Achievement Standard 91268 (Mathematics and Statistics 2.13)

Investigate a situation involving elements of chance using a simulation

Practice assessment

The *Fast and Furious* soft-drink company is running a competition to promote its new soft drink, *ZOOM*.

The inside of the cap of each bottle is printed with one of the letters Z, O, or M. Large numbers of the letters Z, O and M are produced in the ratio 1 : 2 : 1.

To be eligible to enter the competition, a person needs to include four soft drink lids with their entry, printed with the letters Z, O, O and M.

Katie wants to enter the competition, but decides to limit herself to buying a maximum of six bottles of ZOOM.

Design, run and report on a simulation to investigate the average number of bottles of ZOOM that Katie needs to purchase in her attempt to enter the competition, and the likelihood that she will be eligible using her strategy.

Your report should:

- describe your simulation method fully (so that someone else could carry out the simulation independently), identifying tools to be used and defining trials
- include a clear record of your outcomes
- estimate the mean number of bottles Katie will buy and her chances of being eligible to enter the competition
- discuss any assumptions you have made, and how they have affected the design of your simulation
- justify conclusions in your report using evidence from your simulation.

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