Counting, sample spaces and simulation

Learn and practise | Free preview

A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the worked example, then show each step in the practice questions. Show the mathematical steps. A calculator, graphing tool or CAS may be used to check results where useful.

What you will practise

• Random experiments, counting principles, combinations and simulation

Useful starting skills: Year 10 algebra, factorisation, functions, indices, geometry and elementary probability.

The multiplication principle counts sequential choices; the addition principle combines disjoint alternatives. Before counting, decide whether order matters.

A combination selects without order: n Cr=n!/[r!(n-r)!]. Probabilities obtained by counting require equally likely elementary outcomes. Simulations estimate probabilities and vary from run to run.

Worked example

How many committees of 2 can be selected from 6 people?

Choose unordered pairs: C(6,2)=6×5/2=15.

Answer: 15.

Try it yourself

Name: _____ Date: _____

1. Choose a shirt from 4 and trousers from 3. How many outfits?

2. Choose 3 people from 5. How many selections?

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 12.

Each shirt pairs with each trouser choice.

2. 10.

$C(5,3)=10$.

Curriculum reference: Mathematical Methods Units 1–2 — Random experiments, counting principles, combinations and simulation

Independent original resource. Not published or endorsed by VCAA. This focused set supports the listed skills; it is not a complete course or an official assessment.

This free preview may be shared intact with attribution. Not for sale.