

Phenomenon

Questions

Research investigation

Science story

Thinking more

Raising Raisins

Phenomenon

DaNel and Sherrie

Scientist's Name

Basic Sciencing Journal

V4 – Average Bars with Data Points



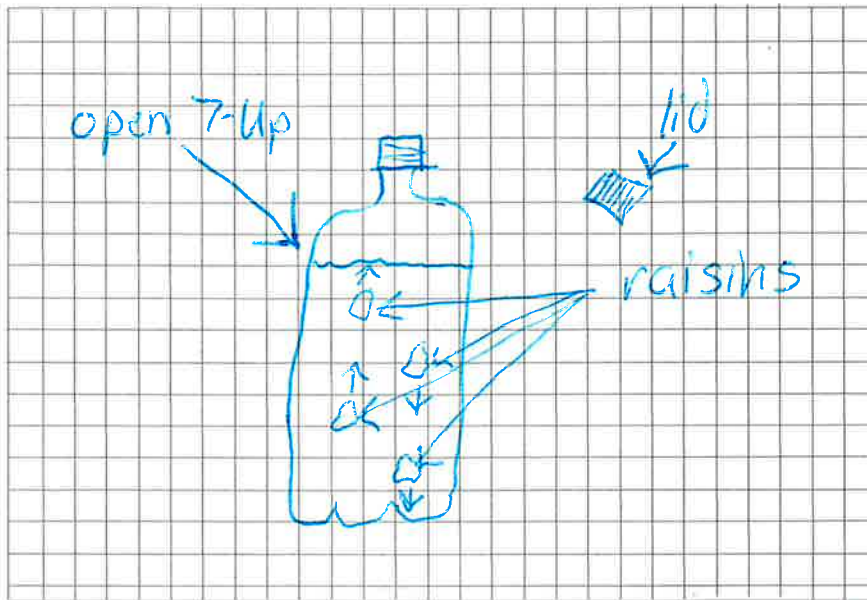
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Sherrie Dennis – STEMAZing.org

Kristin Hunter-Thomson – dataspire.org

Draw and label Phenomenon



I notice the raisins go up and down in the 7-Up.

I notice the go all the way up to the surface and then sink back down.

I notice the raisins have bubbles on them.

Questions (or rather declarative wonders)

I wonder why... I wonder if... I wonder what...

I wonder how... I wonder what would happen if...

I wonder why the raisins
Testable? float and sink

I wonder if the raisins
Testable? would do the same thing in Fanta or Pepsi or orange juice

I wonder how long they
Testable? will keep going

I wonder if the raisins
Testable? would sink and float as long in soda that is flat

I wonder what would
Testable? happen if you put the lid back on the bottle

All Materials and Equipment Available

different types of soda

meter sticks

timers

raisins

craisins

water

magnifying glass

Play to learn more – tinker and experiment with materials and equipment you have available to explore how everything works. Continue observing the phenomenon, noticing, and wondering.

I notice the raisins sometimes bump into each other

I notice the raisins go up and down pretty quickly

I notice some of the bubbles seem to pop when the raisins reach the surface

Even More Wonderings

Now I wonder why... Now I wonder if... Now I wonder what...
Now I wonder how... Now I wonder what would happen if...

Now I wonder what is

Testable? inside the bubbles

Now I wonder if the

Testable? temperature of the soda changes how long the raisins

Now I wonder if other

Testable? dried fruit would do the same thing

Brainstorm Break

What can I change that might impact how the phenomenon works? (cause) ^(soda)
type of soda, how long it has been open, temperature of soda, type of dried fruit, lid off or on

What can I measure about the phenomenon that might be different when I setup the experiment differently using one of my ideas above? (effect)
how long the raisins move how fast they go from bottom to top

What do I want to test?

