



Aberdare Community School
Mathematics Department

WJEC GCSE
Higher – Non Calculator
Data

Tree diagrams

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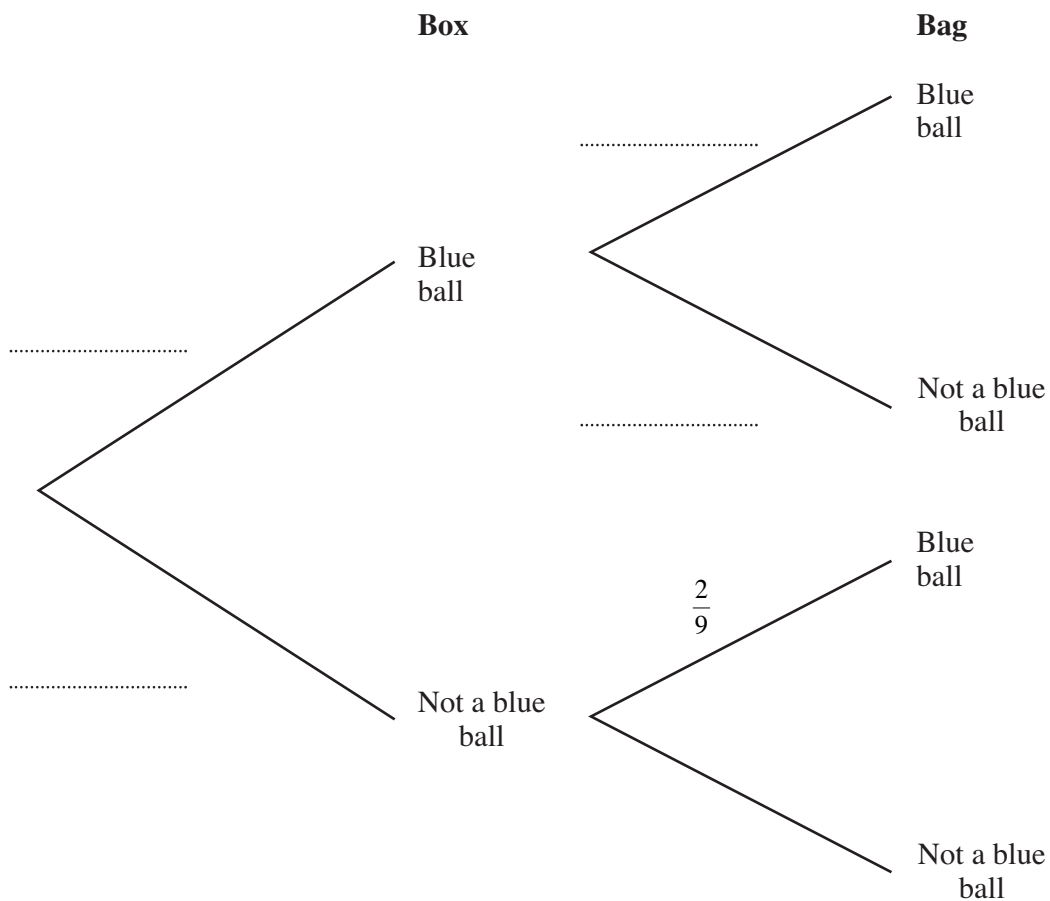
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17. A box and a bag contain coloured balls identical except for their colour. When a ball is drawn at random from the box the probability that the ball is blue is $\frac{3}{5}$. When a ball is drawn at random from the bag the probability that the ball is blue is $\frac{2}{9}$. Hywel draws one ball at random from the box and one ball at random from the bag.

(a) Complete the following tree diagram.



[2]

(b) Calculate the probability that neither of the balls drawn is blue.

