Solve minimum-connector problems using trees and greedy methods.

Key skills | Free preview

Learning target: Solve minimum-connector problems using trees and greedy methods.

A spanning tree connects every vertex without a cycle. A minimum spanning tree minimises the total weight of those selected edges. Prim’s procedure starts with one vertex and repeatedly adds a cheapest edge crossing from the current tree to an outside vertex. This preserves connectedness and avoids cycles; equal choices may produce different optimal trees.

Try the mathematics

Task 1. Use Prim’s algorithm from A on AB=4, AC=2, BC=1, BD=5, CD=7, CE=3 and ED=1. Record the chosen edge and the growing vertex set at every step.

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-ks-04/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). General Mathematics; Unit 2; Outcome 1; Key skills; Graphs and networks; bullet 4; p. 39.

The learning target is a concise paraphrase. Aspire reference: aspire-internal-gm-u2-o1-aos2-ks-04. This is an internal identifier, not an official VCAA code.

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