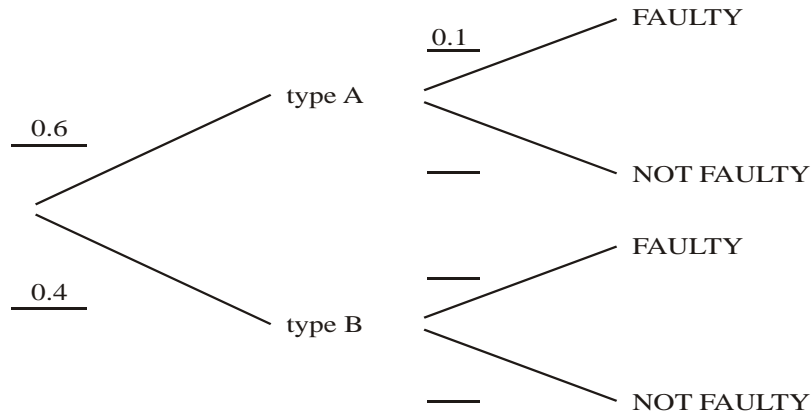


1. A teacher has a box containing six type A calculators and four type B calculators.

The probability that a type A calculator is faulty is 0.1 and the probability that a type B calculator is faulty is 0.12.

- (a) Complete the tree diagram given below, showing all the probabilities.



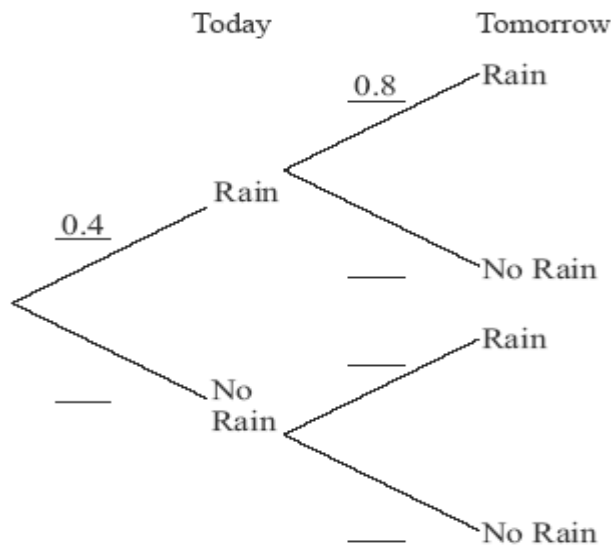
- (b) A calculator is selected at random from the box. Find the probability that the calculator is

- (i) a faulty type A;
 (ii) not faulty.

(Total 4 marks)

2. The probability that it rains today is 0.4. If it rains today, the probability that it will rain tomorrow is 0.8. If it does not rain today, the probability that it will rain tomorrow is 0.7.

- (a) Complete the tree diagram below.



(3)

- (b) Calculate the probability of rain tomorrow.

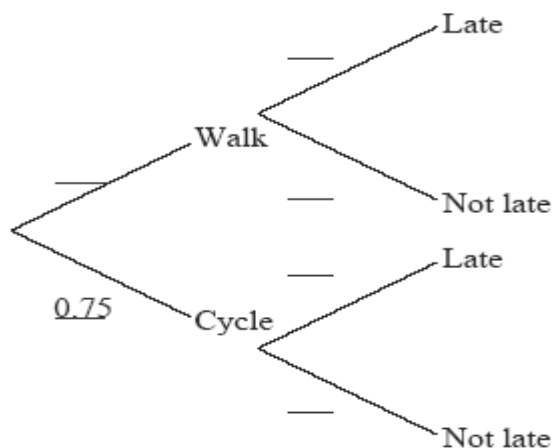
(3)

(Total 6 marks)

3. Maria travels to school either by walking or by bicycle. The probability she cycles to school is 0.75.

If she walks, the probability that she is late for school is 0.1.
 If she cycles, the probability that she is late for school is 0.05.

- (a) Complete the tree diagram below, showing the appropriate probabilities.



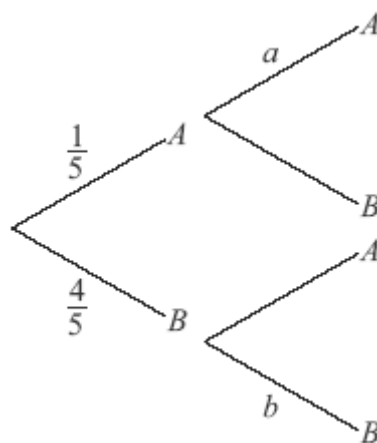
(3)

- (b) Find the probability that Maria is late for school.

