Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Homeroom: \_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_ **1.2**

**Control Groups and Experimental Groups (SPI.INQ.1)**

|  |  |
| --- | --- |
| **Key Points** | **Notes** |
| **Variable Review** | * **Variable**: anything in an experiment that \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ * **Independent variable**: what you manipulate (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) in an experiment * **Dependent variable**: what happens in an experiment because of the independent variable, this is what is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or observed in an experiment * **Control variables**: what you keep the same (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) so it/they don’t interfere with your independent variable |
| **Excellent Experiments have…** | To get good evidence in experiments, scientists use:   * **One independent variable** * **One dependent variable** * **Control variables** * **A \_\_\_\_\_\_\_\_\_\_\_ group** * **An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ group** |
| **Experimental Group** | **Experimental group:** the subject(s) being tested |
| **Control Group** | **Control group:** the subject(s) who \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and are used as a comparison |
| **Control Variables vs. Control Groups** | Don’t confuse **control variable** with **control group**:  **Control variables**, or *constants*, stay the \_\_\_\_\_\_\_ for the entire experiment  **Control group** is a *group* that is used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **The “Placebo Effect”** | * A **placebo** is basically a “\_\_\_\_\_\_\_” or a “sham” used in an experiment * Placebos are frequently used on \_\_\_\_\_\_\_\_\_\_ groups * “*The Placebo Effect*” is the phenomenon of using this fake substance to result in a patient's medical improvement * The phenomenon is related to the perception and expectation that the patient has. If the patients \_\_\_\_\_\_\_\_\_\_ they are taking the medicine, they end up “feeling better” |

***DO NOT START ON THE BACK OF THIS UNTIL MR. C GIVES YOU PERMISSION TO DO SO!***

**Let’s Practice Together (Guided Practice):**

Question: Is there a relationship between the number of hours spent studying and the score a scholars gets on the weekly quiz?

*Define the:*

Independent Variable

Dependent Variable

Control Variables

Experimental Group

Control Group

**“I Got This! (Independent Practice):**

Remember:

**Independent Variable** = What the *I (scientist)* changes between the groups.

**Dependent Variable** = What is *measured* and is dependent upon the independent variable.

**Experimental Group** = Those participants *exposed* to the independent variable.

**Control Group** = Those participants treated just like the experimental group EXCEPT they are *not exposed* to the independent variable. This group is used to *compare.*

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EXAMPLE: A psychologist is studying the effects of steroids on the aggressive behavior of female rats. 24 female rats receive daily injections of a placebo (sugar pill that has no effect), while 24 others receive daily injections of the steroid. Round-the-clock videotapes of the rats allow all aggressive encounters to be counted and timed.

**Independent Variable** *steroid usage in rats*

**Dependent Variable**­*aggressive behavior*

**Experimental Group** *the rats who received the real steroid treatment*

**Control Group** *the rats who received the placebo treatment*

1) Of 100 individuals with moderate depression, 50 receive 8-weeks of a behavioral therapy, while the other 50 are placed on a waiting list for 8-weeks. At the end of the 8-weeks, all 100 are given psychological tests to assess their level of depression.

**Independent Variable**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Dependent Variable**­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Experimental Group**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Control Group**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) A packaging plant manager wants to know if lowering the air temperature in the packing room will cause workers to increase productivity (number of products packed). Workers in two equivalent packing rooms participate in the study. One room is maintained at 65°F, while the other room is left at the usual temperature of 76°F.

**Independent Variable**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Dependent Variable**­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Experimental Group**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Control Group**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_