Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Tree Diagrams 1

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

Write your name in the space provided.

Write your answers in the spaces provided in this question paper.

Answer ALL questions.

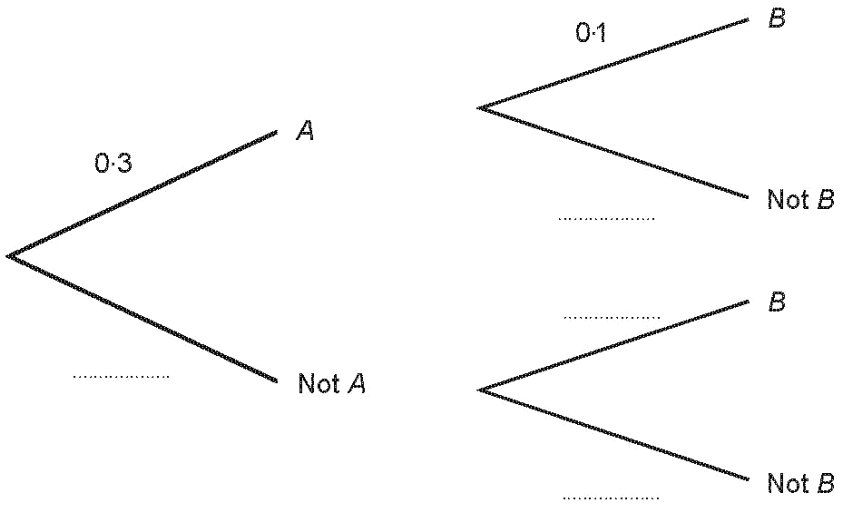
Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

You should have a ruler, compass and protractor where required.

Total Marks :

1) A and B are independent events.
$P(A) = 0{\cdot}3$ and $P(B) = 0{\cdot}1$

(a) Complete the tree diagram. [2]



(b) Calculate the probability of neither event A nor event B occurring. [2]

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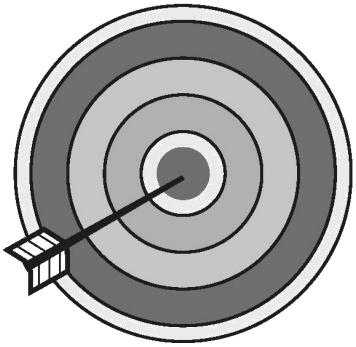
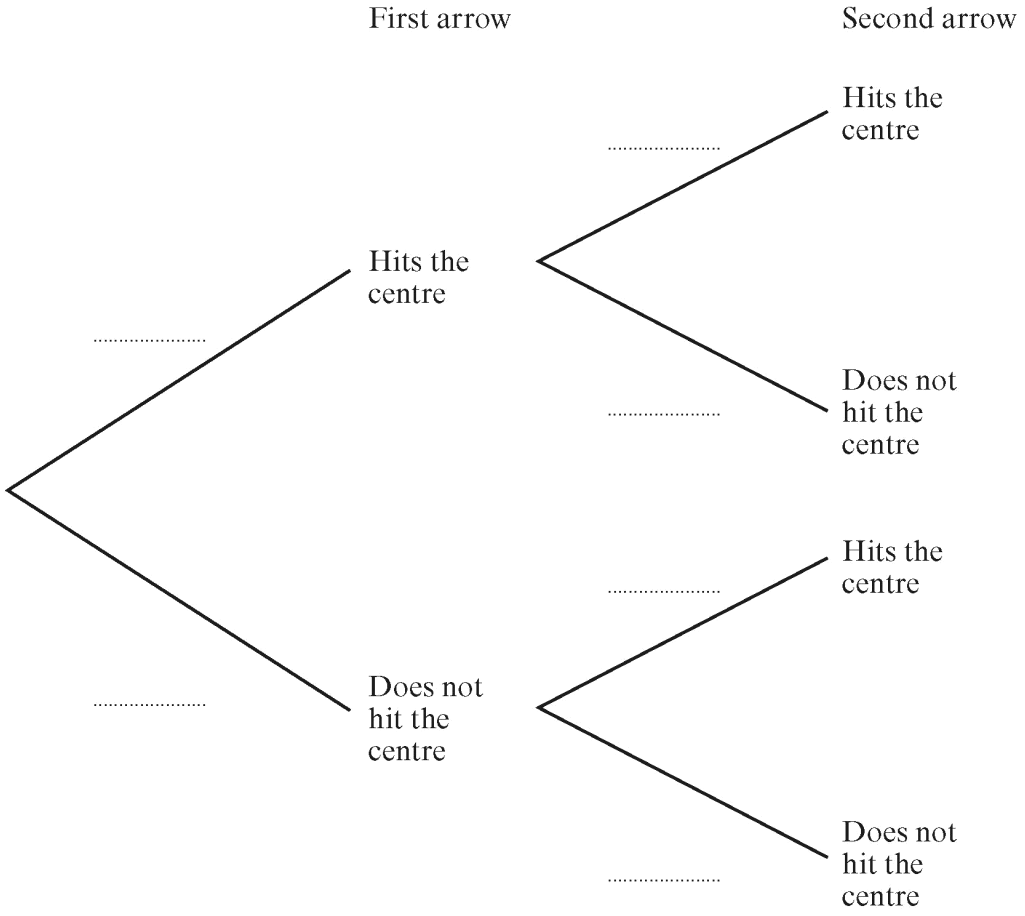
2) Each time George fires an arrow at a target, the probability that it hits the centre of the target is 0·3.



