Pop Quiz 5
September 29, 2003
5 Points

1. (2 points) Arrange this set in a max-heap:

   \{17, 4, 93, 8, 101, 5, 23\}.

2. (3 points) Build a Huffman tree for these letters:

<table>
<thead>
<tr>
<th>Letter</th>
<th>A</th>
<th>J</th>
<th>R</th>
<th>W</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>
Solutions to Pop Quiz 5

1. Many correct answers, either as a complete binary tree or as an array. For example, this array:

```
0 1 2 3 4 5 6
101 17 93 8 4 23 5
```

2. A Huffman tree with these properties:

- A and W are leaves with a parent $x$ of weight 7;
- J and R are leaves with a parent $y$ of weight 11;
- $x$ and $y$ have parent $z$ of weight 18; and
- $z$ and Z (a leaf) have parent $r$ (the root) of weight 30.