Understand weighted networks and the shortest-path problem.

Key knowledge | Free preview

Learning target: Understand weighted networks and the shortest-path problem.

A shortest-path problem minimises the sum of weights along a route between specified vertices. It differs from connecting every vertex at minimum total construction cost. Read direction restrictions before adding weights, and include units in the final interpretation. For a small network, comparing plausible complete routes can justify a shortest-path result by inspection.

Try the mathematics

Task 1. An undirected road network has AB=4, AC=2, BC=1, BD=5, CD=7, CE=3 and ED=1 kilometres. Find a shortest A-to-D route and justify it by comparing alternatives.

Continue with the full worksheet

The complete resource has 2 focused task sets and substantive worked solutions. Use an exercise book or print the A4 worksheet. This preview shows the first task without its full solution.

Find this resource: https://resources.aspiretopowerlearning.com.au/vce/skills/aspire-internal-gm-u2-o1-aos2-kk-02/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). General Mathematics; Unit 2; Outcome 1; Key knowledge; Graphs and networks; bullet 2; p. 38.

The learning target is a concise paraphrase. Aspire reference: aspire-internal-gm-u2-o1-aos2-kk-02. This is an internal identifier, not an official VCAA code.

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