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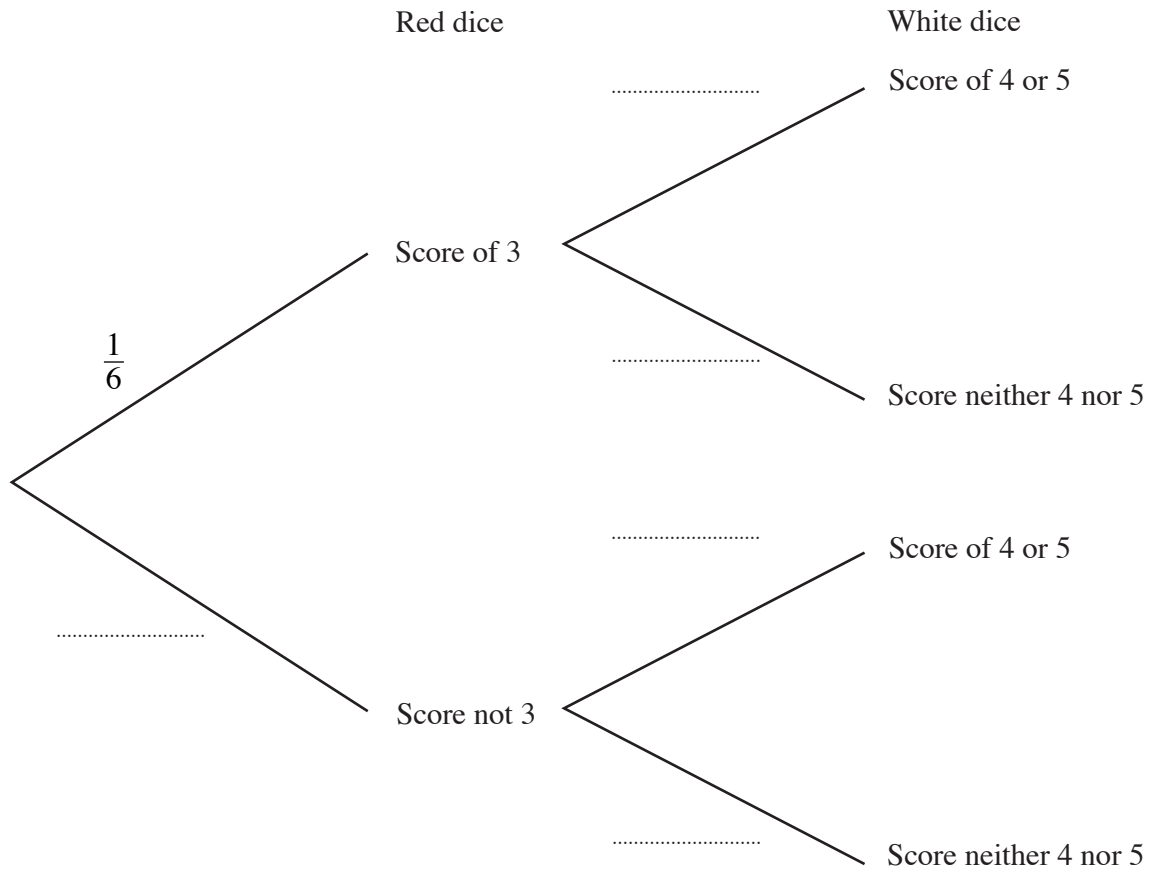
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[2]

13. (a) Gillian throws two fair dice, one coloured red and the other coloured white. She makes a note of the score on each dice.

(i) Complete the following probability tree diagram to show the probabilities of events.



(ii) Calculate the probability of Gillian not scoring 3 on the red dice and getting a score of 4 or 5 on the white dice.

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[5]

(b) Calculate the probability that Gillian gets a double three.

