Assumptions and limitations

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. A model assumes every cake made is sold. Suggest one useful extra restriction. [2 marks]

Use evidence of demand to limit production.

Answer: A maximum demand or sales bound.

2. An optimum uses all 50 staff hours. An absence removes 4 hours. What must change? [2 marks]

The former optimum may be infeasible.

Answer: Use a 46-hour bound and re-optimise.

3. A plotted optimum appears near $(3.98, 6.02)$. Why solve exact boundary equations before choosing integer counts? [2 marks]

Find the exact intersection, then test integer choices against the original inequalities.

Answer: Graph rounding can distort the true corner and feasibility.

4. A higher-price product also has higher unit cost. Is it necessarily better for profit? [2 marks]

Compare unit contribution and use of scarce resources, not selling price alone.

Answer: No.

5. A model predicts unlimited profit with no capacity or demand bound. What does that suggest? [2 marks]

Add justified practical information rather than an arbitrary cap.

Answer: The model is unbounded and may omit a real restriction.

6. A small change in one profit coefficient changes the best plan. What should a report explain? [2 marks]

State the changed data and result; this is not necessarily an arithmetic error.

Answer: The recommendation is sensitive to that input.