George fires two arrows at the target.

(a) Complete the following probability tree diagram.



[2]

(b) Calculate the probability that George only hits the centre of the target once.

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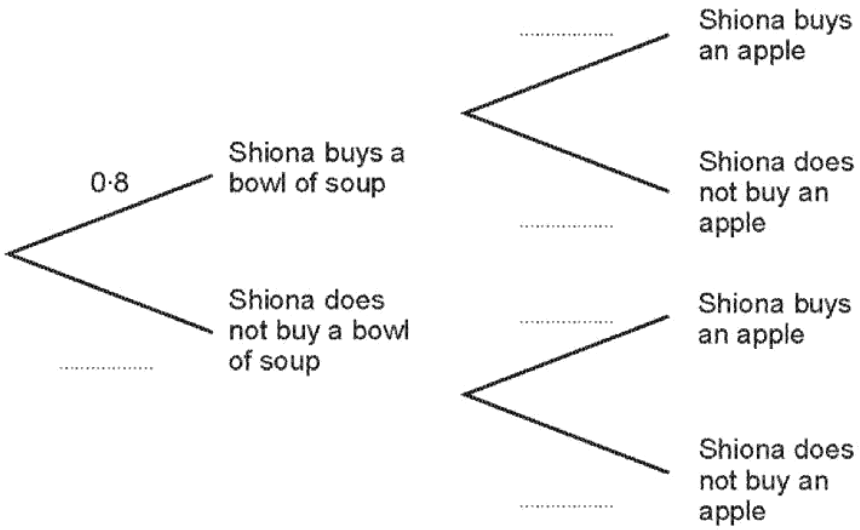
[3]

3) At lunchtime, the probability that Shiona buys a bowl of soup is 0·8.
The probability of Shiona buying an apple is independent of her buying a bowl of soup.
The probability that Shiona buys a bowl of soup and an apple is 0·32.

(a) Complete the tree diagram. [4]



(b) Find the probability that Shiona does not buy soup and does not buy an apple. [2]

4) The probability that Ifor buys a sandwich for lunch is 0·6.
The probability that Ifor buys a sandwich and a drink for lunch is 0·18.
Buying a sandwich for lunch and buying a drink for lunch are independent events.

(a) (i) Find the probability that Ifor buys a drink for lunch. [2]

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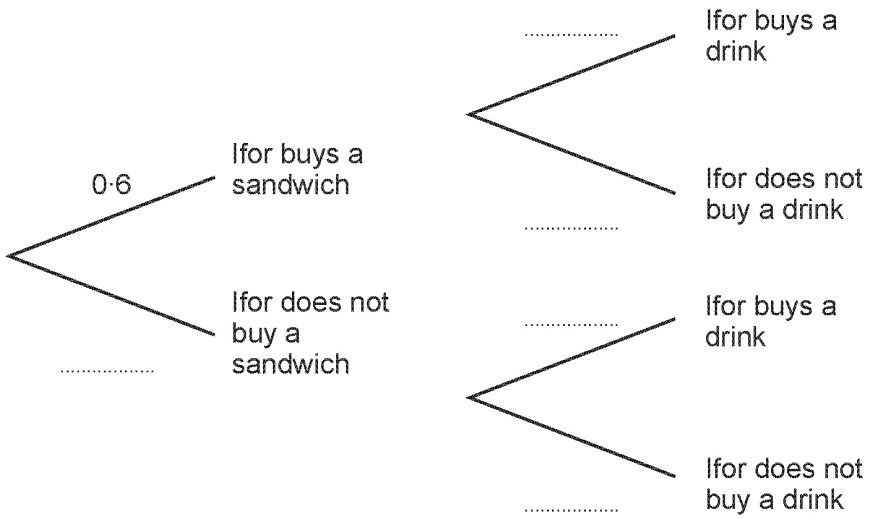
Probability that Ifor buys a drink = ...

