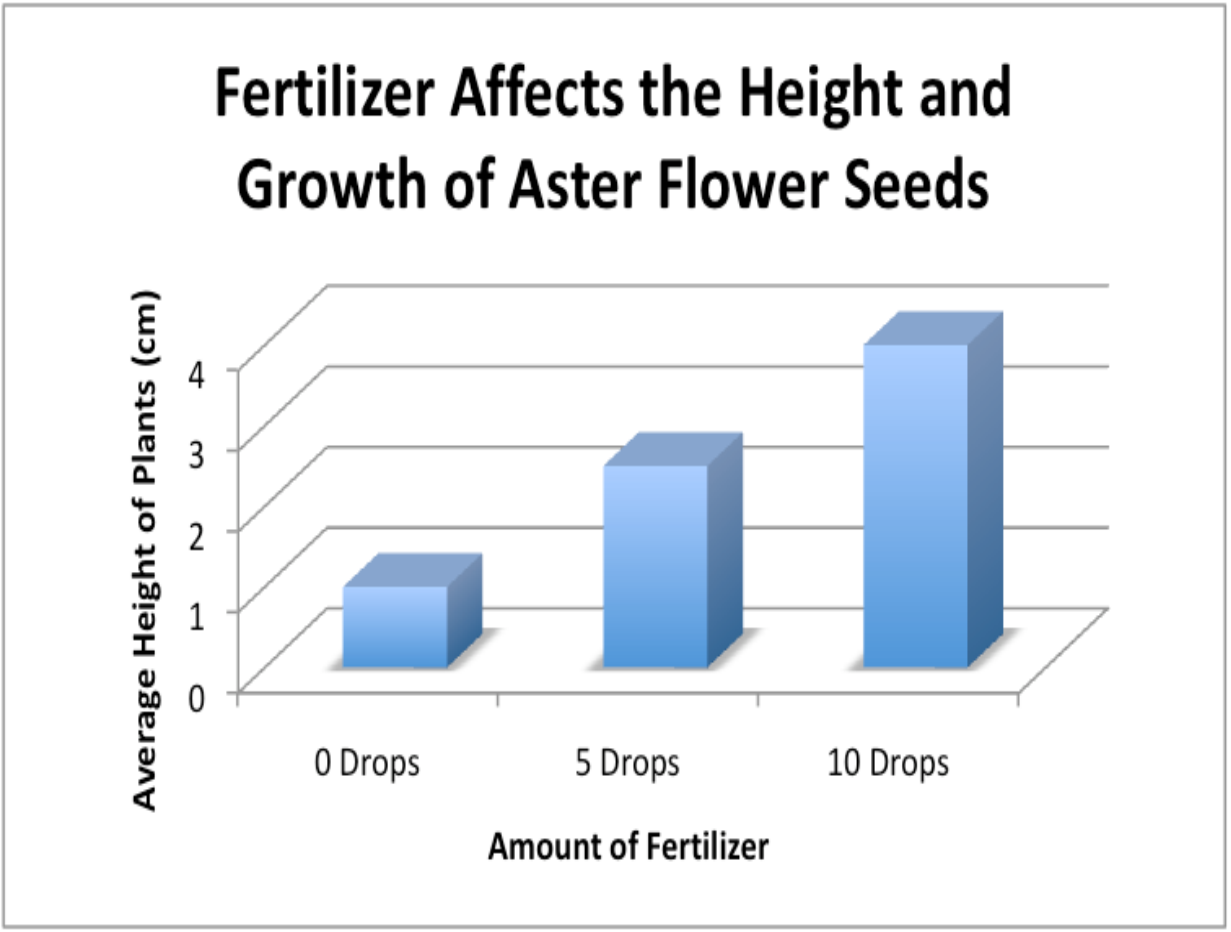
Range of…

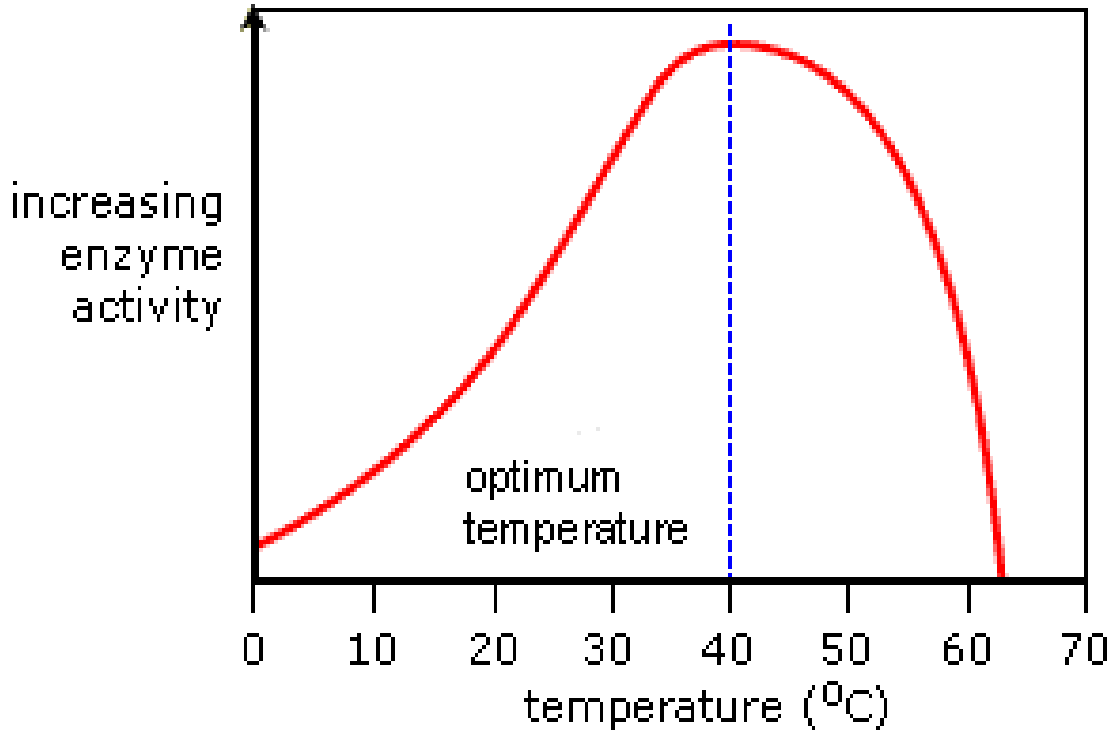
- ✓ Temperature
- ✓ Chemical concentration
  - drug
  - salt
  - fertilizer
- ✓ Amount
  - water
  - light



Independent variable = amount of fertilizer
Dependent variable = yield

In a CCE the *experimental group* consists of <u>multiple parts</u>
Each part tests a different amount of the independent variable





