At a local doughnut shop, the prices for doughnuts are as following:

<table>
<thead>
<tr>
<th>1 Single Doughnut</th>
<th>6 Doughnuts</th>
<th>12 Doughnuts</th>
<th>24 Doughnuts</th>
<th>60 Doughnuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.50</td>
<td>$2.50</td>
<td>$4.50</td>
<td>$9.00</td>
<td>$20.00</td>
</tr>
</tbody>
</table>

1. How much would it cost to buy 18 doughnuts?
   a. Is there more than one possible price? If so, how would you be careful to when you were ordering to make sure you spent the least amount?

2. How much do you save when you buy 60 doughnuts as compared to buying 60 single doughnuts?

MATH STANDARDS ALIGNMENT
Apply properties of operations as strategies to multiply and divide.

Personal Finance Big Ideas:
Scarcity, What is Money

METHOD 1: MAKE A TABLE
1. First I wanted to figure out how much it would cost to buy 18 doughnuts. Looking at the table I realized I could make 18 a couple ways. I could buy 18 at the “1 Single Doughnut Price” or since 3 x 6 = 18, I could buy 18 by buying 3 groups of 6. Or since 18 = 12 + 6, I could buy 6 doughnuts and 12 doughnuts. It was a lot to keep track of, so I made a table.

<table>
<thead>
<tr>
<th>How I made 18 doughnuts</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 single doughnuts</td>
<td>18 ($0.50) = $9</td>
</tr>
<tr>
<td>3 groups of 6 doughnuts</td>
<td>3 ($2.50) = $7.50</td>
</tr>
<tr>
<td>I group of 12 and 1 group of 6 doughnuts</td>
<td>$4.50 + $2.50 = $7</td>
</tr>
</tbody>
</table>

I can see that there’s more than one way to buy 18 doughnuts and they don’t all have the same price! The cheapest way to buy them is to buy 1 group of 12 doughnuts for $4.50 and one group of 6 doughnuts for $2.50 for a total of $7.

2. From part 1, I can see that the pricing changes as I buy more doughnuts. If I were to buy 60 doughnuts all at once, it would be $20. If I bought 60 single doughnuts at the “1 single doughnut” price of $0.50, it would be $30. I would save $10 by buying all 60 at the “60 doughnut” price.

METHOD 2
1. I want to buy 18 doughnuts. Looking at the table, I can see that 1 doughnut is $0.50, or 50 cents. So, I can easily find the price of 2 doughnuts and keep doubling the number of doughnuts and the price until I get to 18 or close:

   1 doughnut → $0.50
   2 doughnuts → $1.00
   4 doughnuts → $2.00
   8 doughnuts → $4.00
   16 doughnuts → $8.00
If I double again, I am going to get way above 18 (32 is too big!). But, I know I only need 2 more doughnuts, and I know the price of 2 doughnuts if $1.00, so I can just add that and see:

18 doughnuts → $9.00

Now, I can make 18 doughnuts other ways too. Looking at the pricing chart, I can see that 6 doughnuts are $2.50. So:

6 doughnuts → $2.50
12 doughnuts → $5.00
18 doughnuts → $7.50

Now I can also make 18 doughnuts by adding 12 doughnuts and 6 doughnuts:

12 doughnuts are $4.50 and 6 doughnuts are $2.50, so $4.50 + $2.50 = $7.

There is more than one way to pay for 18 doughnuts and the least expensive way to do it is to buy 12 and 6 doughnuts for $7.

2. To find the price of 60 doughnuts if I bought them as singles, I could use my calculations from above and alter them slightly:

1 doughnut → $0.50
2 doughnuts → $1.00
4 doughnuts → $2.00
8 doughnuts → $4.00
10 doughnuts → $5.00
20 doughnuts → $10.00
40 doughnuts → $20.00
50 doughnuts → $25.00
60 doughnuts → $30.00

Here, instead of doubling again, I would find the price of 10 doughnuts by adding 2 more here. Then once I had 10, I could get to 60 easily by doubling and adding 10s.

1 doughnut → $0.50
2 doughnuts → $1.00
4 doughnuts → $2.00
8 doughnuts → $4.00
10 doughnuts → $5.00
20 doughnuts → $10.00
40 doughnuts → $20.00
50 doughnuts → $25.00
60 doughnuts → $30.00

So 60 doughnuts bought as singles would be $30. I can see that is more expensive than buying them at the “60 doughnut” price of $20.00. Since $30.00 - $20.00 = $10.00, I can see that it would save me $10 to buy the doughnuts at the “60 doughnut” price.