**Sugar in our drinks** Name: Date: Per.:

**Step 1:** On your own, **estimate** the number of sugar cubes worth of sugar found in each of the 27 drinks!

**Step 2:** In pairs, **calculate** the actual number of sugar cubes contained in your drink, and show your work (with units). Trade drinks with another pair, and do the same calculation for your new drink. Afterward, compare answers to make sure all of the calculations are correct.

**Step 3:** Once both pairs agree on the answers, **display** the correct number of sugar cubes into the plastic cup next to the drink so others can see your results, and write that number of sugar cubes in the **data table** on the board so the class can add your answers to their own paper.

**Step 4**: In pairs, **calculate** the **concentration** of sugar (grams per 100 milliliters or g/100mL), switch with another pair, and do the same calculation for the new drink. Again, compare answers to make sure all of the calculations are correct, and then write the answer on the board.

*\*\*\*At this point, groups that complete step 4 the fastest may choose another drink to work on while others catch up, or help others struggling with their calculations.\*\*\**

**Step 5**: Copy the data from the board for all of the other drinks, and look at the amounts of sugar placed in each cup.

**Step 6:** **Calculate your Percent Error (%)** for each drink to see how close (or far) your estimates were to the actual values. Having a negative percent error means your guess was too high, and having a positive percent error means your guess was too low.

**Step 7: Explain** why comparing percent errors for all of the drinks is more useful than just comparing the difference between your guess and the actual number of sugar cubes in each drink. (Hint: think about a guess being off by 1 sugar cube for the cranberry juice, and a guess being off by 1 sugar cube for the Powerade.)

**Step 8: Analyze** your percent error values. Which 3 drinks had the closest estimates (the smallest numbers, closest to zero)? Which 3 did you over-estimate the most (the largest negative numbers)? Which 3 did you under-estimate the most (the largest positive numbers)? Try to identify any similarities or patterns you notice about the kinds of drinks with your best and worst estimates.

**Step 9: Analyze** the concentrations of sugar among the different drinks. Explain why it is important to compare the **concentrations** of sugar in drinks rather than just the total **amount** of sugar in drinks? (Hint: again, consider the limitations of comparing drinks of different sizes). Which 3 drinks had the highest and lowest concentrations? What concentration was the most common? What are some drinks in this activity that you never would have thought actually have the same concentrations of sugar?

**Step 10: Reflect** on this activity in writing. **Please explain all of your answers to these guiding questions:** How did you feel about this activity? What did you learn? What was surprising? How might this knowledge affect your beverage choices in the future? What new questions and thoughts do you have now about sugar in drinks? What is still confusing or difficult for you? How could this activity be improved? Etc.