I was doing some shopping online and noticed that potato chips come in a lot of different sized bags. I didn’t even know they have 50 ounce bags! That is a lot of chips. Here are five popular options I found and their costs.

<table>
<thead>
<tr>
<th>Weight</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.13 oz (pack of 12)</td>
<td>$4.43</td>
</tr>
<tr>
<td>8.5 oz</td>
<td>$2.79</td>
</tr>
<tr>
<td>10.5 oz</td>
<td>$2.50</td>
</tr>
<tr>
<td>15.75 oz</td>
<td>$3.78</td>
</tr>
<tr>
<td>50 oz</td>
<td>$15.50</td>
</tr>
</tbody>
</table>

I wondered which one is the best buy. What do you think?

**Extra:** Often the largest size of a product is the best buy. If it turns out not to be, what’s the most they could charge for a 50 ounce bag and have it be the best buy?

**MATH STANDARDS ALIGNMENT**

*Grade 6: Ratios & Proportional Relationships*

Understand ratio concepts and use ratio reasoning to solve problems.

*Grade 7: Ratios & Proportional Relationships*

Analyze proportional relationships and use them to solve real-world and mathematical problems.

**Mathematical Practices**

1. Make sense of problems and persevere in solving them.
2. Construct viable arguments and critique the reasoning of others.
3. **Personal Finance Big Ideas:**
   - What is Money, Cost/Benefit Analysis
4. **Jump$tart Standard:**
   - Savings and Investing
     - Standard 3: Evaluate investment alternatives
METHOD 1: COST PER 50 OUNCES
I noticed that the smallest bags only come in a 12-pack, so I divided the cost of the whole pack by 12 to figure out how much one bag would cost.

\[ 4.43 \div 12 = 0.37 \]

So the smallest bags cost $0.37 each.

I decided to figure out how much each bag would cost if it were sized up to 50 ounces. The cheapest one will be the best deal.

To do this, I figured out how many bags of each it would take to make up 50 ounces, then multiplied that number of bags by the cost of that size bag.

<table>
<thead>
<tr>
<th>Weight of Bag</th>
<th>Bags to Make 50 ounces</th>
<th>Cost per bag</th>
<th>Cost for 50 ounces</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.13</td>
<td>50/1.13 = 44.25</td>
<td>$0.37</td>
<td>44.25 x $0.37 = $16.37</td>
</tr>
<tr>
<td>8.5</td>
<td>50/8.5 = 5.88</td>
<td>$2.79</td>
<td>5.88 x $2.79 = $16.41</td>
</tr>
<tr>
<td>10.5</td>
<td>50/10.5 = 4.76</td>
<td>$2.50</td>
<td>4.76 x $2.50 = $11.90</td>
</tr>
<tr>
<td>15.75</td>
<td>50/15.75 = 3.17</td>
<td>$3.78</td>
<td>3.17 x $3.78 = $11.98</td>
</tr>
<tr>
<td>50</td>
<td>—</td>
<td>—</td>
<td>$15.50</td>
</tr>
</tbody>
</table>

The 10.5 ounce bag is 8 cents cheaper for 50 ounces than the 15.75 ounce bag, so the 10.5 ounce bag is cheapest.

METHOD 2: COST PER OUNCE
I noticed that the smallest bags only come in a 12-pack, so I multiplied the weight of one bag by 12 to figure out how many ounces you would get in the whole pack.

\[ 1.13 \times 12 = 13.56 \]

So the smallest one really is 13.56 ounces of chips. I wrote out a new list, in order by size, and put that one where it belonged.

8.5 oz for $2.79
10.5 oz for $2.50
13.56 oz for $4.43
15.75 oz for $3.78
50 oz for $14.95

I then divided each of the costs by the number of ounces to figure out how much each size bag cost per ounce.

\[ \frac{2.79}{8.5 \text{ oz}} = 0.328 \text{ per ounce} \]
\[ \frac{2.50}{10.5 \text{ oz}} = 0.238 \text{ per ounce} \]
\[ \frac{4.43}{13.56 \text{ oz}} = 0.327 \text{ per ounce} \]
\[ \frac{3.78}{15.75 \text{ oz}} = 0.24 \text{ per ounce} \]
\[ \frac{14.95}{50 \text{ oz}} = 0.31 \text{ per ounce} \]
METHOD 3: DIRECT COMPARISON

I noticed that the smallest bags only come in a 12-pack, so I multiplied the weight of one bag by 12 to figure out how many ounces you would get in the whole pack.

\[1.13 \times 12 = 13.56\]

So the smallest one really is 13.56 ounces of chips. I wrote out a new list, in order by size, and put that one where it belonged.

8.5 oz for $2.79
10.5 oz for $2.50
13.56 oz for $4.43
15.75 oz for $3.78
50 oz for $14.95

I can see from the list that the 10.5 ounce bag costs less than the 8.5 ounce bag, so the 8.5 ounce bag can’t be the best buy.

Also, the 13.56 ounce bag costs more than the 15.75 ounce bag, so I can eliminate the 13.56 ounce bag.

8.5 oz for $2.79
10.5 oz for $2.50
15.75 oz for $3.78
50 oz for $14.95

I could see that the 15.75 ounce bag is 1.5 times as big as the 10.5 ounce bag. But 1.5 times the cost of the 10.5 ounce bag is $3.75, which is a little bit less than $13.78. So the 10.5 ounce bag is a better deal.

Now I have to figure out if it’s a better deal than the 50 ounce bag. I didn’t see any easy way to do that, so I figured out how much each one cost per ounce.

\[
\frac{$2.50}{10.5 \text{ oz}} = $0.238 \text{ per ounce}
\]
\[
\frac{$14.95}{50 \text{ oz}} = $0.31 \text{ per ounce}
\]

The 10.5 ounce bag is cheaper per ounce, so it’s the best buy.

Extra: For the 5 lb pack to be the best value, it only has to be one cent less than the 5 oz would cost if you bought 16 bars. To solve, we multiplied the cost of the 5 oz bars times 16 (80 oz) to get $13.60. One cent less than $13.60 is $13.59. Therefore, the 5 lb pack would need to cost a maximum of $13.59 if it has to be the best value.

For the 50 ounce bag to be cheapest, it would need to cost less per ounce than the 10.5 ounce bag. For example, if we make it $0.23 per ounce, it would be cheaper. For the whole 50 ounces, that would be $11.50. That would make it the best buy.