5+ a Day

Purpose:

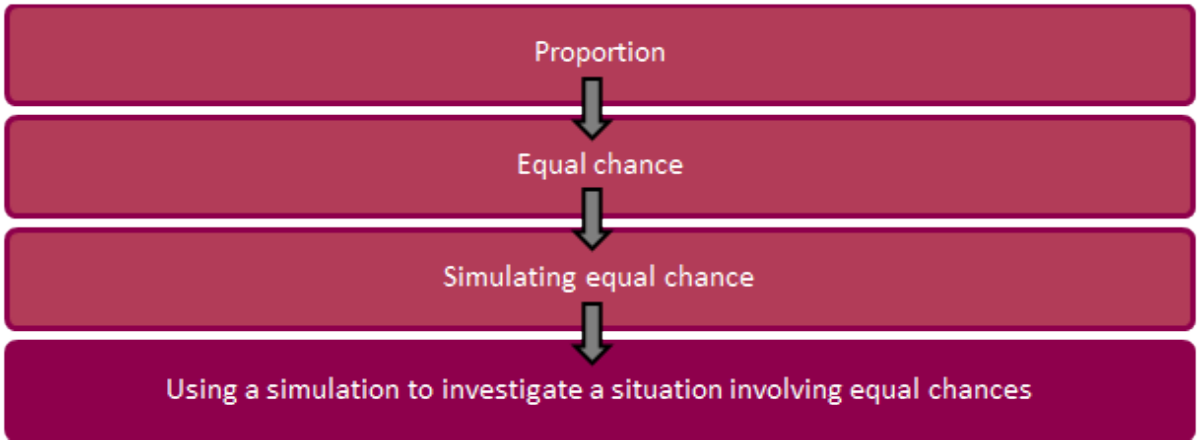
The purpose of this activity is to engage the students in finding an experimental probability and using this to model the outcome of a given scenario.

Achievement Objectives:

S3-3: Investigate simple situations that involve elements of chance by comparing experimental results with expectations from models of all the outcomes, acknowledging that samples vary.

Description of mathematics:

The background knowledge and skills that need to be established before and/or during this task are outlined in the diagram below:



Proportion

Fifteen people are asked if they like bananas. Twelve say they do and the remainder say they do not. What proportion of people questioned, do not like bananas?

Equal chance

A box of porridge sachets has three sachets of each of four different flavours. one of those flavours is 'plain'. If a sachet from a full box is chosen at random, what is the chance that it is plain?

Simulating equal chance

A box of porridge sachets has three sachets of each of four different flavours. one of those flavours is 'plain'. How could this be modelled with coloured counters to find the likelihood of a sachet chosen at random being plain?

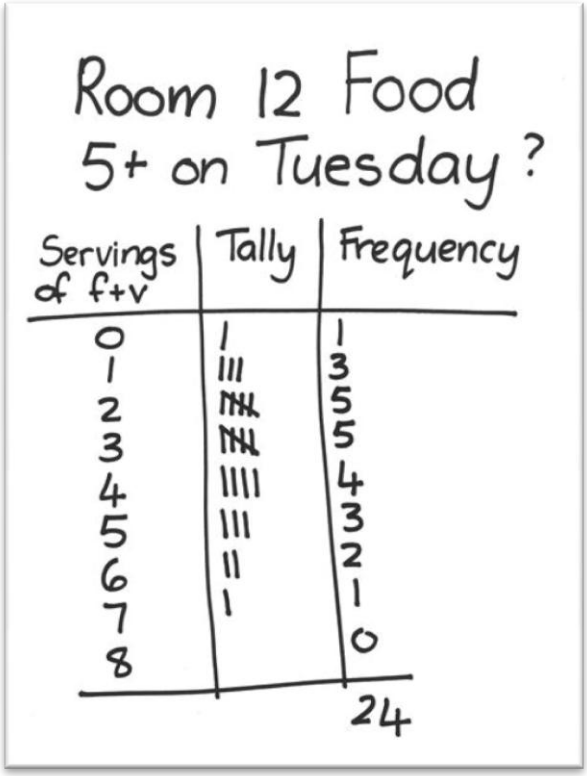
Using a simulation to investigate a situation involving equal chances

A box of porridge sachets has three sachets of each of four different flavours. one of those flavours is 'plain'. Use coloured counters to model a full box. find the probability of getting at least one plain sachet amongst the first three picked at random. Run twenty trials to determine this probability.

