

OUR GOALS

Using an inquiry-based approach, we aim to

- facilitate student-driven learning,
- integrate mathematics into literacy and science, and
- encourage students to approach problems from many angles.

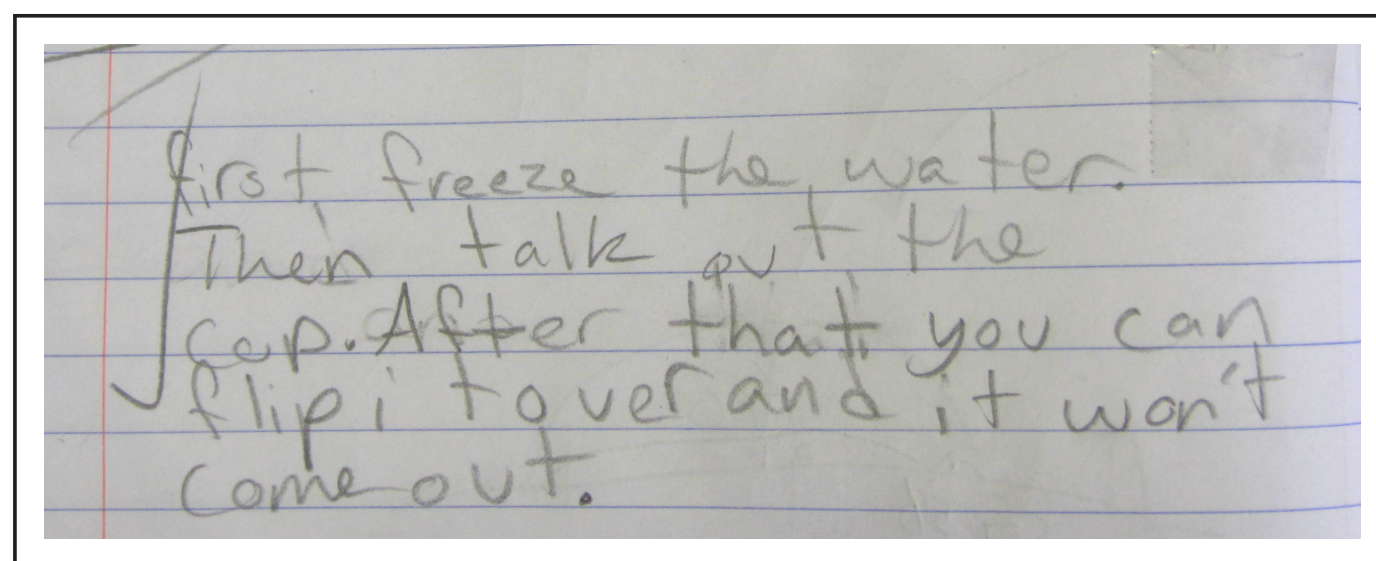
PROBLEM-A-PALOOZA

To stimulate creative thinking and problem solving, both grade levels participate in a bi-weekly problem solving party called “Problem-a-palooza!” Fellow and teachers work together to develop problem sets that help students think differently and apply their existing knowledge in unusual ways. Students have 30 minutes to solve and explain their thinking for any or all of the problems. In return, students not only gain valuable knowledge, but also they have the opportunity to win prizes. The problem solving is fierce and everyone is engaged.