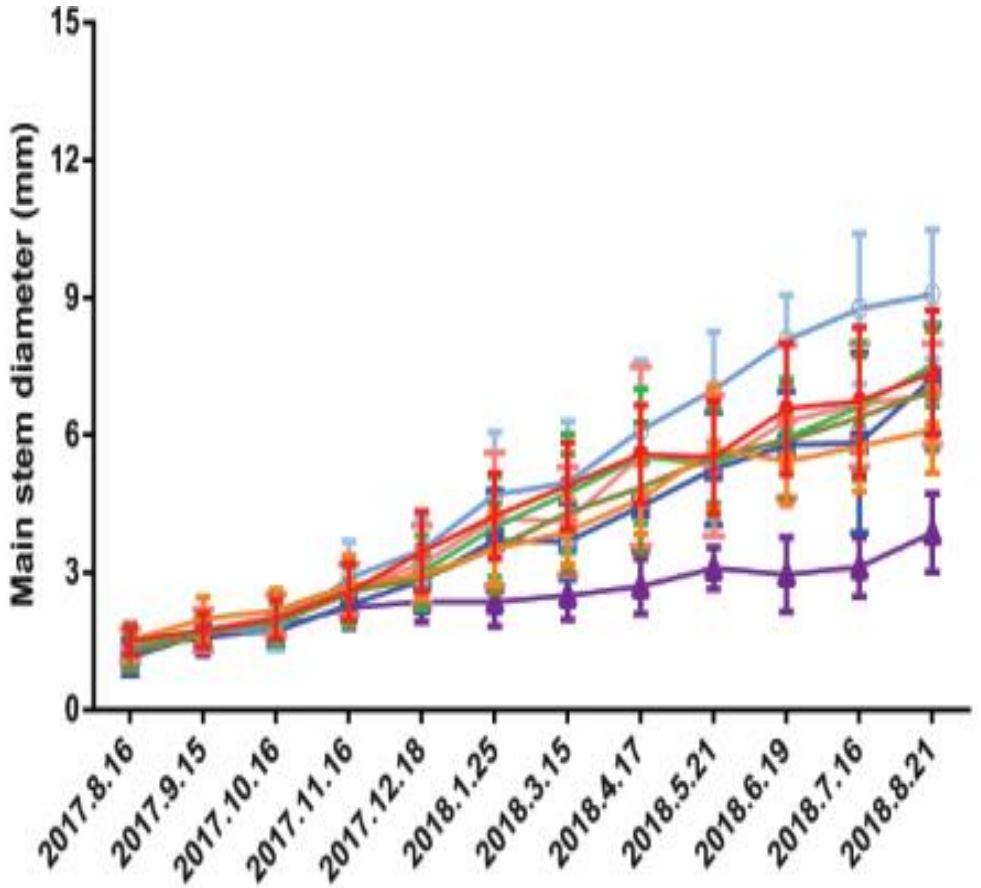
The *control group* has only <u>one part</u> – without the IV (for example, testing fertilizer) or at the "normal" IV (such as temperature)

A variation of the CCE would be when different things of the same type are tested and compared to each other

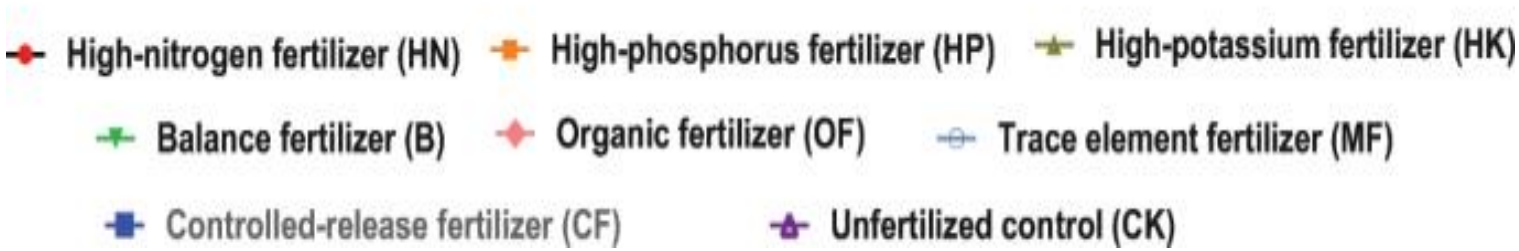
For example

Drug A, B, C and D are all tested in regard to how they affect cancer cell growth

The results are compared to each other and to cell growth with no drug



Different types of fertilizer tested and compared to determine their effect on stem growth →



