

PROBLEM

How does the density of differing sugar water solutions affect the weight of rock candy?

HYPOTHESIS

When four cups of sugar is added to one cup of water, the rock candy crystal will become the heaviest.

MATERIALS

- 10 Cups of sugar
- 4 Glasses (All the same size. This experiment uses glasses that are all about a pint)
- 4 Cups of water
- 4 Metal washers
- 1 Mini scale (Accuracy to .00g)
- Stick to secure string and washer (upholding item)
- 4 Pieces of string
- 1 Extra glass
- Spoon/mixing tool
- Stove
- 4 Paper towels
- Pot and lid
- Scissors

** Materials listed are for one set of data. For the higher ratio solutions, one batch makes enough solutions for both sets.

VARIABLES

Control:

The water in each solution remains the same.

Independent Variable:

The amount of sugar added to the solution.

Dependent Variable:

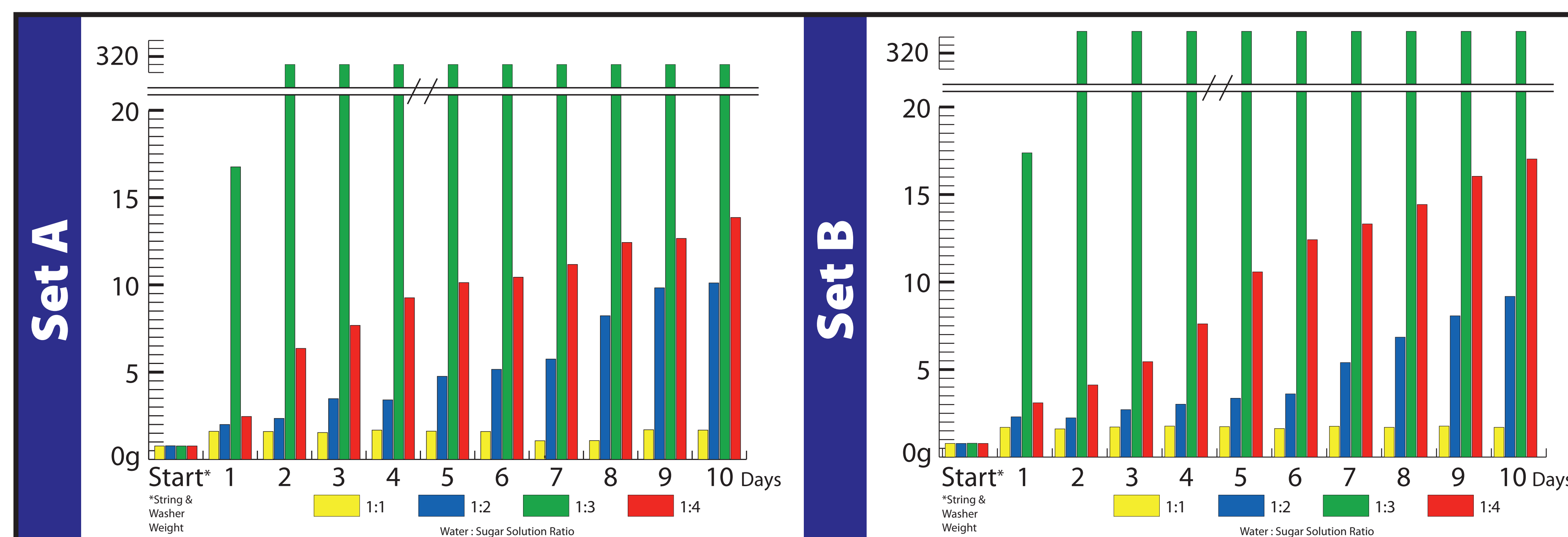
The weight of the sugar crystals.

Crystal Growing:

How the Ratio of Sugar to Water Affects Crystal Growth
or else:

"Oh, man, there is sugar everywhere. Everything is sticky!"

GRAPH



Inspiration:

The simple inherit folly, but the prudent are crowned with knowledge. - **Proverbs 14:18**

PROCEDURE

1. Attach washers to strings
2. Wet string and washer with hot water (for cleansing)
3. Attach strings to upholding item
4. Coat strings and washers with sugar and place in the extra glass to dry
5. Prepare the four, pint glasses and paper towels, cutting a hole in the center for the string to pass through.
6. Boil one cup of water in the pot. Make sure to put on the lid.
7. Once boiling, add one cups of sugar and mix with a spoon, until sugar is dissolved.
8. Let the water cool for 10 minutes and pour 1 cup into pint glass
9. Put paper towel onto the glass, and slip in the string and washer, using the upholding item.
10. Repeat steps six through nine using two, three, and four cups of sugar, instead of one (referencing step 7)
11. Record the weight of the crystals each day at the same time by removing the string from the upholding item and placing on the mini scale. Use a bowl to hold the rock candy. Zero the scale between measurements with the tare button.

RESULTS

1:1 - Did not grow any crystals. Any fluctuation in weight is due to sugar water in and on the string.

1:2 - Grew a few crystals on the string, top of the solution, and on the bottom of the glass.

1:3 - After day two the crystals on the bottom fused with the crystals on the string, making it impossible to measure by itself. It continued to grow into a near solid mass of crystal. The final weights recorded are minus the weight of the glass.

1:4 - Grew big crystals on the string and on the top of the solution and bottom of the glass. However, this did not fuse with the bottom, as the 1:3 ratio did. The mass at the bottom did grow fairly large.

CONCLUSION

Our hypothesis was incorrect. We have determined that the density of different sugar water solutions affects the growth of rock candy greatly. However, the 1:3 ratio solution became the heaviest the quickest.