Independent variable freshness of soda
Option 1 freshly opened Option 2 opened 2 hrs

Testable Question (can be answered with a claim based on evidence from a scientific experiment)

How will changing freshness of soda
independent variable (what I manipulate - cause)
affect how long raisins bob up and down
dependent variable (what I measure as the outcome - effect)

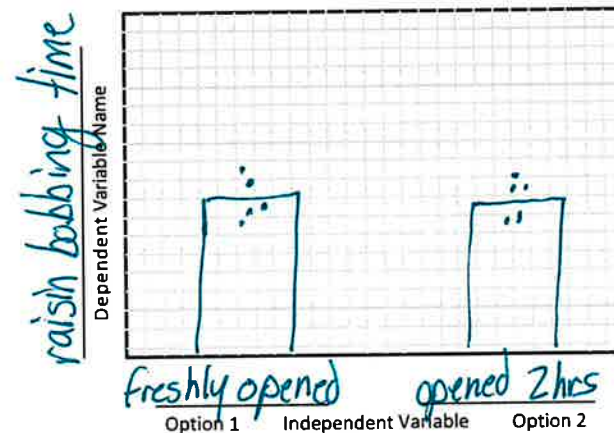
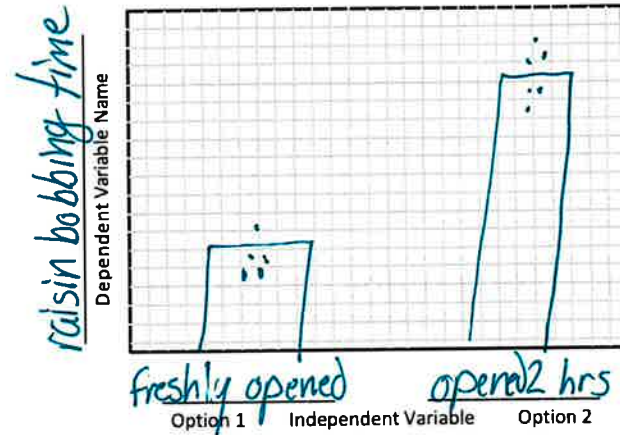
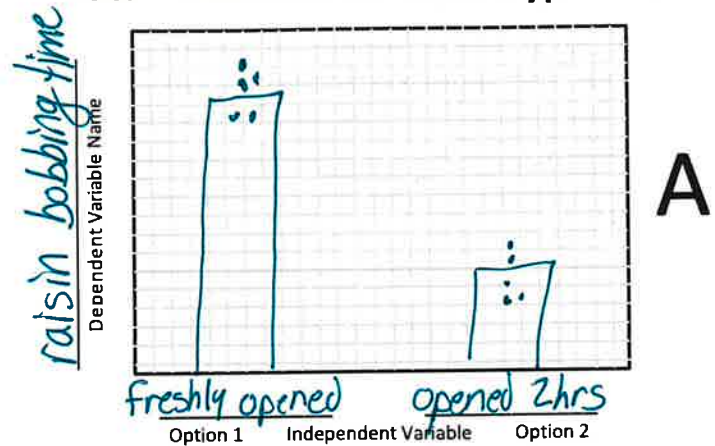
Multiple Hypotheses (consider every possible claim you might be able to make once you collect data)

Hypothesis/Prediction A: Yes, the freshly opened soda will keep the raisins bobbing longer than the opened 2hrs. soda.

Hypothesis/Prediction B: Yes, the opened 2hrs soda will keep the raisins bobbing longer than the freshly opened soda.

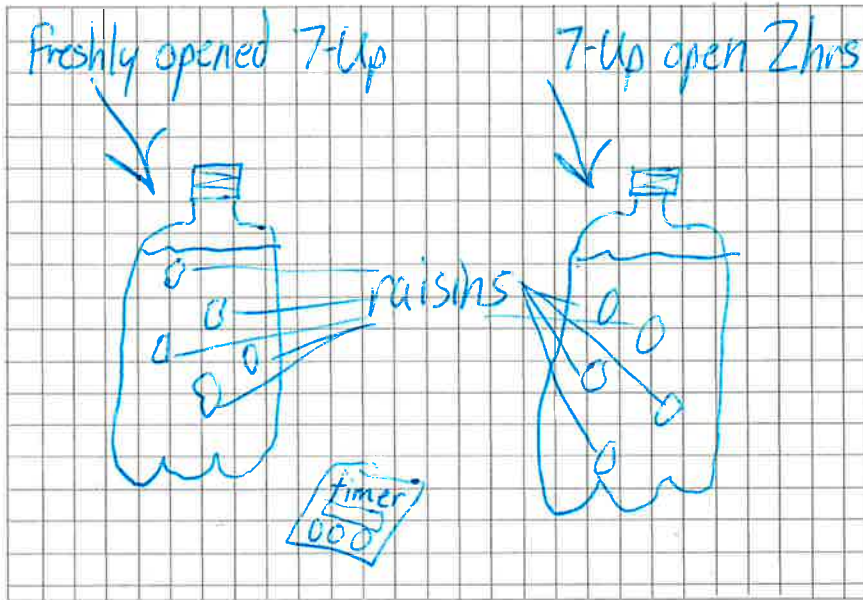
Hypothesis/Prediction C: No, they will both keep the raisins bobbing for about the same amount of time.

