

Name _____

Date _____

Scientific Method Read & Write Handout

Is Green the New Clean?

Sally loved to keep her house clean. She always cleaned the kitchen counter with a cleaner that contained bleach.

One day Sally was shopping and found a green cleaner, which was environmentally friendly, in the grocery store. It did not contain bleach. Sally knew that bleach was bad for the environment, but she also liked her kitchen germ free. She wondered if the green cleaner killed as many germs as her bleach cleaner.

While doing some research, she discovered that germs were living bacteria that could not survive exposure to bleach. She remembered from reading the label on the green cleaner that it did not contain bleach and that it only contained natural ingredients. She thought the green cleaner would not kill as many bacteria as the bleach cleaner, although she hoped it would.

She swabbed her desk with a sterile q-tip and then rubbed it onto a petri dish that contained nutrient agar. Agar is a blend of nutrients and water that bacteria love.

Then she cleaned half the desk with bleach cleaner and half with green cleaner. She then re-swabbed each of those areas on the desk. She did the same with the telephone, door knob, and computer keyboard. She put all of these petri dishes, along with one that had not been swabbed with anything, into the incubator. An incubator is like a little oven that keeps the bacteria nice and warm so they can grow. She left the petri dishes in the incubator for 3 days. When she removed them, she counted the number of bacteria colonies in each petri dish.

The dish with nothing swabbed in it had no colonies. The bleach dishes had an average of 12 colonies and the green cleaner dishes had an average of 87 bacteria colonies. The 'before' dishes had an average of 1200 colonies. The bleach cleaner had killed 99% of the bacteria and the green cleaner had killed 96.75% of the bacteria. Sally decided that even though she proved her hypothesis correct, she would switch to the green cleaner. She decided she was willing to kill less of the germs in her kitchen if it meant being kinder to the environment.

1. State the problem.

2. List two things Sally learned in her research about bleach and the green cleaner.
 - a. _____
 - b. _____
3. Circle Sally's hypothesis.
4. Why do you think Sally uses sterile q-tips in her experiment?

5. Underline all of the places Sally swabs. Why so many?

6. Why do you think Sally chose these surfaces to test?

7. Box-in Sally's analyzed data.
8. What was Sally's conclusion?

9. Underline where Sally makes an ethical decision.
10. Name one way Sally could add to this experiment to make it better.

