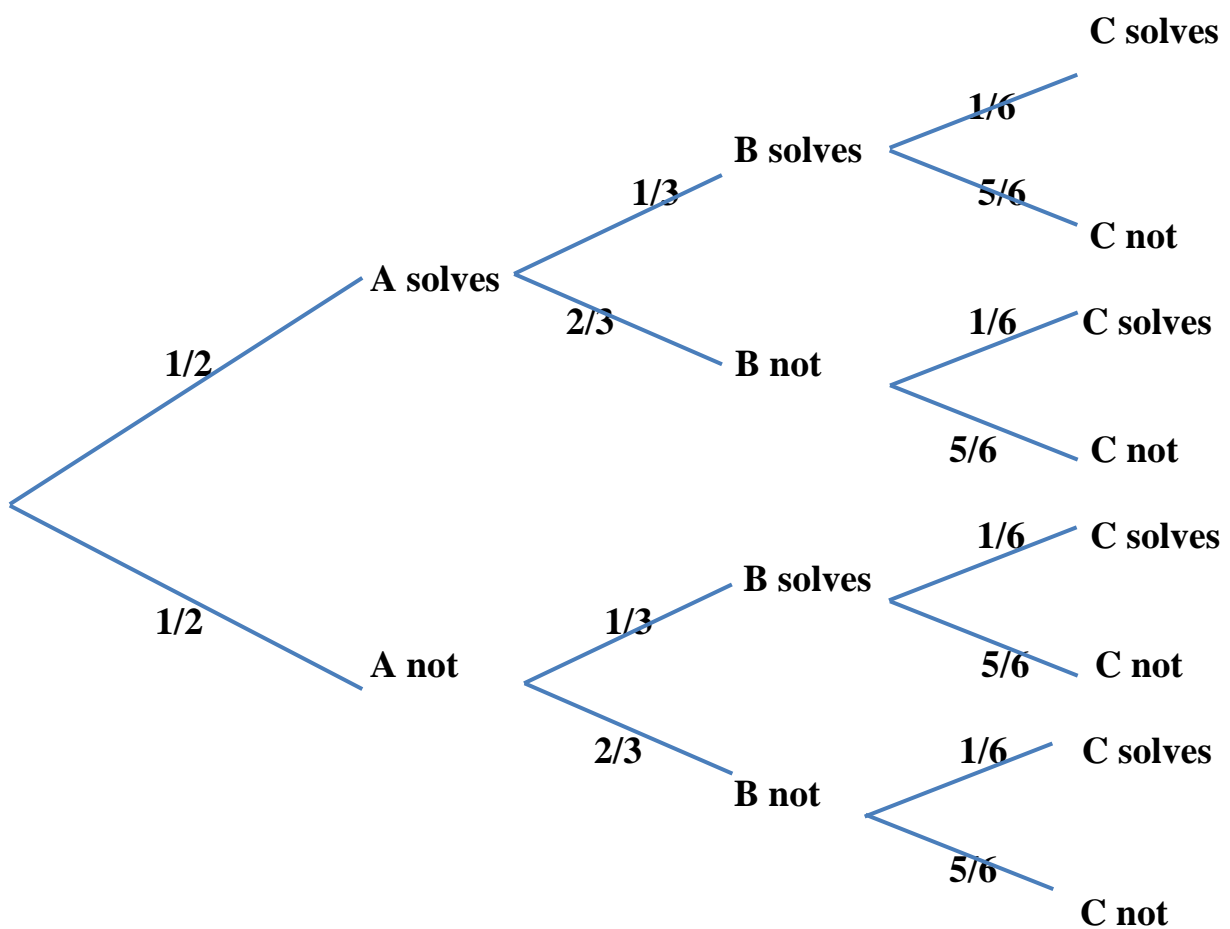
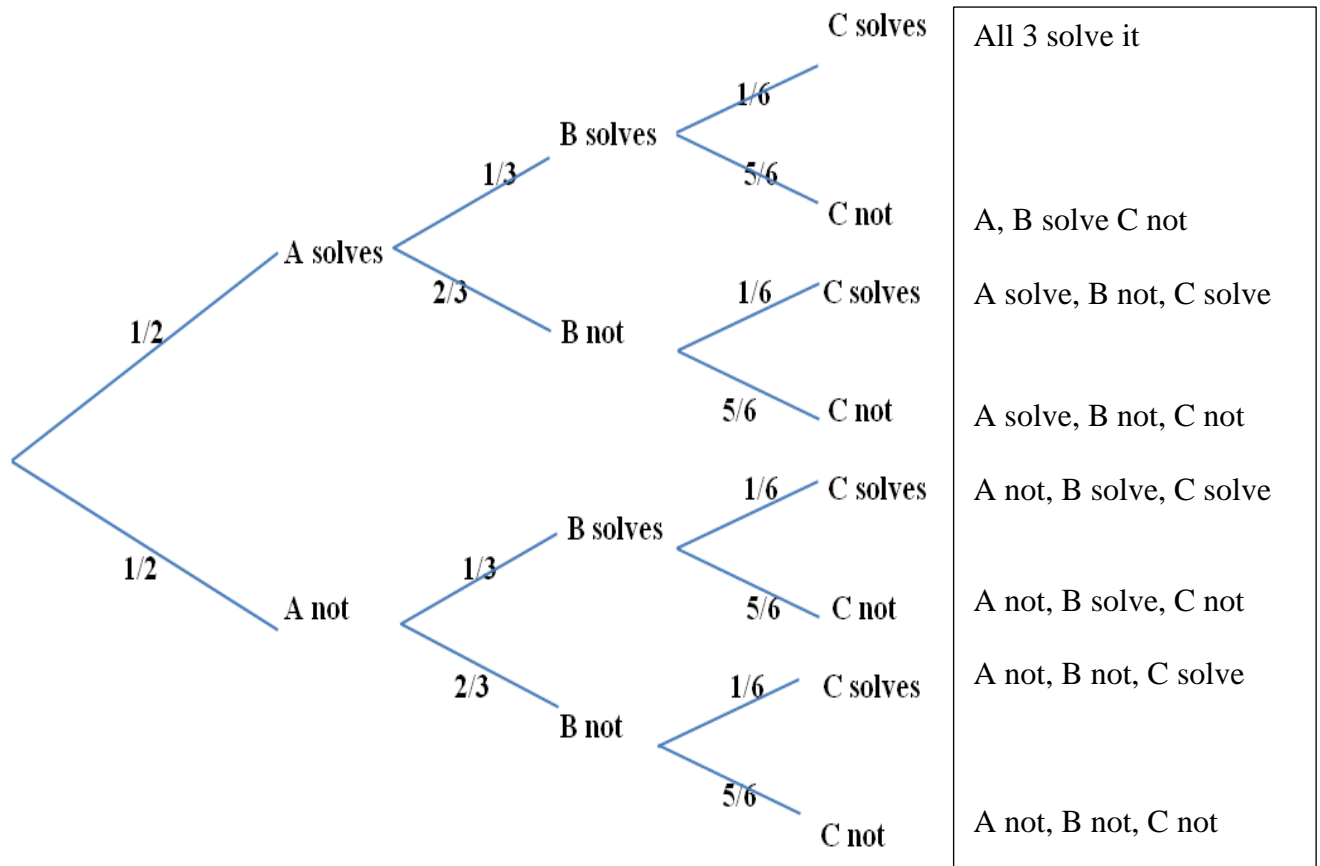


