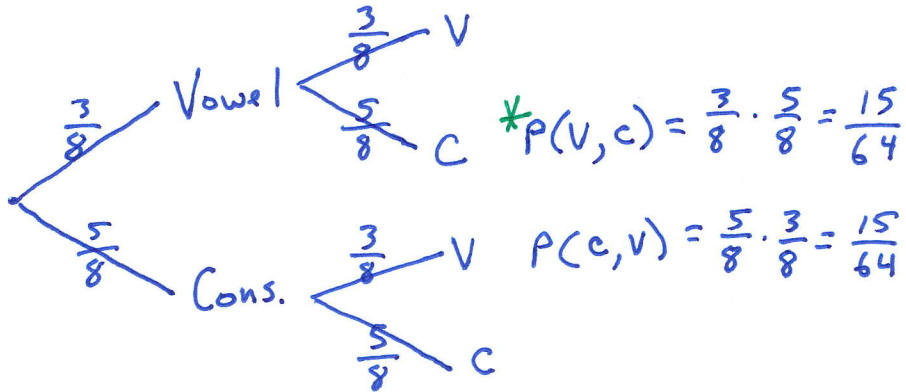


## Worked Examples

A box has slips of paper with the following letters: T E X T B O O K

- a) A slip of paper is drawn out, the letter is recorded, and replaced. A second slip of paper is drawn. Find the probability of getting exactly one vowel.



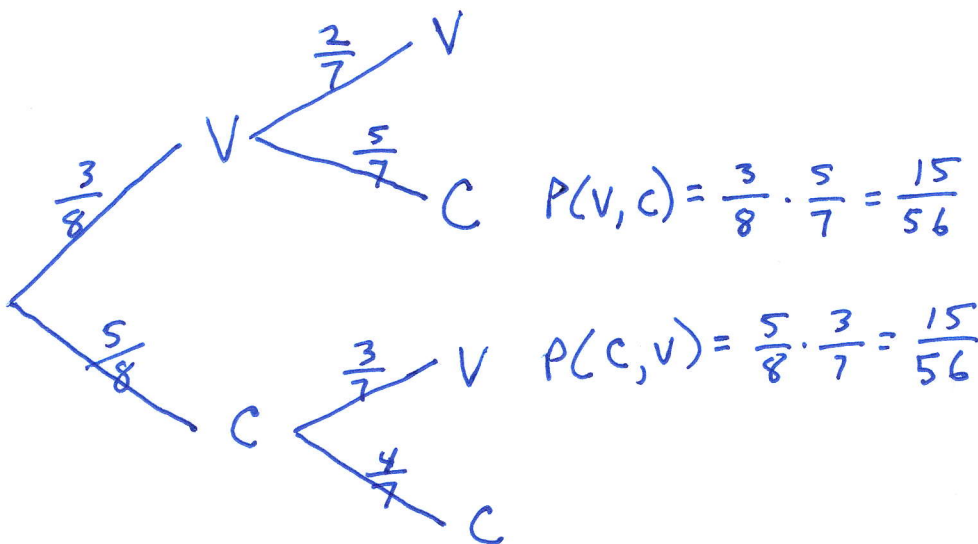
Count the letters  
8 letters  
3 vowels

\* To find the probability of a vowel followed by a consonant you multiply along the path  $\frac{3}{8} \cdot \frac{5}{8}$ .

$$P(\text{exactly one vowel}) = \frac{15}{64} + \frac{15}{64} = \frac{30}{64} = \boxed{\frac{15}{32}}$$

In this step add the probabilities because there are two ways to get one vowel.

- b) A slip of paper is drawn out and the letter is recorded (and not replaced). A second slip of paper is drawn. Find the probability of getting exactly one vowel.



The process is similar.

In step two, since the slip of paper is not replaced, there are fewer slips of paper in the box, so the probabilities change.

$$P(\text{exactly one vowel}) = \frac{15}{56} + \frac{15}{56} = \frac{30}{56} = \boxed{\frac{15}{28}}$$

Objective: Find a probability of a multi-stage experiment (using a tree diagram).