Different kinds of experiments

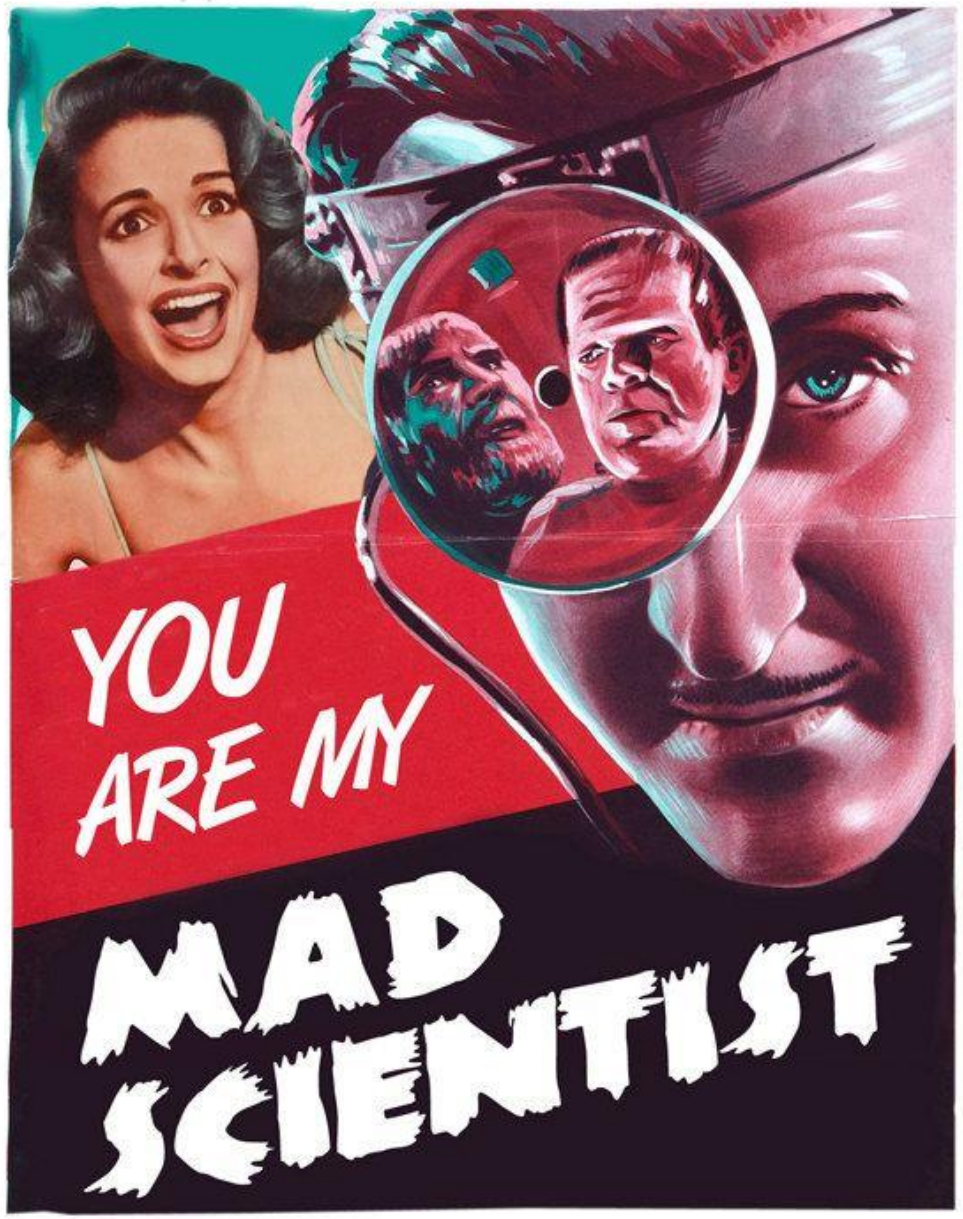
✓ "Discovery" Experiments

Investigations do not have to follow the rules of a CE

- No formal groups
- More than one variable changed in procedure

➢ Experiments need to be…

- procedure that investigates cause/effect
- repeatable in procedure and outcome



An important way of gaining evidence = *the Experiment*

Many different kinds of experiments - all with this in common…

- *A* **procedure/series of steps** ***with an*** **observable outcome**
- Investigate a **cause/effect question**
- **Repeatable** *in procedure and outcome*