(3)

(Total 6 marks)

4. (a) Phoebe chooses a biscuit from a blue tin on a shelf. The tin contains one chocolate biscuit and four plain biscuits. She eats the biscuit and chooses another one from the tin. The tree diagram below represents the situation with the four possible outcomes where A stands for chocolate biscuit and B for plain biscuit.

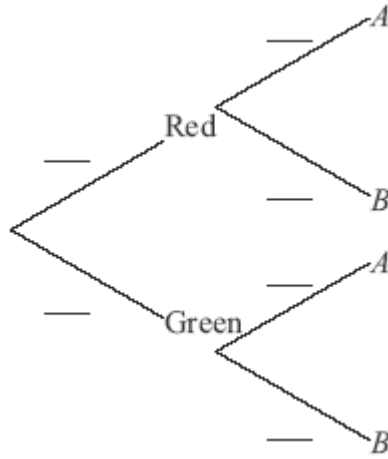


- (i) Write down the value of a .
 (ii) Write down the value of b .
 (iii) Find the probability that both biscuits are plain.

(6)

On another shelf there are two tins, one red and one green. The red tin contains three chocolate biscuits and seven plain biscuits and the green tin contains one chocolate biscuit and four plain biscuits. Andrew randomly chooses either the red or the green tin and randomly selects a biscuit.

(b) **Copy and complete** the tree diagram below.



(3)

(c) Find the probability that

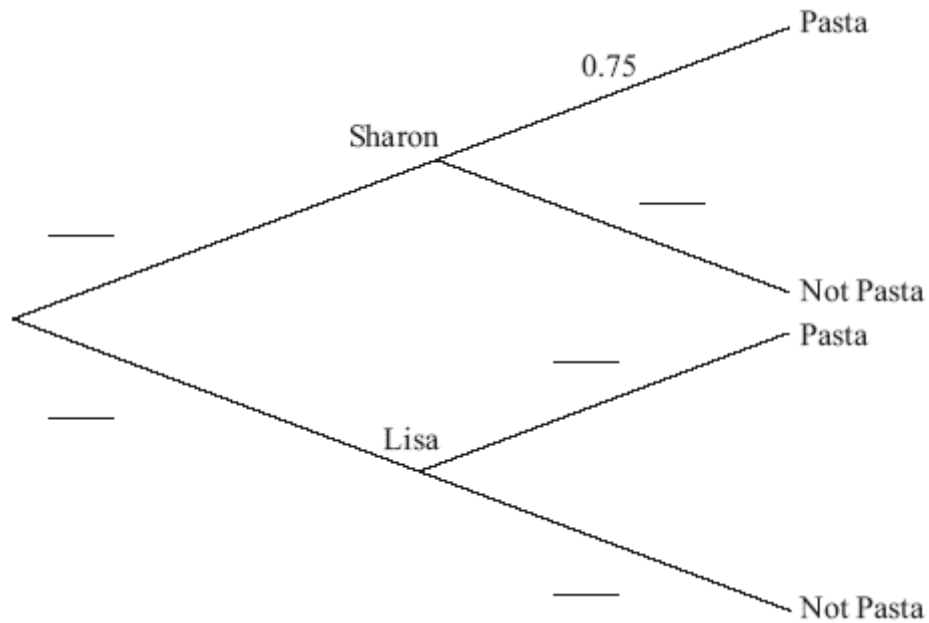
- (i) he chooses a chocolate biscuit;
- (ii) he chooses a biscuit from the red tin given that it is a chocolate biscuit.

(6)

(Total 15 marks)

5. 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)

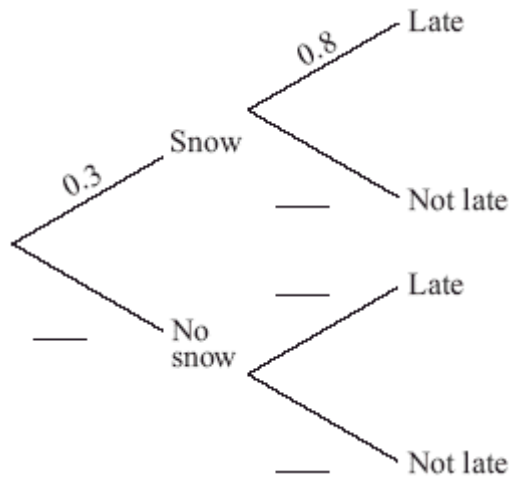
- (d) Given that they do not have pasta, find the probability that Lisa cooked dinner.

(3)

(Total 11 marks)

6. The probability that it will snow tomorrow is 0.3.
 If it snows tomorrow the probability that Chuck will be late for school is 0.8.
 If it does not snow tomorrow the probability that Chuck will be late for school is 0.1.

(a) Complete the tree diagram below.



(3)

(b) Find the probability that it does not snow tomorrow and Chuck is late for school.

