Use deduction, pigeonhole reasoning and Pascal's triangle in counting arguments

Key skills | Free preview

Learning target: Use deduction, pigeonhole reasoning and Pascal's triangle in counting arguments.

Choose a counting model before calculating. Order matters for permutations; a selection without order uses combinations. Inclusion–exclusion corrects duplicated membership, while a pigeonhole argument proves a repeated category must occur. Identities can be established by counting the same collection in two different ways.

Try the mathematics

Task 1. From eight different students, count a three-person ordered podium and a three-person committee. Count the distinct arrangements of AABC. Explain each difference.

Continue with the full worksheet

The complete resource has 3 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/sm-u1-o1-ks-06/

Study-design reference

VCE Mathematics Study Design 2023-2027, version 1.1 (November 2022). Specialist Mathematics; Unit 1; Outcome 1; Key skills; bullet 6; p. 62.

The learning target is a concise paraphrase. Aspire reference: sm-u1-o1-ks-06. This is an internal identifier, not an official VCAA code.

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