Practice worksheet | Matrices and networks

# Counting paths with restrictions

Name: _____ Date: _____

6 questions | 12 marks

**1.** Edges are A→B, A→C, B→D and C→D. List two-edge walks from A to D. [2 marks]

**2.** For $A=\begin{pmatrix}0&1&1\\0&0&1\\1&0&0\end{pmatrix}$, find $(A^2)_{AA}$. [2 marks]

**3.** For $A=\begin{pmatrix}0&1&1\\0&0&1\\1&0&0\end{pmatrix}$, find $(A^2)_{BC}$. [2 marks]

**4.** A route must not revisit its start. Why might diagonal entries of $A^2$ be excluded from a total? [2 marks]

**5.** There are two distinct ferry services A→B and three B→C services. Count A→B→C service combinations. [2 marks]

**6.** Edges are A→B, A→C, B→C, B→D and C→D. List all A-to-D paths with no repeated vertices. [2 marks]