(1)

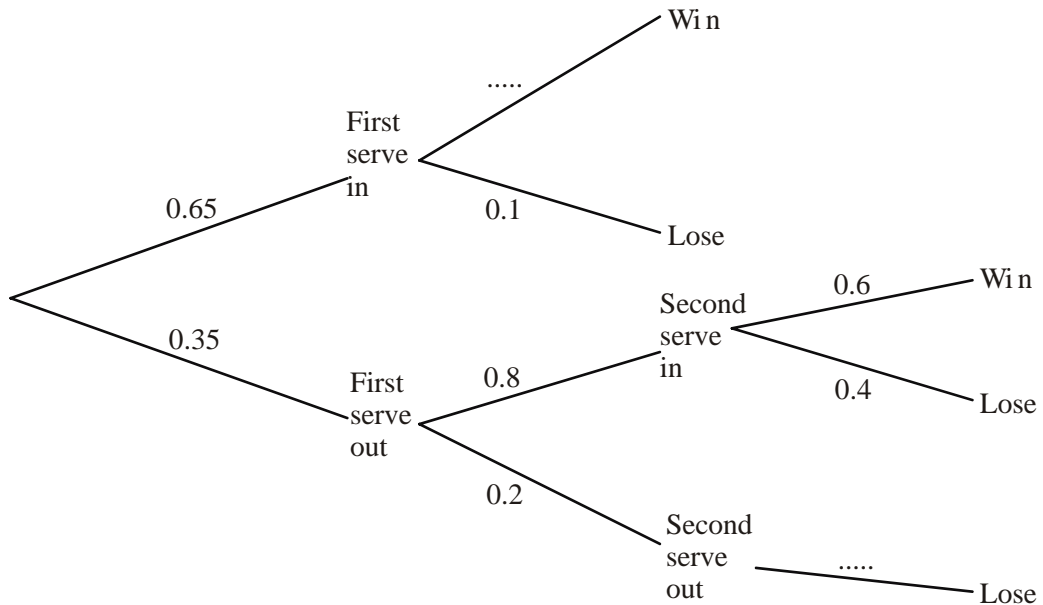
(c) Find the probability that Chuck is late for school.

(2)

(Total 6 marks)

7. When Andy plays tennis, 65% of his first serves go into the correct area of the court. If the first serve goes into the correct area, his chance of winning the point is 90%. If his first serve does not go into the correct area, Andy is allowed a second serve and, of these, 80% go into the correct area. If the second serve goes into the correct area, his chance of winning the point is 60%. If neither serve goes into the correct area, Andy loses the point.

(a) Complete the tree diagram below.



(2)

(b) Find the probability that Andy loses the point.

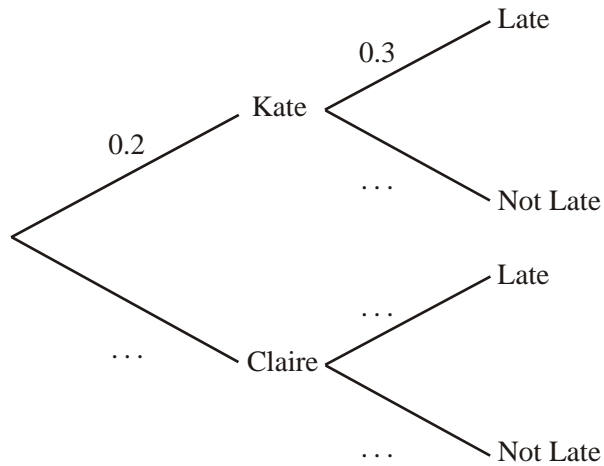
(4)

(Total 6 marks)

8. Claire and Kate both wish to go to the cinema but one of them has to stay at home to baby-sit.

The probability that Kate goes to the cinema is 0.2. If Kate does not go Claire goes.
If Kate goes to the cinema the probability that she is late home is 0.3.
If Claire goes to the cinema the probability that she is late home is 0.6.

- (a) Copy and complete the probability tree diagram below.



(3)

- (b) Calculate the probability that

- (i) Kate goes to the cinema and is not late;

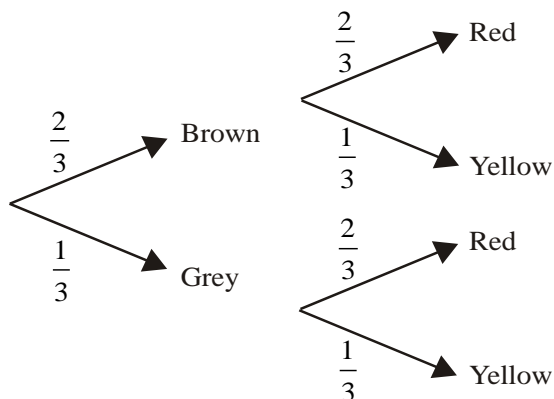
(2)

- (ii) the person who goes to the cinema arrives home late.