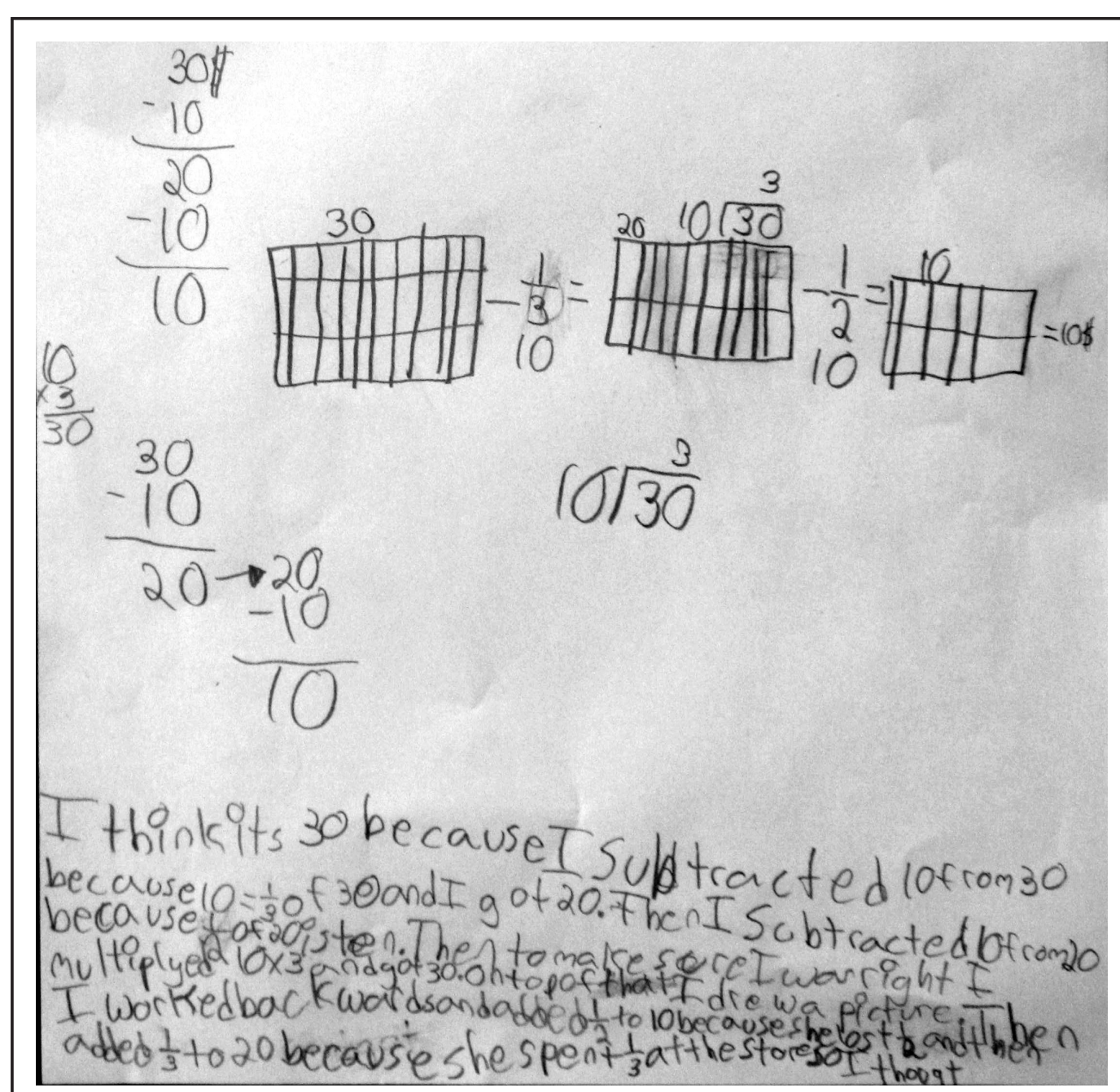
Half the fun is creating a carnival-like atmosphere. Students must solve problems individually, but they often build camaraderie as the problems are solved; if many people have solved a particular problem, more students are likely to try that problem.

The focus of Problem-a-Palooza! is to develop students’ ability to think about a variety of problems, and clearly articulate their thinking. Students must write up a complete and concise solution to each problem. Problem sets include classic logic problems, problems to make students think outside the box, and curriculum related problems.

How can you turn a full cup of water upside down without spilling any of the water? You may not use a lid.



Julie spent one third of her birthday money, then lost half of the rest. She now has \$10 left. How much money did she get for her birthday? Explain your thinking.



Rubric that students use to self-score their problem write-ups.

	1 Novice	2 Apprentice	3 Practitioner	4 Expert
Strategy	I do not know how to set up the problem, or My work does not show my strategy, or My strategy didn't work.	I did not apply my strategy to the whole problem. I did not check my work.	I picked an efficient strategy and used it throughout the whole problem. I solved the problem through skill, not luck.	I used at least two different strategies to solve and check my work. At least one of my strategies is efficient. I solved the problem through skill, not luck.
Explanation	I did not explain my answer.	I explained my answer in one of the three ways: pictures, words and numbers. I explained my answer, but it's not very clear and/or readable.	I explained my answer in two of the three ways: pictures, words and numbers. I explained most of my steps. I used accurate mathematical vocabulary. I labeled my answer appropriately.	I explained my answer in all three ways: pictures, words and numbers. My answer is very readable and my steps are easy to understand. I used accurate mathematical vocabulary. I labeled my answer appropriately.
Reflection	There is no reflection.	My reflection lacks detail. My reflection is not connected to anything else.	My reflection is detailed and connected to other problems I've solved or to what I already know. I explained why I made the problem solving decisions I made.	My reflection is very detailed and connects the problem to other problems I've solved as well as to what I already know. I explained why I made the problem solving choices I made and provided evidence of how I did it.

Developed using Primary Problem of the Week Scoring Rubric for Students, Drexel University.

Occasionally, students write up the solution to a single problem and focus on the quality of their strategy, their explanation, and possibly a reflection. Then students assign themselves grades in each of the three categories. Their total score corresponds with the number of tickets they earn.

PROJECT BASED LEARNING

Students used knowledge of mixtures and solutions to create the perfect recipe for Original Soda Flavors. The students were involved in the creative process from the beginning, first brainstorming a list of flavors and then creating three different trial recipes per team. Flavors were tested on the student market and promoted through packaging design and persuasive commercials written, acted, and directed by students.

