Excel Exercises: Hypothesis analysis

1. Consider the sheet **[17-AH.xlsx | Ex01]**.

   1.1. Considering that the expected average occupancy rate for the Porto-Lisbon itinerary could be between 70% and 90%, build a simulation table that allows analyzing the impact that these values could have on the daily gross margin of the itinerary. For the average occupancy rate consider the values 70%, 75%, 80%, 85% and 90%

   1.2. Build a table that allows you to analyze the gross margin of the Braga-Porto itinerary, considering a possible change in the number of trips between 14 and 18 and an expected average occupancy rate between 65% and 75%
   - For the number of trips consider all integer values between 14 and 18
   - For the average occupancy rate consider the values 65%, 70% and 75%

2. Consider the sheet **[18-FA.xlsx | Ex02]**.

   2.1. 2.1. Considering that some market analysts predict that in the next 12 months the "Biotech" fund will evolve between $370 and $385, build four scenarios that allow you to analyse and evaluate the results of this fund as a function of the expected value (H6) and a possible variation of EURUSD exchange rate between 1.45 and 1.52 (K14). The four scenarios to consider are as follows.:
   - Scenario A: último preço $385; EURUSD 1,45
   - Scenario B: último preço $385; EURUSD 1,52
   - Scenario C: último preço $370; EURUSD 1,45
   - Scenario D: último preço $370; EURUSD 1,52

   2.2. Create a scenario summary that allows you to analyse the impact of the four previously created scenarios on the fund's redemption value (K6) and balance (L6)

3. In a chemical factory, two compounds (A and B) are produced in a mixing device that requires the filling of a total of 100 barrels. The factory has 180kg of sodium and enough raw materials to produce a maximum of 55 barrels of compound B, knowing that to produce each barrel of compound A, 2kg of sodium is needed, while for each barrel of compound B 1kg is needed , it is intended to determine the optimal production of the two compounds, taking into account that the expected profits will be €700 per barrel of compound A and €200 per barrel of compound B. Use the solver to solve this optimization problem, generating in the end a sensitivity report. To simplify solving the problem, consider sheet **[18-FA.xlsx | Ex03]** and the following problem formulation:

Objective:	Maximise profit
Variables:	A (No. barrels of compound A) B (No. barrels of compound B)
Objective function:	Maximise the expression 700*A+200*B
Constraints:	1) A+B=100 2) B<=55 3) 2*A+1*B<=180 4) A>=0 5) B>=0