InkMaths

QUESTION WORKBOOK

The stepping-stone method

Decision Mathematics 2 · Year FM

6 questions · 23 marks

PRINT EDITION

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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]