(3)

(Total 8 marks)

9. 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.

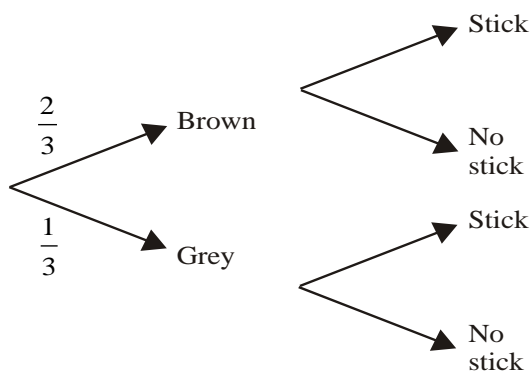


- (a) One of the dogs is chosen at random.

- (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)

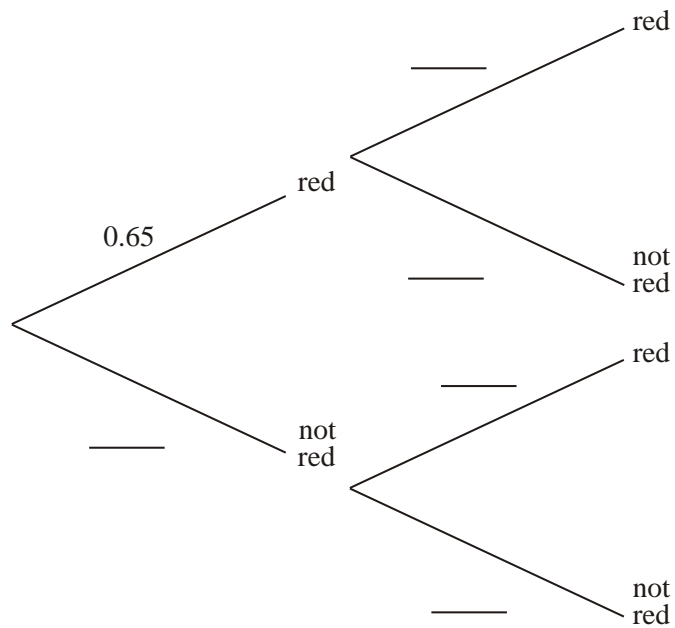
(Total 12 marks)

10. Jim drives to work each day through two sets of traffic lights.

The probability of the first set of traffic lights being red is 0.65.

If the first set is red then the probability that the next set of traffic lights is red is 0.46.

If the first set is not red, the probability that the next set is red is 0.72.



(a) Complete the tree diagram above.

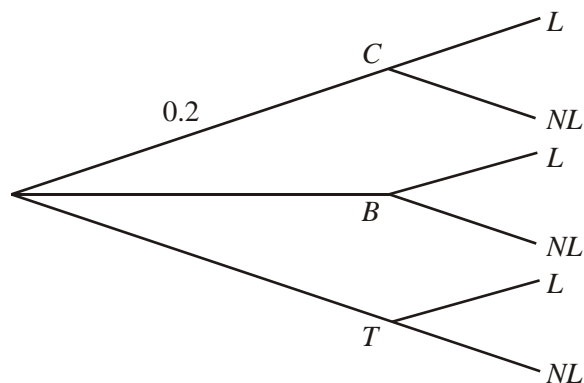
(b) Calculate the probability that the second set of traffic lights is red.

(Total 8 marks)

11. 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)

12. 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.

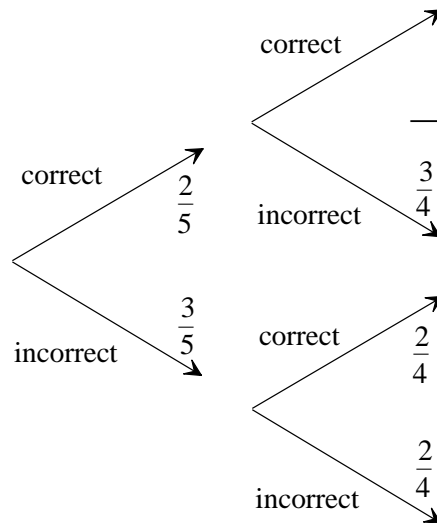
(3)

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

(3)

(Total 12 marks)

13. Sandra is attempting an exam question. She has to choose two correct statements from a list of five. Below is a tree diagram showing Sandra's possible choices. One of the probability values is missing.



- (a) Fill in the missing probability value on the diagram.
- (b) (i) If Sandra makes two guesses, what is the probability that she will get only one of them correct?
- (ii) Sandra definitely knows the first correct statement but has to guess the second. What is the probability that she will answer both correctly?

(Total 8 marks)