II. Darin wants to continue his study of the proportion of 30-milligram parts found to be defective in chapter 12. This study found 5 of 50 parts were defective. This data and an additional 9 samples are summarized below. Construct a p chart for this data. Do not use the finite correction factor.

<table>
<thead>
<tr>
<th>Date</th>
<th>1/3</th>
<th>1/4</th>
<th>1/5</th>
<th>1/6</th>
<th>1/7</th>
<th>1/10</th>
<th>1/11</th>
<th>1/12</th>
<th>1/13</th>
<th>1/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample #</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Defects</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Defects Proportion</td>
<td>.10</td>
<td>.08</td>
<td>.12</td>
<td>.06</td>
<td>.10</td>
<td>.08</td>
<td>.14</td>
<td>.08</td>
<td>.06</td>
<td>.14</td>
</tr>
</tbody>
</table>

\[
p = \frac{\text{total defects}}{\text{total sampled}}
\]

\[
UCL \text{ and } LCL = \bar{p} \pm 3 \sqrt{\frac{\bar{p}(1-\bar{p})}{n}}
\]

\[
\bar{p} = \frac{\text{total defects}}{\text{total sampled}} = \frac{48}{500} = .096
\]

\[
UCL \text{ and } LCL = .096 \pm 3 \sqrt{.096(1-.096)}
\]

\[
=.096 \pm 3(.04166)
\]

\[
=.096 \pm .125
\]

\[
-.029 \leftrightarrow .221
\]

-.029 is rounded to zero

**Proportion of Defects - The P Chart**

**Defective 30-Milligram Parts**

UCL is .221

\( \bar{p} \) is .096

LCL is 0

Sample Number