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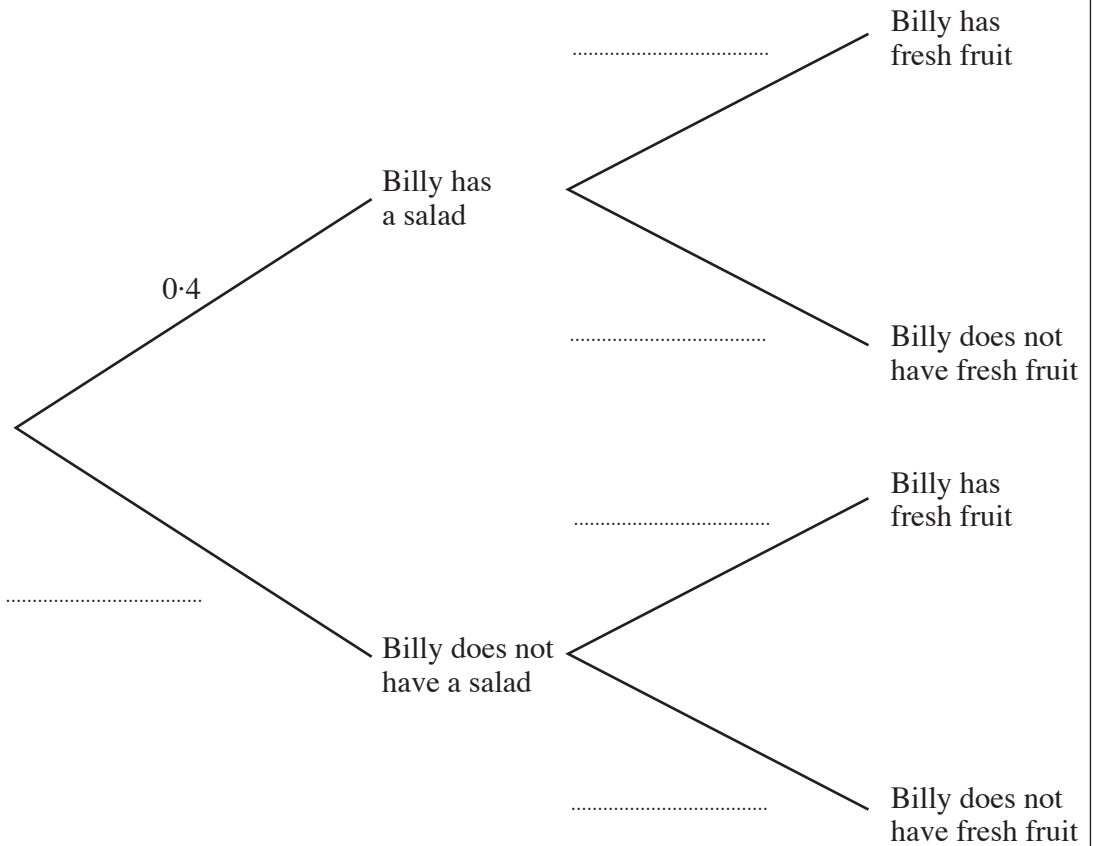
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[2]

8. At lunchtime, the probability that Billy has a salad is 0.4. Whether or not Billy has a salad, the probability that Billy has fresh fruit afterwards is 0.3.

(a) Complete the following tree diagram.



[2]

- (b) Calculate the probability that Billy has a salad for lunch but does not have fresh fruit afterwards.

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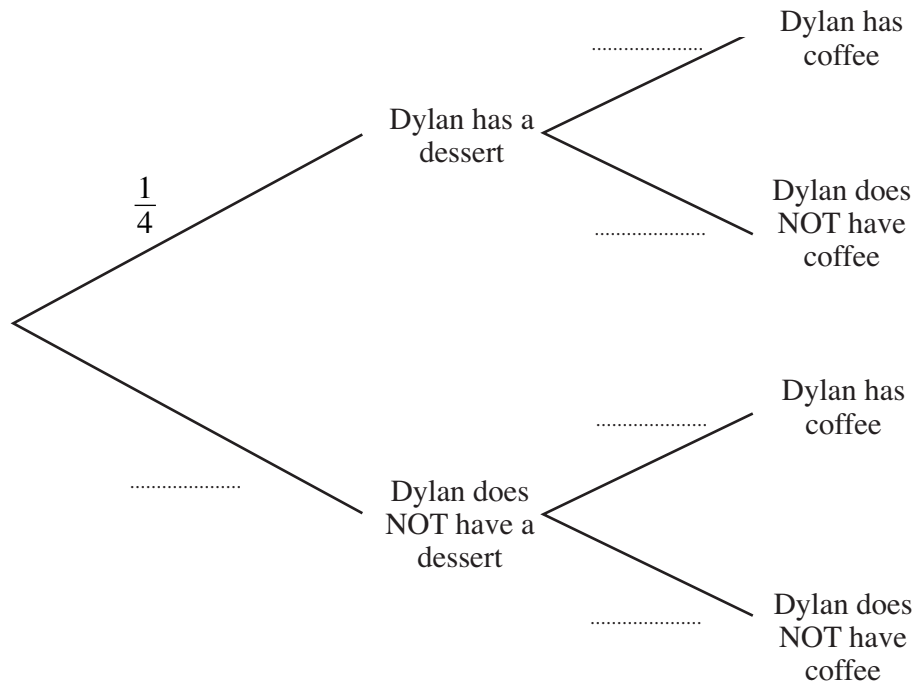
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[2]

11. When Dylan has lunch the probability that he has a dessert is $\frac{1}{4}$. Whether or not he has a dessert the probability that he has coffee is $\frac{2}{5}$.

