



QUESTION WORKBOOK

The stepping-stone method

Decision Mathematics 2 · Year FM

6 questions · 23 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

- A1** Explain what the improvement index of an unused cell measures, and what a positive index tells you. [2]

- A2** A solution has R values A 0, B 3 and K values X 6, Y 4. The unused cell BX costs 8. Find its improvement index and say whether it is a candidate to enter. [3]

SECTION B · Standard

- B1** Costs are AX 8, AY 5, AZ 6, BX 4, BY 9, BZ 7, CX 3, CY 6, CZ 5. The north-west corner solution is AX 35, AY 5, BY 30, CY 10, CZ 40, costing 835. Find the shadow costs and all four improvement indices. [5]

- B2** Carry out the improvement. Name the entering cell, give the stepping-stone loop, state the value moved and the exiting cell, and give the new cost two ways. [5]

- B3** In that first table the cell CX had the lowest cost of all nine at 3, yet BX entered. Explain why, without recalculating the indices. [3]

SECTION C · Stretch

- C1** Continue from the solution costing 595. A second round of indices gives $CX = -6$ as the only negative one. Complete the problem and justify that your answer is optimal. [5]