

Identify the Controls and Variables

KEY

Name: _____



Smithers thinks that a special juice will increase the productivity of workers. He creates two groups of 50 workers each and assigns each group the same task (in this case, they're supposed to staple a set of papers). Group A is given the special juice to drink while they work. Group B is not given the special juice. After an hour, Smithers counts how many stacks of papers each group has made. Group A made 1,587 stacks, Group B made 2,113 stacks.

Identify the:

1. Control Group **GROUP B**
2. Independent Variable **JUICE**
3. Dependent Variable **NUMBER OF STACKS**
4. What should Smithers' conclusion be?
THE SPECIAL JUICE DOES NOT "INCREASE THE PRODUCTIVITY OF WORKERS".
5. How could this experiment be improved?



Homer notices that his shower is covered in a strange green slime. His friend Barney tells him that coconut juice will get rid of the green slime. Homer decides to check this out by spraying half of the shower with coconut juice. He sprays the other half of the shower with water. After 3 days of "treatment" there is no change in the appearance of the green slime on either side of the shower.

6. What was the initial observation? **shower is covered in a strange green slime**

Identify the-

7. Control Group **THE HALF THE SHOWER SPRAYED WITH WATER.**
8. Independent Variable: **COCONUT JUICE**
9. Dependent Variable: **APPEARANCE OF GREEN SLIME [SHOULD MEASURE SOMEHOW]**
10. What should Homer's conclusion be?

COCONUT JUICE HAS NO EFFECT ON THE GROWTH OF GREEN SHOWER SLIME.

Bart believes that mice exposed to radiowaves will become extra strong (maybe he's been reading too much Radioactive Man). He decides to perform this experiment by placing 10 mice near a radio for 5 hours. He compared these 10 mice to another 10 mice that had not been exposed. His test consisted of a heavy block of wood that blocked the mouse food. he found that 8 out of 10 of the radiowaved mice were able to push the block away. 7 out of 10 of the other mice were able to do the same.



Identify the-

11. Control Group **THE 10 MICE NOT EXPOSED TO THE RADIO.**
12. Independent Variable **PRESENCE [OR NOT] OF RADIOWAVES**
13. Dependent Variable **ABILITY TO MOVE WOOD**
14. What should Bart's conclusion be? **RADIOWAVES HAVE NO EFFECT OF ABILITY OF MICE TO MOVE A BLOCK OF WOOD.**
15. How could Bart's experiment be improved?
MEASURING THE DISTANCE THEY MOVED THE WOOD, among other things...



Krusty 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 usual product. One test subject (A) is sprinkled with the original itching powder, and another test subject (B) was sprinkled with the Experimental itching powder. Subject A reported having itches for 30 minutes. Subject B reported to have itches for 45 minutes.

Identify the-

16. Control Group **PERSON SPRINKLED WITH ORIGINAL ITCHING POWDER**

17. Independent Variable **LENGTH OF TIME OF ITCHING**

18. Dependent Variable **PRESENCE OF ITCHING POWDER**

19. Explain whether the data supports the advertisements claims about its product. **ARE THE ITCHES 50% LONGER? THE NEW POWDER LASTS 15 MIN LONGER THAN THE ORIGINAL 30 MIN. $15 \div 30 = 0.5 = 50\% \dots$ SO, YES.**

Lisa is working on a science project. Her task is to answer the question: "Does Rogooti (which is a commercial hair product) affect the speed of hair growth". Her family is willing to volunteer for the experiment.



20. Describe how Lisa would perform this experiment. Identify the control group, and the independent and dependent variables in your description.

ANSWERS MIGHT BE DIFFERENT, BUT ONE WAY IS AS FOLLOWS:

LISA SHOULD DIVIDE HER FAMILY IN HALF. HALF GET NO ROGOOTI, BUT CONTINUE THEIR NORMAL HAIR ROUTINE. THE OTHER HALF CONTINUE THEIR NORMAL HAIR ROUTINE AND USE ROGOOTI. LIS MUST MEASURE HAIR LENGTH ON EVERYONE AT THE START OF THE EXPERIMENT. AFTER A MONTH ... OR SO ... SHE MEASURES HAIR LENGTH AGAIN. LISA SHOULD ENSURE ALL FAMILY MEMBERS EAT THE SAME FOODS AND GET THE SAME AMOUNT OF SLEEP, AND ... ALSO SHE'D BE BETTER OFF HAVING OTHER FAMILIES PARTICIPATE. AND, FINALLY, SHE SHOULD ACTUALLY MEASURE HAIR GROWTH RATE OF ALL FAMILY MEMBERS FOR A FEW MONTHS IN ADVANCE OF STARTING THE EXPERIMENT. [AMONG OTHER THINGS TO MAKE THIS EXPERIMENT MORE VALID AND REDUCE BIAS.

CONTROL GROUP: THE FAMILY MEMBERS NOT USING ROGOOTI

INDEPENDENT VARIABLE: ROGOOTI

DEPENDENT VARIABLE: CHANGE IN HAIR LENGTH