

# Maths HL15 Extended: Probability using Tree Diagrams

## Independent Probability questions:

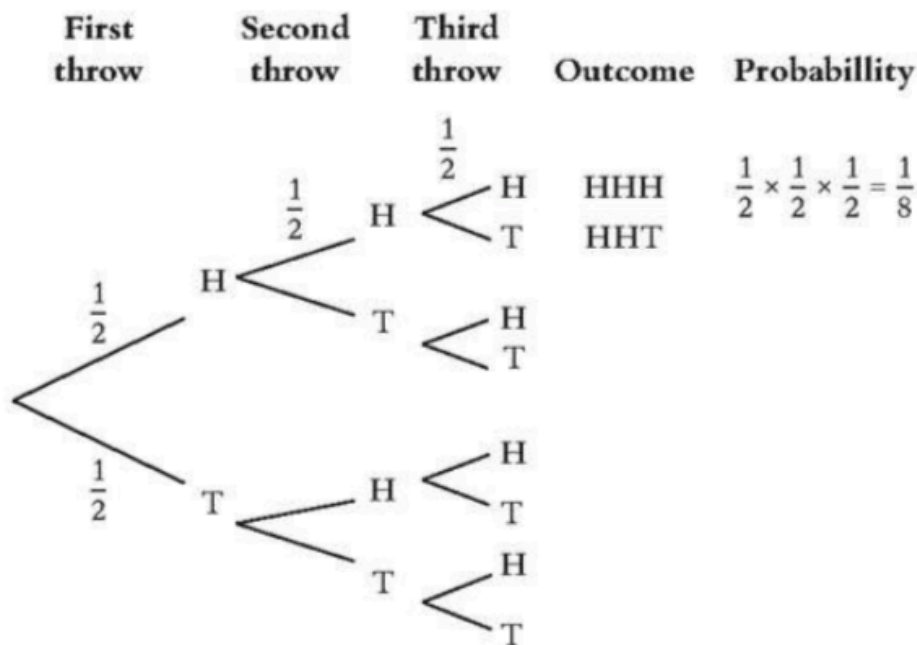
- 1 A bag contains 5 green counters and 2 yellow counters. Ali chooses a counter at random from the bag, he notes the colour and then he replaces it in the bag. He then chooses a second counter at random. Draw a tree diagram to show all the possible outcomes. Find the probability that he chooses



- a two greens,                      b two yellows,  
c two of the same colour,      d at least one green.

- 2 Three unbiased coins are thrown.

- a Copy and complete the tree diagram to show all the possible outcomes. (H = head and T = tail)



- 3

Colour	Red	Blue	Yellow
Probability	$\frac{1}{4}$	$\frac{1}{3}$	$\frac{5}{12}$



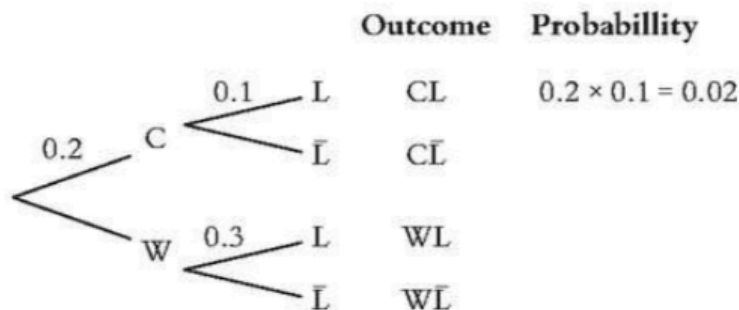
The circular board is divided into three unequal sections. The table shows the probabilities of the spinner landing on each of the three colours. The spinner is spun three times. Draw a tree diagram to show all the possible outcomes. Find the probability of getting

- a three reds,    b three blues,    c three yellows,    d one of each colour.

## Dependent Probability questions:

- 1 Omar either walks or cycles to school.  
 The probability that he cycles to school is 0.2.  
 If Omar cycles, the probability that he is late is 0.1.  
 If Omar walks, the probability he is late is 0.3.

- a Copy and complete the tree diagram.  
 (C = cycle W = walk L = late and  $\bar{L}$  = not late)

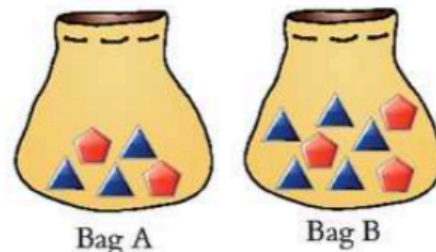
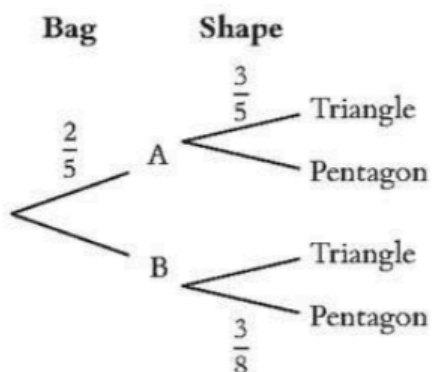


- b Calculate the probability that Omar will be  
 i late to school,      ii not late to school.

- 2 a Jacob is asked to select one shape at random from either bag A or bag B.

The probability that he chooses from bag A is  $\frac{2}{5}$ .

- i Copy and complete the tree diagram.



- ii Calculate the probability that Jacob chooses a triangle.  
 iii Calculate the probability that Jacob chooses a pentagon.

- b Eduardo is asked to select 2 shapes at random from bag A or two shapes at random from bag B. (He does not replace the first shape before selecting the second shape.)

The probability that he chooses from bag A is  $\frac{1}{3}$ .

- i Calculate the probability that Eduardo chooses two triangles.  
 ii Calculate the probability that Eduardo chooses two different shapes.