The soda project is an excellent example of STEAM—STEM plus Arts—being implemented in the classroom.

Phase I: Brainstorming



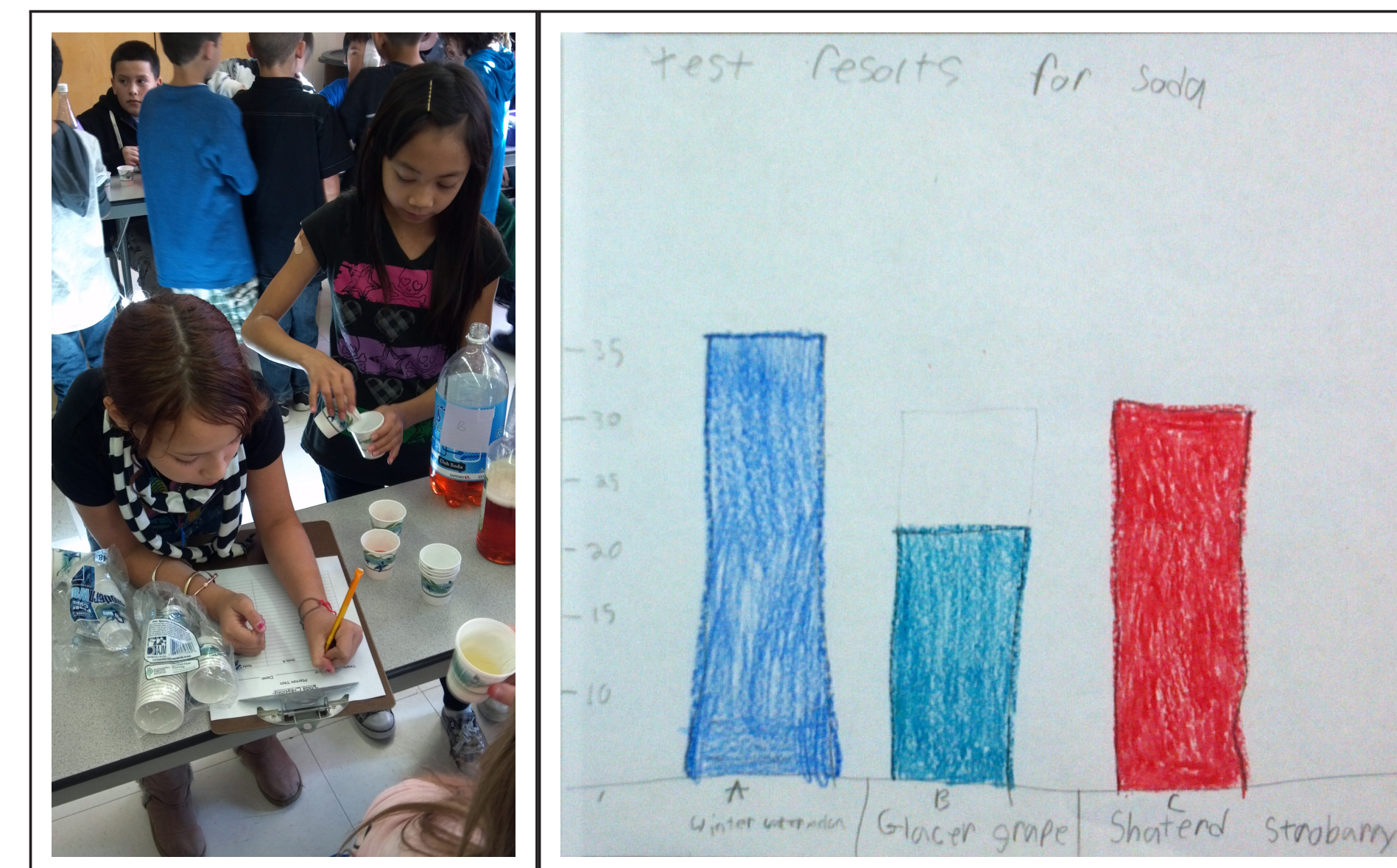
Students brainstormed a list of flavors, including watermelon, strawberry-kiwi, lemon, lime, chipotle pepper, bacon, and pickle juice. Teams of three students then identified flavor combinations they wanted to try.

Phase II: The Test Kitchen



Students tested different different flavor combinations to create three test recipes. This involved measurement as students used syringes to transport flavorings and calculated the amount of club soda they needed to add to achieve exactly 250 mL.

Phase III: Market Research



Next, students doubled their perfected recipes to make 500 mL of soda for market research. Students tested their products on third, fourth, and fifth graders to determine which of their three test recipes to mass produce.

Phase IV: Marketing



Finally, students designed and created packaging, wrote jingles, and acted and directed their own commercials to promote their new brand of soda.