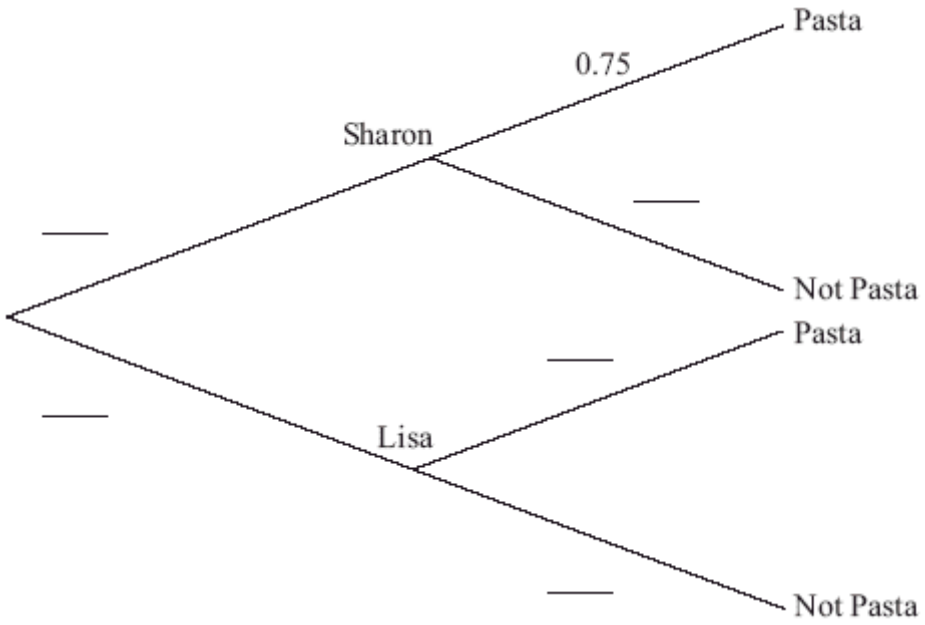
1. Sharon and Lisa share a flat. Sharon cooks dinner three nights out of ten.
If Sharon does not cook dinner, then Lisa does. If Sharon cooks dinner the probability that they have pasta is 0.75. If Lisa cooks dinner the probability that they have pasta is 0.12.

(a) **Copy and complete** the tree diagram to represent this information.



(3)

(b) Find the probability that Lisa cooks dinner and they do not have pasta.

(2)

(c) Find the probability that they do not have pasta.

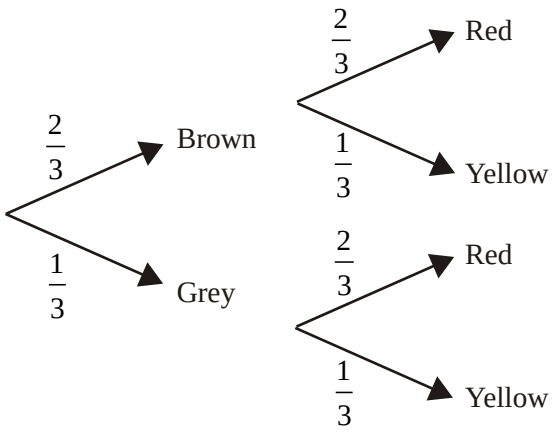
(3)

(d) Given that they do not have pasta, find the probability that Lisa cooked dinner.

(3)

(Total 11 marks)

2. Neil has three dogs. Two are brown and one is grey. When he feeds the dogs, Neil uses three bowls and gives them out randomly. There are two red bowls and one yellow bowl. This information is shown on the tree diagram below.



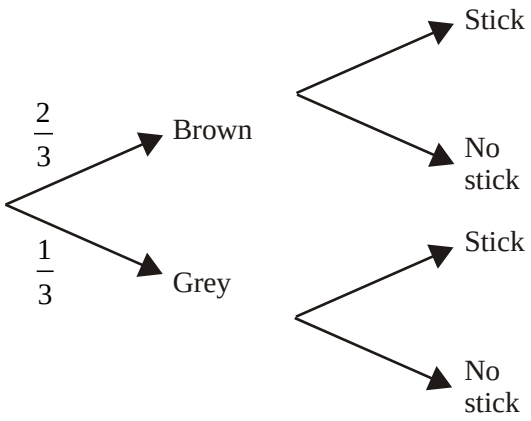
(a) One of the dogs is chosen at random.

(i) Find P (the dog is grey and has the yellow bowl).

(ii) Find P (the dog does not get the yellow bowl).

(3)

(b) Neil often takes the dogs to the park after they have eaten. He has noticed that the grey dog plays with a stick for a quarter of the time and both brown dogs play with sticks for half of the time. This information is shown on the tree diagram below.



(i) Copy the tree diagram and add the four missing probability values on the branches that refer to playing with a stick.

During a trip to the park, one of the dogs is chosen at random.

(ii) Find P (the dog is grey or is playing with a stick, but not both).

(iii) Find P (the dog is grey given that the dog is playing with a stick).

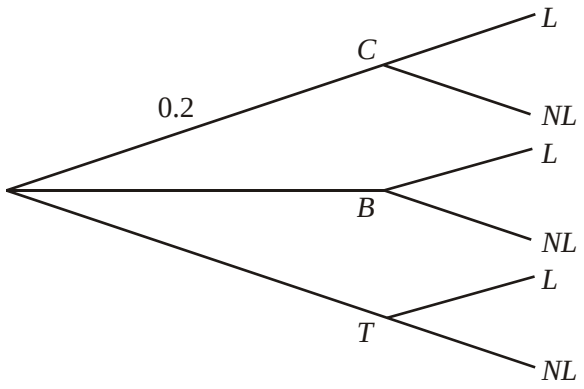
(iv) Find P (the dog is grey and was fed from the yellow bowl and is not playing with a stick).

(9)
(Total 12 marks)

3. When Geraldine travels to work she can travel either by car (C), bus (B) or train (T). She travels by car on one day in five. She uses the bus 50% of the time. The probabilities of her being late (L) when travelling by car, bus or train are 0.05, 0.12 and 0.08 respectively.

(a) Copy the tree diagram below and fill in all the probabilities, where NL represents not late, to represent this information.

(5)



(b) Find the probability that Geraldine travels by bus and is late.

(1)

(c) Find the probability that Geraldine is late.

(3)

(d) Find the probability that Geraldine travelled by train, given that she is late.

(3)

(Total 12 marks)

4. Amos travels to school either by car or by bicycle. The probability of being late for school is $\frac{1}{10}$ if he travels by car and $\frac{1}{5}$ if he travels by bicycle. On any particular day he is equally likely to travel by car or by bicycle.

(a) Draw a probability tree diagram to illustrate this information.

(4)

(b) Find the probability that

(i) Amos will travel by car and be late.

(2)

(ii) Amos will be late for school.

(3)

(c) Given that Amos is late for school, find the probability that he travelled by bicycle.

(3)

(Total 12 marks)