15.5) Given: $\bar{x} = 26.8$, $\sigma = 7.5$, $C = 95\%$.

a) $n = 100$
   i. $SE = \frac{7.5}{\sqrt{100}} = 0.75$
   ii. $C \quad 95\%$
       $z^* \quad 1.960$
   iii. $E = (1.960)(0.75) = 1.47$
   iv. Thus, at 95% confidence, the margin of error is 1.47, for a sample size of 100.

b) $n = 400$
   i. $SE = \frac{7.5}{\sqrt{400}} = 0.375$
   ii. $C \quad 95\%$
       $z^* \quad 1.960$
   iii. $E = (1.960)(0.375) = 0.735$
   iv. Thus, for a sample size of 400, the margin of error for a 95% C.I. is 0.735.

c) $n = 1600$
   i. $SE = \frac{7.5}{\sqrt{1600}} = 0.1875$
   ii. $C \quad 95\%$
       $z^* \quad 1.960$
   iii. $E = (1.960)(0.1875) = 0.3675$
   iv. Thus, for a sample size of 1600, the margin of error for a 95% C.I. is 0.3675.

The table below shows the margin of error for different sample sizes:

<table>
<thead>
<tr>
<th>$n$</th>
<th>100</th>
<th>400</th>
<th>1600</th>
</tr>
</thead>
<tbody>
<tr>
<td>$E$</td>
<td>1.47</td>
<td>0.735</td>
<td>0.3675</td>
</tr>
</tbody>
</table>

So, we conclude that as the sample size increases, the margin of error decreases. This means that as the sample size increases, our confidence interval will shrink in size and thus provide a more accurate estimate for $\mu$. 