Consider the population data in the table.

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>6</th>
<th>12</th>
<th>18</th>
<th>24</th>
<th>30</th>
<th>36</th>
<th>42</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pop</td>
<td>12000</td>
<td>10000</td>
<td>8000</td>
<td>10000</td>
<td>12000</td>
<td>10000</td>
<td>8000</td>
<td>10000</td>
<td>12000</td>
</tr>
</tbody>
</table>

Determine a sine function for the data in the table.

\[ y = a \sin(b(x-h)) + k \]

\[ A = 2000 \]

\[ b = \frac{2\pi}{P} = \frac{\pi}{12} \]

\[ P = 24 - 0 = 24 \]

\[ h = 18 \]

\[ k = 10000 \]

\[ y = 2000 \sin \left( \frac{\pi}{12} (x-18) \right) + 10000 \]