This activity may be carried out with step by step guidance, or by allowing the student to follow their own method of solution. The approach should be chosen in sympathy with students' skills and depth of understanding.

Activity:

As part of a study on nutrition, a teacher asked her class to record everything they ate on a particular day. When they submitted the information anonymously, the class then looked through the data to find how many servings of fruit and/or vegetables each student in the class had consumed that day. The results were:



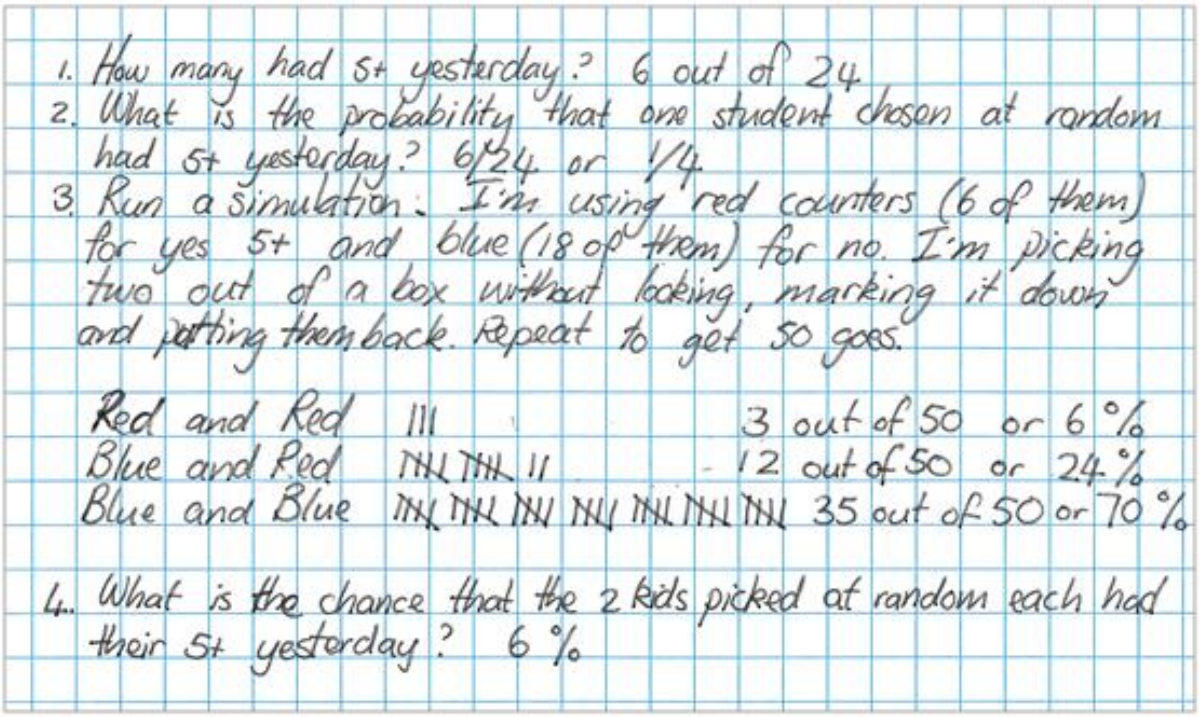
What is the chance, if any two students in the class are picked at random, that they both ate their 5+ servings of fruit and/or vegetables that day?

The procedural approach

The student is able to follow the steps given, to find a probability and use it to model a given problem.

Prompts from the teacher could be:

1. How many students are in the class?
2. How many students had 5+ fruit and/or veges that day?
3. What proportion of students had 5+ fruit and/or veges that day?
4. What is the probability that a student chosen at random from this class had 5+ fruit and/or veges that day?
5. Model this probability. You could use coloured counters, with one colour for each of the students who ate 5+ servings of fruit and/or veges and another colour for each of those who didn/t. Select two counters at random and record their colours. Replace the counters and repeat. Carry out at least 20 trials.
6. Use the results of your model (simulation) to answer the question: What is the chance, if any two students in the class are picked at random, that they both ate their 5+ servings of fruit and/or vegetables that day?



The conceptual approach

The student is able to find a probability and use it to model a given problem.

Prompts from the teacher could be:

1. What proportion of students had 5+ fruit and/or veges that day?
2. What is the probability that a student chosen at random from this class had 5+ fruit and/or veges that day?
3. Model this probability. Carry out at least 20 trials.
4. Use the results of your model (simulation) to answer the question: What is the chance, if any two students in the class are picked at random, that they both ate their 5+ servings of fruit and/or vegetables that day?