

## Buying Drinks

Last year when I went to Kings Dominion amusement park in Virginia, the menu sign below caught my eye so I took a picture of it. I am frugal. I will usually just ask for a free cup of ice water. My family, on the other hand, enjoys the sugary goodness of a soda.

There are four options for purchasing soda in the image:

- 20 oz. cup for \$4.29
- 30 oz. cup for \$4.69
- A green refillable mug for \$14.99 (free refills on day of purchase, \$1 refills on other days)
- An orange \$24.99 mug that includes unlimited free refills.



1. Which beverage option would you choose (green mug, orange mug, 20 oz., or 30 oz.) and why? The mugs contain 24-25 oz.
2. Complete the following table to compare the overall cost of the purchase options.

	2 drinks in one day	4 drinks in two days (2 each day)	6 drinks in two days (3 each day)
20 oz. (\$4.29 each)			
30 oz. (\$4.69 each)			
Green mug (\$14.99 + \$1 refill in future)			
Orange mug (\$24.99 unlimited refills)			

3. Either by hand or by using Desmos, create a graph of your data from the chart above. If you use Desmos, fill in the rest of the url that shows your graph to me.

<https://www.desmos.com/>\_\_\_\_\_

(Note: the equation for the green mug will be flawed since you do not have values for the number of drinks consumed during the day. Assume that **all** refills cost \$1 for the purposes of the equation/graph).

4. **Extension question** (optional): Supply the equations for your data here.

5. When is buying a 20 oz. drink the 'best buy'?

6. When is buying an orange (\$24.99 unlimited) mug a good idea?

7. Should you ever buy a green mug?

8. Are there any advantages to buying an orange mug? Are there any disadvantages?  
Advantages:

Disadvantages:

**Bonus:** How many 16.9 ounce bottles of DaSani are needed to have a gallon of water? There are 128 ounces in a gallon? How much would it cost to buy this water at the \$3.99 per 16.9 ounce rate?

<http://www.foodservice.com/articles/food-cost/costing-out-soda-free-refills-in-foodservice-how-to-price-soda/>  
<http://www.coca-colaproductfacts.com/en/coca-cola-products/coca-cola/>