Data Prediction for Each Hypothesis



Research Investigation (Experiment)

Draw and label experimental setup.



Materials and Equipment List for Experiment

raisins

10 7-Ups (8oz) in plastic bottles

timer

Experimental Procedure (detailed enough to allow data collection to be repeated exactly as you collected it)

NOTE: Control Variables (all independent variables not selected for testing must be given a set value or controlled. These controlled settings must be explicitly noted in the procedure.)

Testing freshly opened 7-Up

- 1) Open up an 8oz 7-Up that is at room temperature.
- 2) Quickly put in 5 raisins, and start timer.
- 3) Stop timer when raisins stop bobbing.
- 4) Repeat 5 times.

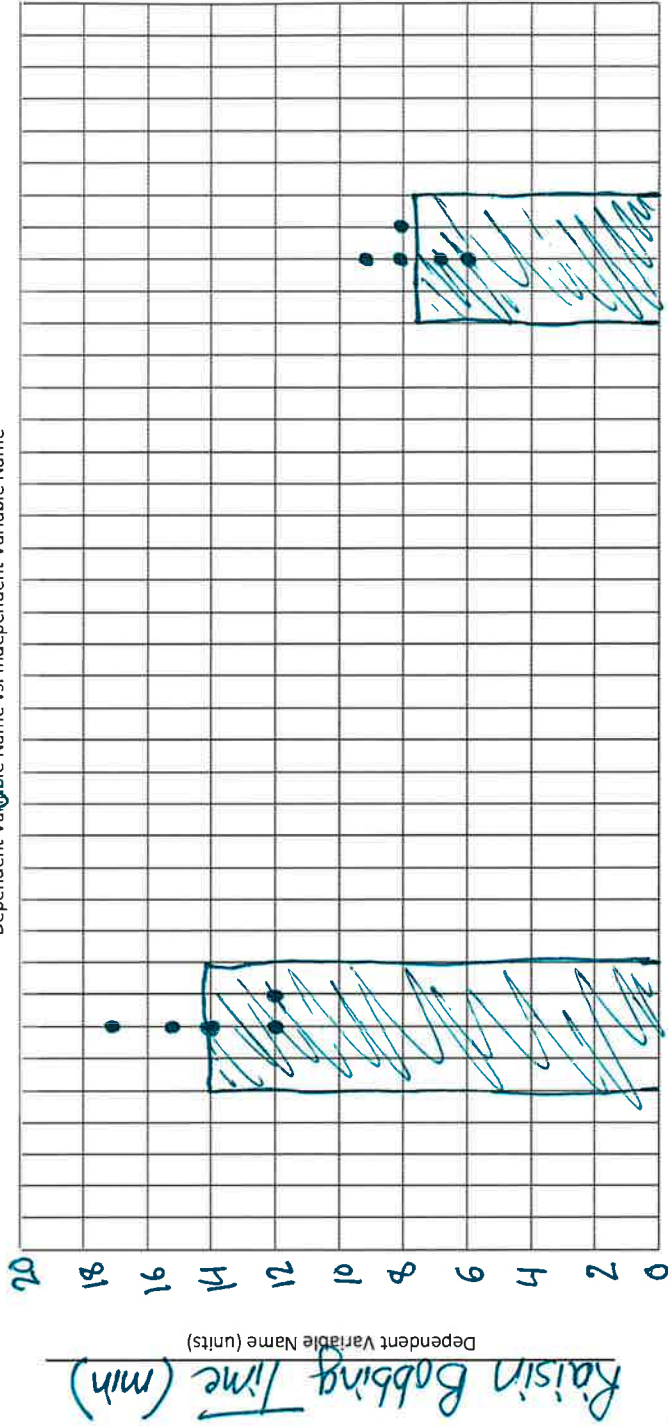
Testing open 7-Up

- 1) Open an 8oz 7-Up and let it sit open for 2hrs.
(Set an alarm so I know when 2 hours have passed.)
- 2) When alarm goes off, quickly put 5 raisins in the 7-Up, and start timer.
- 3) Stop timer when raisins stop bobbing.
- 4) Repeat 5 times.