(ii) Complete the tree diagram. [2]



(b) Find the probability that Ifor does not buy a sandwich and does not buy a drink at lunchtime. [2]

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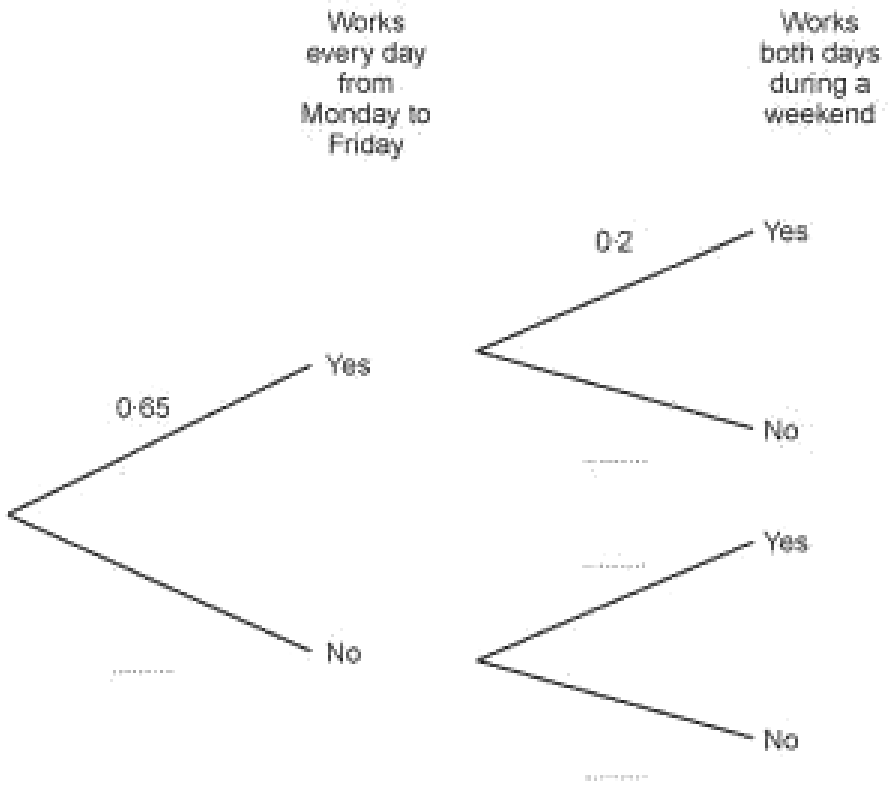
5) Carys has a Monday to Friday job and a weekend job.
Working Monday to Friday and working weekends are independent events.

In any given week, the probability that Carys works every day from Monday to Friday is 0·65.
The probability that she works both days during a weekend is 0·2.

(a) Complete the following tree diagram. [2]



(b) Calculate the probability that next week Carys will work every day from **Monday to Sunday**. [2]

