

Identify the Experimental Design Variables

What is a Control Variable?
Also called a constant.

Do all experiments have a control set up?

BIG BANG PRACTICE PROBLEMS:



1. Sheldon thinks that he has created a **special serum** that will increase the productivity of ants. He creates **two groups of 50 ants each** and **assigns each group the same task** (in this case, they're supposed to **carry Legos**). **Group A** is given the special serum to drink while they work. **Group B** is not given the special serum. After an hour, Sheldon counts how many Legos each group has moved. **Group A moved 12 Legos and Group B moved 85 Legos.**



Identify the:

1. Independent Variable : _____

2. Dependent Variable : _____

3. List 2 Constants: _____

Group A



Group B



How many Ants? _____

What did they drink? _____

How many Legos moved? _____

Was the special serum effective at making the ants more productive? **YES / NO/Not enough data**



2. Leonard notices that his glasses are covered in a **strange black slime**. His friend Sheldon tells him it is some of his ant serum and that tomato juice will get rid of the black slime. Leonard decides to check this this out by spraying the **left lens** of his glasses with **tomato juice** and the **right lens** with **water**. After 3 days of "**treatment**" **there is no change in the appearance** of the black slime on either lens and Leonard is tired of running into things because he can't see.

Identify the:

1. Independent Variable : _____

2. Dependent Variable : _____



Which lens? _____

What was the slime sprayed with? _____

Did the Slime go away after 3 days? _____

Did tomato juice work to remove the black slime/ant serum? **YES / NO/Not enough data**

3. Howard believes that rats exposed to 100% oxygen will become extra strong. He decides to perform this experiment by placing **10 mice (group X)** in a hyperbaric oxygen chamber for **5 hours**. He **compared** these 10 mice **to another 10 (group Z)** mice that had **not been exposed**. His test consisted of a heavy block of wood that blocked the rat food. He found that **8 out of 10 of the mice receiving 100% oxygen** were able to **push the block** away. **7 out of 10 of the other mice** were able to **do the same**.



Identify the:

3. Independent Variable :

4. Dependent Variable :

5. List 3 Constants :



Group? _____

How many mice? _____

Exposed to Oxygen? (Y/N) _____

How many pushed the blocks? _____

Did 100% oxygen help the mice become stronger? YES / NO / Not enough data



4. Raj was told that a certain **itching powder** was the newest best thing on the market, it even **claims to cause 50% longer lasting itches**. Interested in this product, he buys the itching powder and **compares** it to his **old itching powder**. One test subject (**Howard**) is sprinkled with the **old itching powder**, and another test subject (**Leonard**) was sprinkled with the **Experimental itching powder**. **Howard** reported having itches for **30 minutes**. **Leonard** reported to have itches for **40 minutes**.



Identify the:

6. Independent Variable :

7. Dependent Variable :

Test Subject's Name: _____

Type of Itching Powder: _____

Time of itching: _____

Does the experimental itching powder last 50% longer?

YES / NO

Explain:
