Multi stage chance and simulations

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

Read the explanation and worked example. Show your working; use a calculator only where asked.

What you will practise

• Compare replacement rules, combined events and simulated probabilities.

• Explain a method and check the reasonableness of a result.

Useful starting skills: Use the prerequisite operations and representations shown in the worked example.

Tree branches show conditional probabilities after earlier outcomes. Without replacement the available counts change; with replacement they return to the original counts.

Relative frequency estimates probability from trials. For inclusive or, subtract overlap once. A simulation must match the real selection rules and use enough trials to assess variability.

Worked example

A bag has 3 red and 2 blue counters. Draw two without replacement. Find P(two red).

First red probability 3/5.

Then 2 red remain among 4 counters.

Answer: (3/5)(2/4)=3/10

Try it yourself

Name: _____ Date: _____

1. Find P(two heads) in exactly two independent fair coin tosses.

2. A bag has 4 red,6 blue. Find P(two red) with replacement.

Answers and explanations

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

1. 1/4

$1/2 \times 1/2$.

2. 4/25

$(4/10)^2$.

Curriculum reference: VC2M9P01; VC2M9P02; VC2M9P03

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