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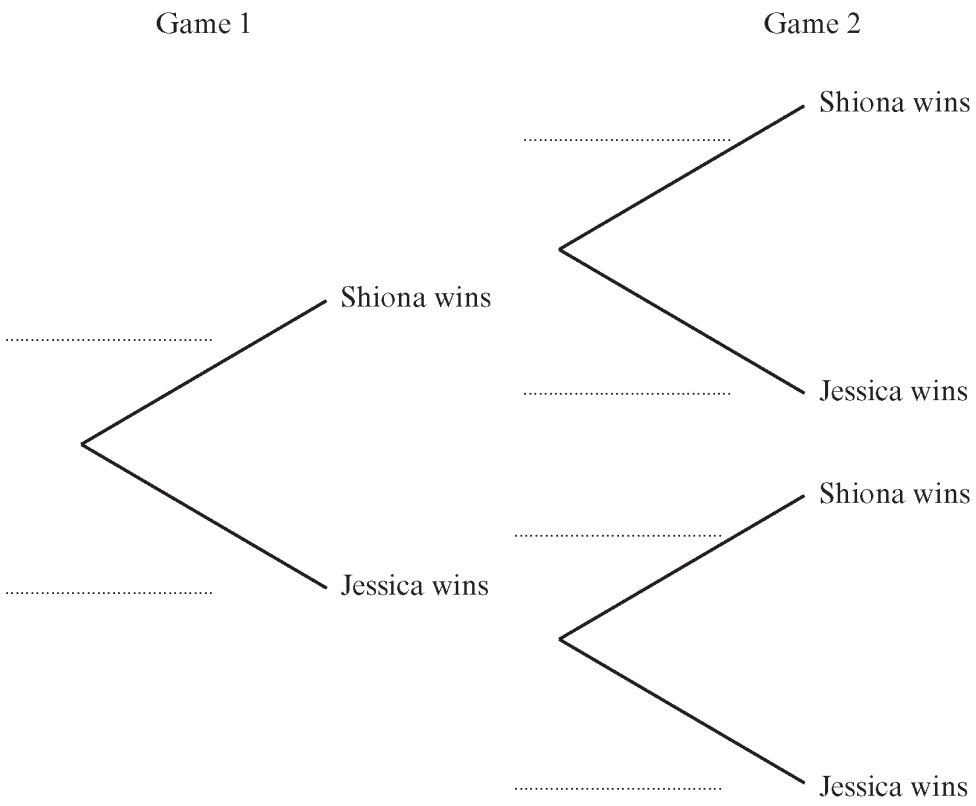
6) Whenever Shiona and Jessica play a game of 'Jewels' the probability that Shiona wins is 0·3.

(a) Complete the following tree diagram to show the probabilities of what can happen when Shiona and Jessica play two games of 'Jewels'.



[2]

(b) Calculate the probability that Shiona wins exactly one game.

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[3]

7) At lunchtime, the probability that Kelly buys a bowl of soup is 0·7.
The probability that Kelly buys a sandwich is independent of her buying a bowl of soup.
The probability that Kelly buys a bowl of soup **and** a sandwich is 0·28.

(a) Complete the tree diagram.

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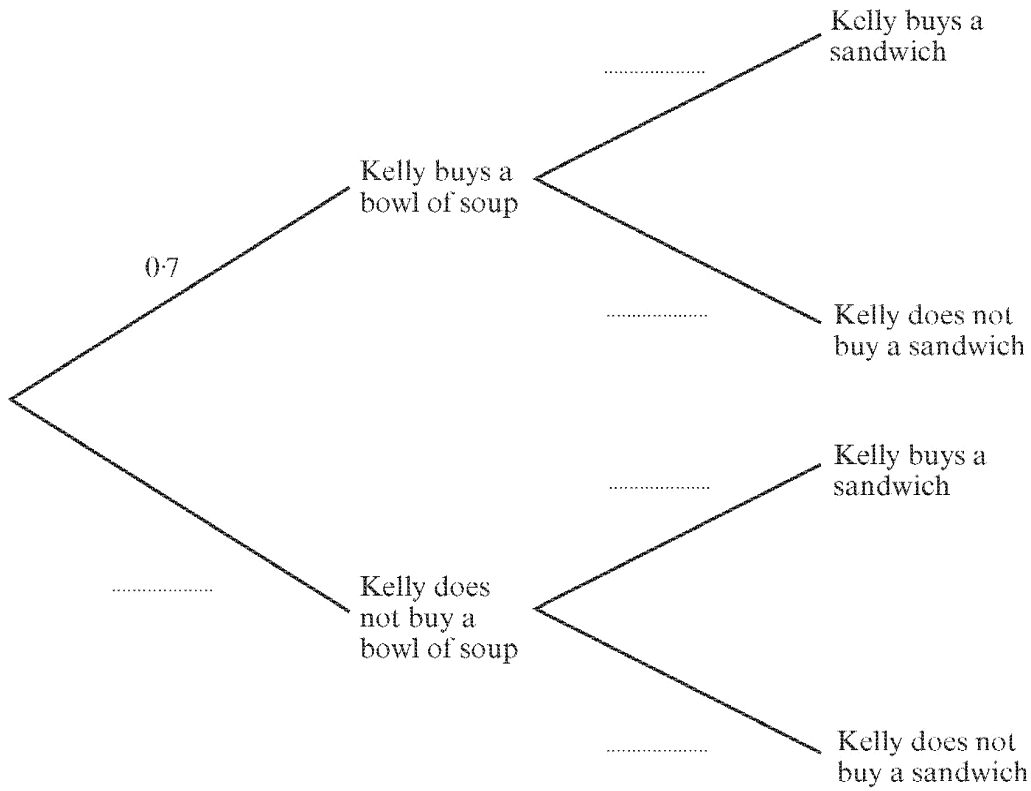

