Construct a population transition matrix whose process has an equilibrium.

Key skills | Free preview

Learning target: Construct a population transition matrix whose process has an equilibrium.

Fix the state order and choose a column-state convention before constructing a transition matrix. Each column describes where members of one origin state go next, so its entries sum to one in a closed population. Iteration applies the same rule repeatedly. An equilibrium state reproduces itself after one transition and must match the population total.

Try the mathematics

Task 1. Each month 75% of bus users stay with bus and 25% switch to train; 25% of train users switch to bus. Use order bus,train and S0=[[160],[40]]. Build T, calculate S1 and S2, and draw the corresponding labelled transition arrows.

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-u1-o1-aos4-ks-05/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). General Mathematics; Unit 1; Outcome 1; Key skills; Matrices; bullet 5; p. 32.

The learning target is a concise paraphrase. Aspire reference: aspire-internal-gm-u1-o1-aos4-ks-05. This is an internal identifier, not an official VCAA code.

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