Memo Tutorial 2 (out of 24 marks)

1. It is called a sequential search because it uses a loop to sequentially step through an array starting from the first element while comparing each value with the value being searched for.
2. N/2 attempts
3. $2^6$ – a maximum of 6 comparisons will be made on an array of 50 elements
4. False
5. False
6. False
7. True
8. False
9.

<table>
<thead>
<tr>
<th>Array Size →</th>
<th>250</th>
<th>12000</th>
<th>5000</th>
<th>3600</th>
<th>4000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear search (average comparisons)</td>
<td>125</td>
<td>6000</td>
<td>2500</td>
<td>1800</td>
<td>2000</td>
</tr>
<tr>
<td>Binary search (Maximum comparisons)</td>
<td>8</td>
<td>14</td>
<td>13</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Linear search (Maximum Comparisons)</td>
<td>250</td>
<td>12000</td>
<td>5000</td>
<td>3600</td>
<td>4000</td>
</tr>
</tbody>
</table>

Note:
- Average linear search comparisons – $N/2$
- Maximum binary search comparisons – ($2^n$), basically find the smallest power of 2 that is greater than or equal to the number of elements in the array
- Maximum linear search comparisons - $N$