[4]

(b) Find the probability that Kelly does not buy soup and does not buy a sandwich.

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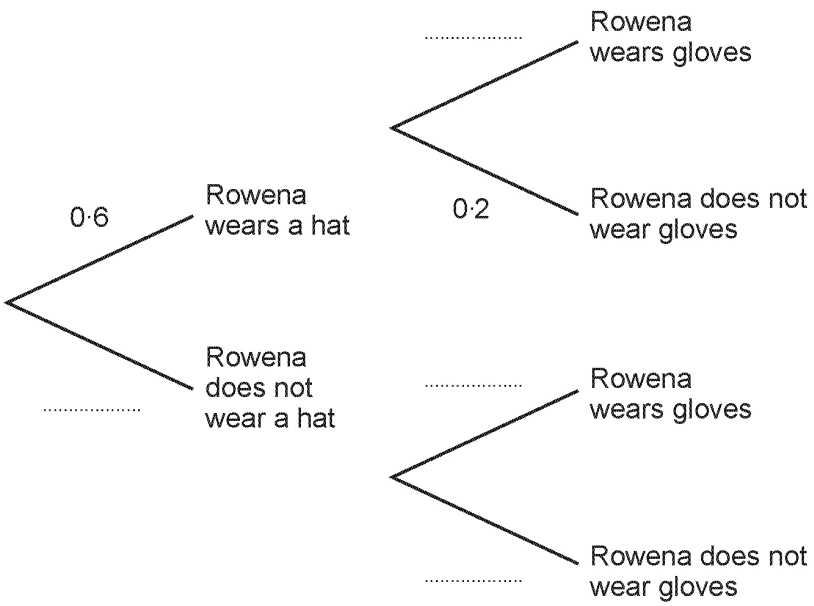
[2]

8) Rowena sometimes wears a hat and sometimes wears gloves.

The probability that she wears a hat on a given day is 0·6.
The probability that she **does not** wear gloves on a given day is 0·2.
Wearing a hat and wearing gloves are independent.

(a) Complete the following tree diagram. [2]



(b) Calculate the probability that, on a given day, Rowena wears a hat but does not wear gloves. [2]

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(c) Calculate the probability that, on a given day, Rowena **does not** wear a hat or gloves. [2]

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9) The probability that Daisy wears a bracelet is 0·7.
The probability that Daisy wears a bracelet **and** wears a necklace is 0·63.
For Daisy, wearing a bracelet and wearing a necklace are independent events.

(a) (i) Find the probability that Daisy wears a necklace. [2]

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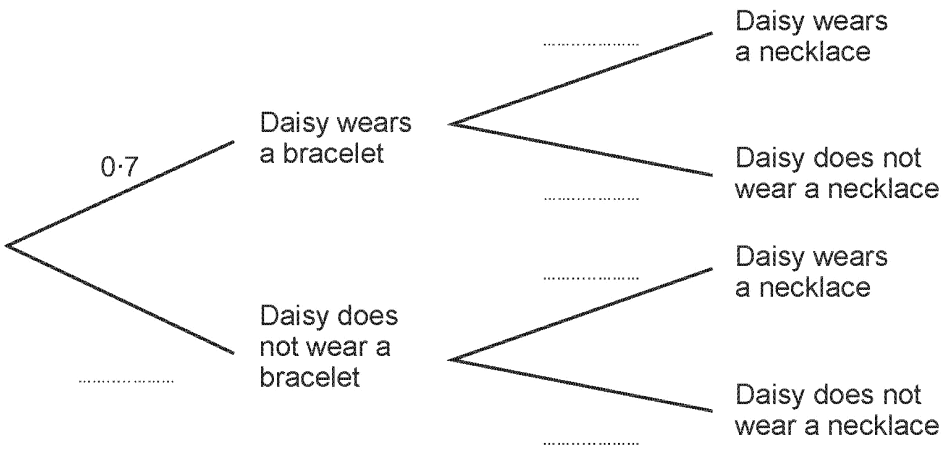
Probability that Daisy wears a necklace = ...

