Partial Groups Problem Situations - Division
1. Solve each problem with direct modeling. Describe your reasoning.
   a. A punch recipe calls for 2 cups of sugar. How many batches can I make with 6 cups of sugar?
   b. A punch recipe calls for $\frac{1}{2}$ cup of sugar. How many batches can I make with 6 cups of sugar?
   c. A punch recipe calls for $\frac{1}{2}$ cup of sugar. How many batches can I make with $\frac{3}{4}$ cup of sugar?
   d. A punch recipe calls for $\frac{1}{2}$ cup of sugar. How much of a batch can I make with $\frac{3}{8}$ cup of sugar?
2. Complete the following table for each word problem.

<table>
<thead>
<tr>
<th>Word Problem</th>
<th>Number of Groups</th>
<th>Amount per Group</th>
<th>Total</th>
<th>Possible Equation(s)</th>
<th>Problem Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A punch recipe calls for 2 cups of sugar. How many batches can I make with 6 cups of sugar?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A punch recipe calls for $\frac{1}{2}$ cup of sugar. How many batches can I make with 6 cups of sugar?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A punch recipe calls for $\frac{1}{2}$ cup of sugar. How many batches can I make with $\frac{3}{4}$ cup of sugar?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A punch recipe calls for $\frac{1}{2}$ cup of sugar. How much of a batch can I make with $\frac{3}{8}$ cup of sugar?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The last two problems are Partial Groups problems. A Partial Groups problem is one in which the number of groups is not a whole number. A Multiple Groups problem is one in which there is a whole number of groups and a fractional amount in each group where the fraction is not equal to a whole number. An Equal Sharing problem is one type of Multiple Group problem.
   a. I have 6 cups of sugar. I have enough sugar to make a double batch of punch. How much sugar is needed for one batch?

   b. I have 6 cups of sugar. I have enough sugar to make \( \frac{3}{4} \) of a batch of punch. How much sugar is needed for a full batch?

   c. I have \( \frac{3}{8} \) cup of sugar. I have enough sugar to make \( \frac{3}{4} \) of a batch of punch. How much sugar is needed for a full batch?

   d. I have \( \frac{1}{2} \) cup of sugar. I have enough sugar to make \( \frac{3}{4} \) of a batch of punch. How much sugar is needed for a full batch?
4. Complete the following table for each word problem.

<table>
<thead>
<tr>
<th>Word Problem</th>
<th>Number of Groups</th>
<th>Amount per Group</th>
<th>Total</th>
<th>Possible Equation(s)</th>
<th>Problem Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have 6 cups of sugar. I have enough sugar to make a double batch of punch. How much sugar is needed for one batch?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have 6 cups of sugar. I have enough sugar to make (\frac{3}{4}) of a batch of punch. How much sugar is needed for a full batch?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have (\frac{3}{8}) cup of sugar. I have enough sugar to make (\frac{3}{4}) of a batch of punch. How much sugar is needed for a full batch?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have (\frac{1}{2}) cup of sugar. I have enough sugar to make (\frac{3}{4}) of a batch of punch. How much sugar is needed for a full batch?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Note: The last two problems are Partial Groups problems. A Partial Groups problem is one in which the number of groups is not a whole number. A Multiple Groups problem is one in which there is a whole number of groups and a fractional amount in each group where the fraction is not equal to a whole number. An Equal Sharing problem is one type of Multiple Group problem.

5. Select one problem from page 1 or 3 and use the problem to make sense of the traditional algorithm for dividing fractions.