

SAMPLE RESEARCH PAPER FOR SCIENCE FAIR
Ms. Willis

Excellent Evaporation

Science Fair Research Paper

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Ms. Willis' Class

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Background Information

Liquids are all around us. Every day we drink and eat items that contain liquids, we use liquids to clean ourselves and our belongings and liquids can even be found in the places that we would not expect, like televisions. When someone watches liquid over time, an interesting thing begins to happen. The liquid will slowly start to disappear. The formal term for the liquid disappearing is evaporation. According to Asminov, Liquids are a state of matter that will take the shape of the container that is holding it (Asminov, 2008). There are three common states of matter. These states of matter are liquid, solid and gas. To transform a liquid into a gas you would typically apply heat, however, liquids will also become a gas over time. This process is called evaporation. Evaporation is defined by Gorin as the "conversion of a liquid substance into the gaseous state" (2008). Gorin continues by explaining that liquids can evaporate at room temperature as well as when they are heated. This knowledge led the writer to wonder if liquids evaporate at different rates. After observing liquids evaporate I began to wonder what affects the evaporation of liquids.

Research question

The research question that this project focused on was: What liquid will evaporate the fastest, Kool-Aid, Coke, Apple Juice, or Orange Juice?

Comment [m1]: Create a Title Page with this information

Comment [m2]: Write background information here. Include all key words and any research you did to better understand your topic. Include the definitions of any important words that you needed to know in order to design the experiment.

Comment [m3]: Exactly from research plan.

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Hypothesis

The hypothesis of the researcher is: If the rate of evaporation is related to the thickness of the liquid then the thinner liquids, Kool-Aid and apple juice will evaporate faster than the thicker liquids, orange juice and Coca-Cola.

Comment [m4]: IF Then Format

Experimental design:

Materials Needed:

- 30 mL Orange Juice
- 30 mL Apple Juice
- 30 mL Coca-Cola
- 30 mL Kool-Aid
- measuring cup with mL markings
- kitchen timer
- digital camera
- 4 identical cups
- Sharpie
- Masking tape
- Metric ruler

Comment [m5]: Exactly from research plan. Include Materials, about, plan and schedule. Make sure that you define your independent, dependant and controlled variables.

Comment [M6]: Be thorough – Make sure that you have listed ALL the materials that you will need to complete your experiment. Include measurements – **USE THE METRIC SYSTEM** – no inch, ounce, pint, etc. . .

About the experiment:

This experiment is designed to test and compare the evaporation rate of four different types of liquid. The independent variable of this experiment is the liquid being used. The liquids being used in this experiment are Kool-Aid, Coca-Cola, Orange Juice and Apple Juice. The dependant variable is the rate of evaporation. The experiment will measure the rate that each liquid evaporates. The controls for this experiment are the location of the cups of liquid, the amount of liquid in each cup, the cup used and the

Comment [M7]: Give a BRIEF description of the experiment. This should be in paragraph form. Make sure that you include the Independent and Dependant Variables, as well as the controls for your experiment.

Comment [M8]: Independent Variable – what is changed.

Comment [M9]: Dependant Variable – what changes as a result of the changed independent variable.

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times that observations are made. These controls will insure that the experiment is measuring the change in evaporation due to the liquid used.

Comment [M10]: Controls – the variables that stay the same in an experiment. List everything you are keeping the same here.

Experiment Plan:

Comment [M11]: Detailed Step-by-step plan goes here.

1. Gather Materials
2. Label cups for each liquid
3. Place 30 mL in each cup
4. Use the sharpie to indicate the start level of the liquid
5. Start kitchen timer
6. Record initial observations
7. Record observations every 12 hours for 5 days, or until the liquid has fully evaporated.
8. After liquid has evaporated analyze data.

Schedule for Experiment:

Comment [M12]: How long do you expect the experiment to last? How often will you need to check/make observations?

This experiment will take approximately 5 days to complete depending upon the evaporation rate of the liquids. Observations and measurements will need to be made every 12 hours.

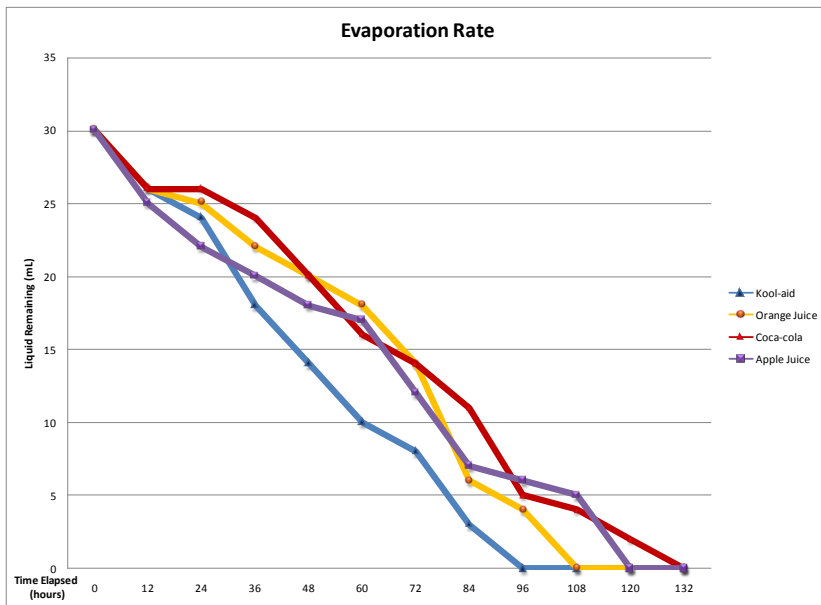
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Results/Data

During the experiment the data was recorded in the writer's log book. At each check point observations and measurements of liquid lost were recorded in a table. Pictures were taken as documentation of each observation period. The data from the log book was the entered into an excel table and a line graph was made and analyzed. The data chart and line graph are below.

Comment [m13]: Put your data here. Include how it was collected and the process used to analyze.

	Amount of liquid left in cup			
Hour	Kool-aid	Orange Juice	Coca-cola	Apple Juice
0	30	30	30	30
12	26	26	26	25
24	24	25	26	22
36	18	22	24	20
48	14	20	20	18
60	10	18	16	17
72	8	14	14	12
84	3	6	11	7
96	0	4	5	6
108	0	0	4	5
120	0	0	2	0



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Conclusion-

This was a valuable learning experience. The writer was able to design and test an experiment, and in the process learned a lot about not only the topic, but also the scientific method. The writer ran into a slight problem when the experiment was moved by a sibling and spilled. This caused the writer to restart the experiment. The writer would not change any major components of the lab experiment, but would use a different type of cup because it was so difficult to get the measurements at each checkpoint. After conducting the experiment and analyzing the data, the writer has concluded that due to the amount of residue left in each cup after the liquid evaporated, the rate of evaporation does not correspond to the density of the liquid, rather the chemical properties of the liquid. Additional experiments need to be done to determine this hypothesis.

Comment [m14]: Tells what you discovered and also includes any experimental errors, or questions that you now have after doing the experiment and anything that you would have done differently.

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Works Cited

Asimov, I. (2008). Liquids. (R. Gardner, Rev.). *The New Book of Knowledge*. Retrieved December 16, 2008, from Grolier Online <http://nbk.grolier.com/cgi-bin/article?assetid=a2017390-h>

Gorin, G. (2008). evaporation. *Grolier Multimedia Encyclopedia*. Retrieved December 16, 2008, from Grolier Online <http://gme.grolier.com/cgi-bin/article?assetid=0101030-0>