(ii) Complete the tree diagram. [2]



(b) Find the probability that Daisy does not wear a bracelet **and** does not wear a necklace. [2]

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10) Alwyn often drives from Bangor to Cardiff.
He always chooses one of two routes for these journeys.
He either travels through Rhayader or through Hereford.
The probability that he travels through Rhayader is 0·7.

Sometimes he decides to stop for a break during his journey.
His decision is independent of the route he takes.

The probability that he travels through Rhayader **and** stops for a break is 0·42.

(a) Complete the following tree diagram. [4]

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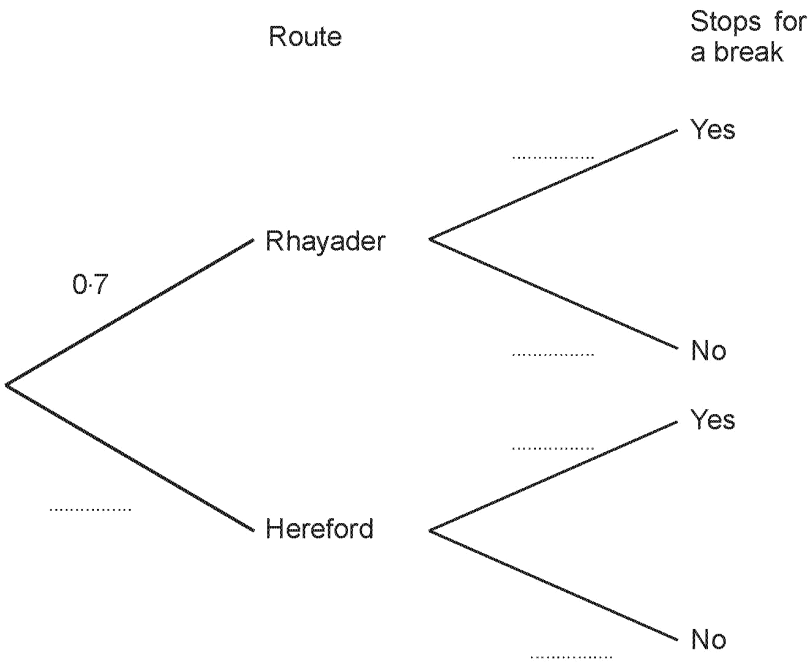

(b) Calculate the probability that Alwyn travels through Hereford but **does not** stop for a break. [2]

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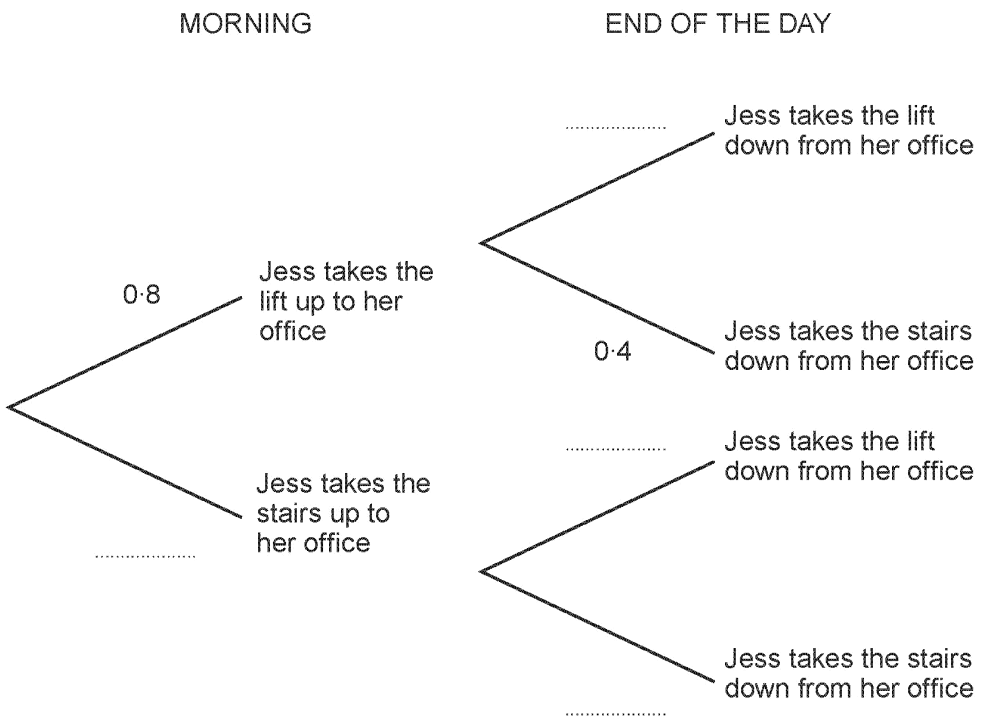
11) Jess works on the 8th floor of an office block.
To get up to her office in the morning and down from her office at the end of the day, she uses either the lift or the stairs.