**If the probability that a problem will be solved by three people is  $\frac{1}{2}$ ,  $\frac{1}{3}$  and  $\frac{1}{6}$ , then what is the probability that the problem will be solved?**

If you find this type of problem to be difficult just draw a TREE diagram and it will put all your logic in place for many variants of the problem.





From this Probability Tree you can easily find such things as:

1. Probability (all 3 solve it) =  $\frac{1}{2} \times \frac{1}{3} \times \frac{1}{6}$

2. Probability (only 1 solves it)  
 = P(A solves, B not, C not) + P(A not, B solves, C not) + P(A not, B not, C solves)  
 =  $\frac{1}{2} \times \frac{2}{3} \times \frac{5}{6}$  +  $\frac{1}{2} \times \frac{1}{3} \times \frac{5}{6}$  +  $\frac{1}{2} \times \frac{2}{3} \times \frac{1}{6}$

3. Probability (none solve it) =  $\frac{1}{2} \times \frac{2}{3} \times \frac{5}{6} = \frac{5}{18}$

4. Probability (at least I person solves it)

= the SUM of the top 7 outcomes on the list (a bit long – winded though!!)

**A cleverer way** is to realise all the probabilities must add up to **1**  
 Probability (at least I person solves it) = 1 – Probability (nobody solves it!)  
 =  $1 - \frac{5}{18}$   
 =  $\frac{13}{18}$