<u>freshness of soda</u>	<u>Raisin Bobbing Time (min)</u>
Independent Variable Name (units) →	Dependent Variable Name (units)
Trial 1	freshly opened
Trial 2	opened 2 hours
Trial 3	
Trial 4	
Trial 5	
Average	

Raisin Bobbing Time vs. Soda Freshness

Dependent Variable Name vs. Independent Variable Name



freshly opened

Option 1

opened 2 hrs

Option 2

Soda Freshness

Independent Variable (units)

Data Observations (What do you notice as you look at the raw data collected in the data table and at the graphical representation of the data?)

The freshly opened soda seems to last longer.
All of the freshly opened data is between
12 min to 17 min. All the 2 hrs opened
data is between 6 min to 9 min. Each
has two data points that are the same.
Freshly opened has two data points at 12 min.
2 hrs opened has two data points at 8 min.

Data Talk (Notes from peer discussion about data observations, claim, evidence, and reasoning.)

Sherrie noticed the longest 2 hrs opened - 9 min -
was 3 minutes less than the shortest freshly
opened data point - 12 min.

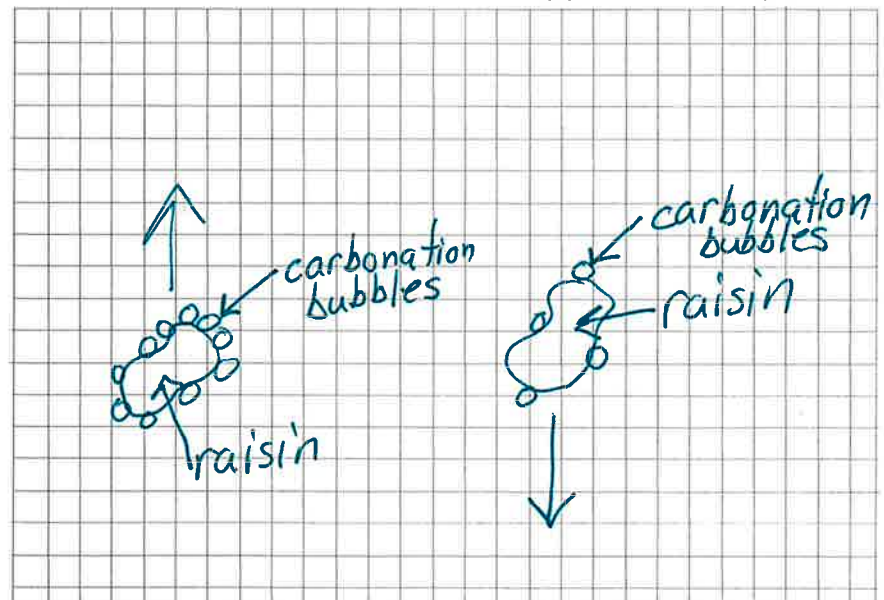
Science Story (Using Claim, Evidence, and Reasoning, share the story the data tells and the science explains.)

2. Claim (answer to testable question, should either be one of your hypotheses or a new claim you had not considered) The freshly opened soda keeps the raisins bobbing longer than soda that has been open for 2 hrs.

1. Evidence (cite data from the experiment to support the claim) The freshly opened soda keeps raisins bobbing from 12-17 min while the 2 hrs opened lasts from 6-9 min. These ranges don't overlap and the freshly opened is at least 3 minutes longer than the 2 hrs opened.

3. Reasoning (connect evidence to claim using scientific principles and rules) Soda freshly opened is more carbonated than soda that has been open for 2 hrs. The bubbles on the raisins from the carbonation are what keep them bobbing. As the carbonation runs out, the raisins eventually stop bobbing. Because the soda that was open for 2 hours has already lost some carbonation it doesn't last as long.

Drawing to Explain Reasoning (Draw a model with labels to show what happens and why.)



Thinking more...

Now I wonder why... Now I wonder if... Now I wonder what...

Now I wonder how... Now I wonder what would happen if...

Now I wonder if sparkling
Testable? water works the same
way.

Now I wonder why the
Testable? sky is blue.

Now I wonder does Sherrie
Testable? want to be my friend.

Now I wonder _____
Testable? _____

Now I wonder _____
Testable? _____