The probability that she takes the lift up to her office is 0·8.
The probability that she takes the stairs down from her office is 0·4.
Going up to her office and coming down from her office are independent events.

(a) Complete the following tree diagram. [2]



(b) Calculate the probability that Jess takes the lift up to her office in the morning and takes the stairs down from her office at the end of the day. [2]

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(c) Calculate the probability that Jess **does not** use the lift when she goes up to her office in the morning or when she comes down at the end of the day. [2]

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12) At breakfast, the probability that Melanie has a bowl of cereal is 0·3 and the probability that Melanie has a slice of toast is 0·2.
Melanie having a bowl of cereal and Melanie having a slice of toast are independent events.

(a) Complete the tree diagram. [3]

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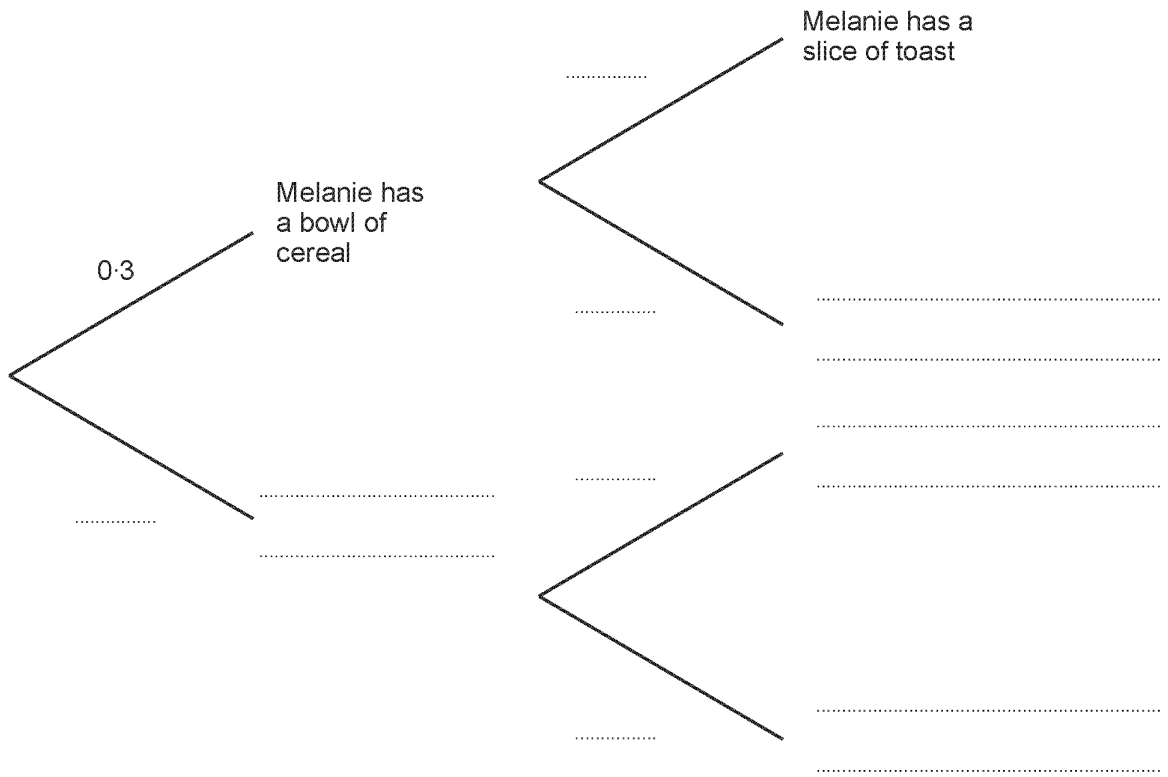

