#1. What equation is used to generate the entry in cell N5? (10 points) You can answer with a traditional mathematical expression or an Excel expression.

#2. What equation is used to generate the entry in cell N11? (10 points) You can answer with a traditional mathematical expression or an Excel expression.

#3. What is the Bayes Strategy for this problem? (10 points)

#4. The gross value of the one-trial experiment is 56.50 (i.e., \( GV[E_1] = 56.50 \)). What is the net-value of the one-trial experiment (i.e., what is \( NV[E_1] \))? (10 points)
#5. What is the decision using the maximin value rule? (10 points)

#6. What is the regret table? (10 points)

<table>
<thead>
<tr>
<th>state 1</th>
<th>act 1</th>
<th>act 2</th>
<th>act 3</th>
<th>act 4</th>
<th>act 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>state 2</td>
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<tr>
<td>state 3</td>
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<tr>
<td>state 4</td>
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</tr>
<tr>
<td>state 5</td>
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</tr>
</tbody>
</table>

#7. What is the decision using the minimax regret rule? (10 points)
#8. Suppose an individual is indifferent between a lottery paying $30,000 with probability 1/2 and -$10,000 with probability 1/2, and a sure-thing worth -$3,400. What is the individual’s risk attitude? (10 points)
#9. A company has $100,000 to invest. The company has three acts. It can expand its production facilities, invest the money in stocks, or put the money in a bank at a fixed (annual) interest rate of 8%. If there is no recession, the company expects a profit of 14% if the production facilities are expanded and a profit of 12% if stocks are purchased. However, if there is a recession, expansion will lead to a loss of 6% and stocks will lead to a loss of 2%. The decision will be reevaluated in one year, so that only the first year’s profit or loss is of interest now. The company estimates the probability of a recession to be 0.30.

#9a. Given the foregoing information, determine the company’s optimal act under the maximum expected value rule. (10 points)
Suppose the company wants to account for the well known risk aversion of the owner, and therefore wants to solve the foregoing decision problem as an expected utility problem. The owner’s utility function is

\[ U(M) = \begin{cases} 
M + 5000 & \text{for } M \geq 5000 \\
2M & \text{for } M \leq 5000 
\end{cases} \]

where \( M \) represents the profit or loss in dollars.

#9b. Determine the company’s optimal act under the maximum expected utility rule. (10 points)