Inverse of Exponential Functions

**Goal:** To take the inverse of exponential functions. We will examine the specific case of the exponential function base 2:

\[ y = 2^x = f(x). \]

**Game:** I give you the \( y \) value of this function; you determine which \( x \) value would produce the \( y \) value.

Ex. If \( y = 4 \), what does \( x \) equal? \( 4 = 2^x \). \( x \) must equal 2.

Fill in the following table:

<table>
<thead>
<tr>
<th>( y = 2^x )</th>
<th>( x )</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>( \frac{1}{2} )</td>
<td></td>
</tr>
<tr>
<td>( \frac{1}{4} )</td>
<td></td>
</tr>
<tr>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td></td>
</tr>
</tbody>
</table>

Input | Output

This table defines a new function. The first column is the input of the new function. The second column is the output of the new function. Make a graph of your data. Label the horizontal axis "input" and label the vertical axis "output".