(b) Find the probability that Melanie has a bowl of cereal and a slice of toast. [2]

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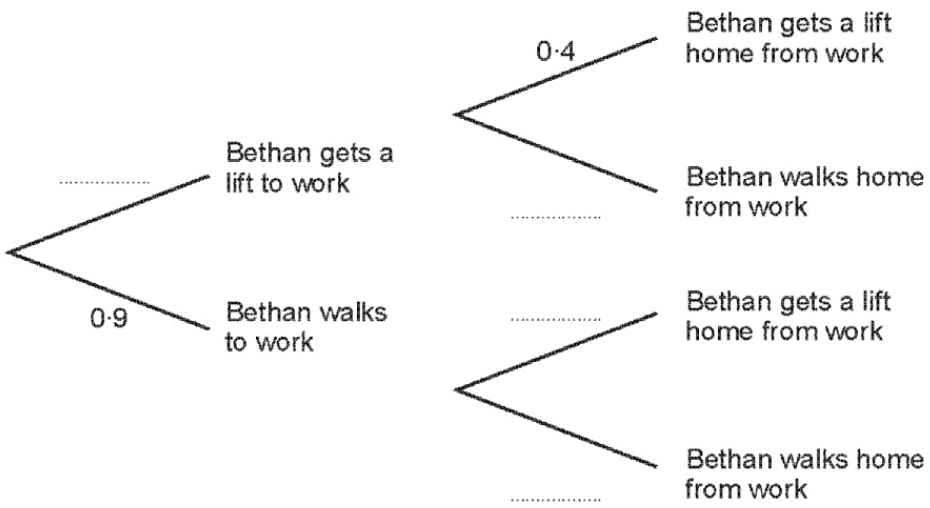
13) Bethan sometimes gets a lift to and from work.
When she does not get a lift, she walks.
The probability that she walks to work is 0·9.
The probability that she gets a lift home from work is 0·4.
Getting to work and getting home from work are independent.

(a) Complete the following tree diagram. [2]



(b) Calculate the probability that Bethan walks to work and gets a lift home from work. [2]

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(c) Calculate the probability that Bethan gets a lift to work but **does not** get a lift home from work. [2]

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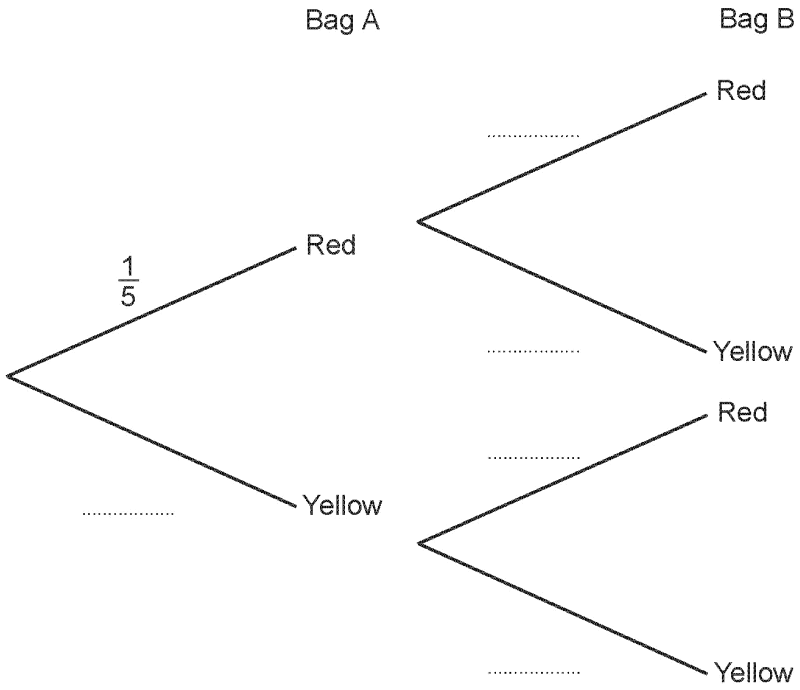
14) A game involves two bags, each containing coloured balls.

Bag A contains 1 red ball and 4 yellow balls.
Bag B contains 2 red balls and 1 yellow ball.

A player picks one ball at random from each bag.

(a) Complete the following tree diagram. [2]



(b) Find the probability of picking one ball of each colour. [3]

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