(a) Complete the following tree diagram.



[2]

(b) Calculate the probability that Dylan has a dessert or coffee, but not both.

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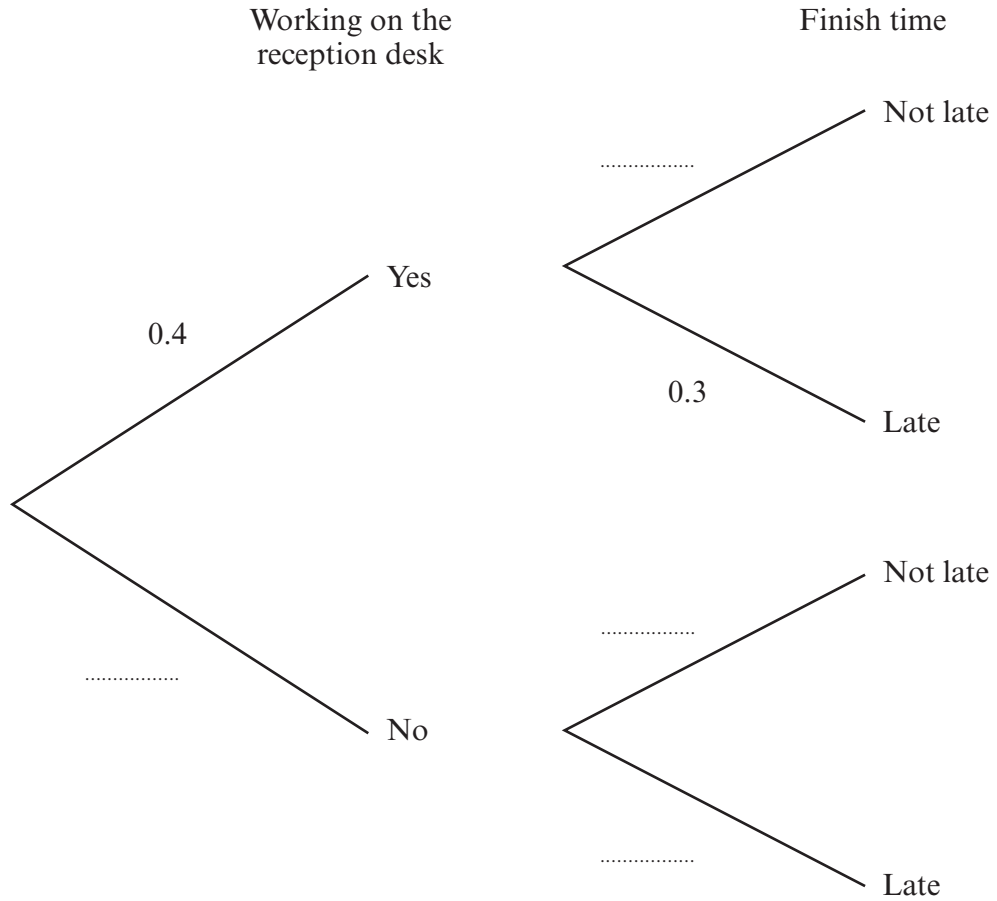
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[2]

11. David is employed by a law company.
 The probability that he works on the reception desk is 0.4.
 The probability that he has to work late is 0.3.
 Working on the reception desk and working late are independent events.

(a) Complete the following tree diagram.



[2]

- (b) Calculate the probability that David works on the reception desk and he does not finish work late.

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[2]

(c) Which of the following, **A**, **B**, **C** or **D** is the most likely work routine for David?

- A** Working on the reception desk and **not** finishing late.
- B** Working on the reception desk and finishing late.
- C** **Not** working on the reception desk and **not** finishing late.
- D** **Not** working on the reception desk and finishing late.

Show your working and give a reason for your answer.

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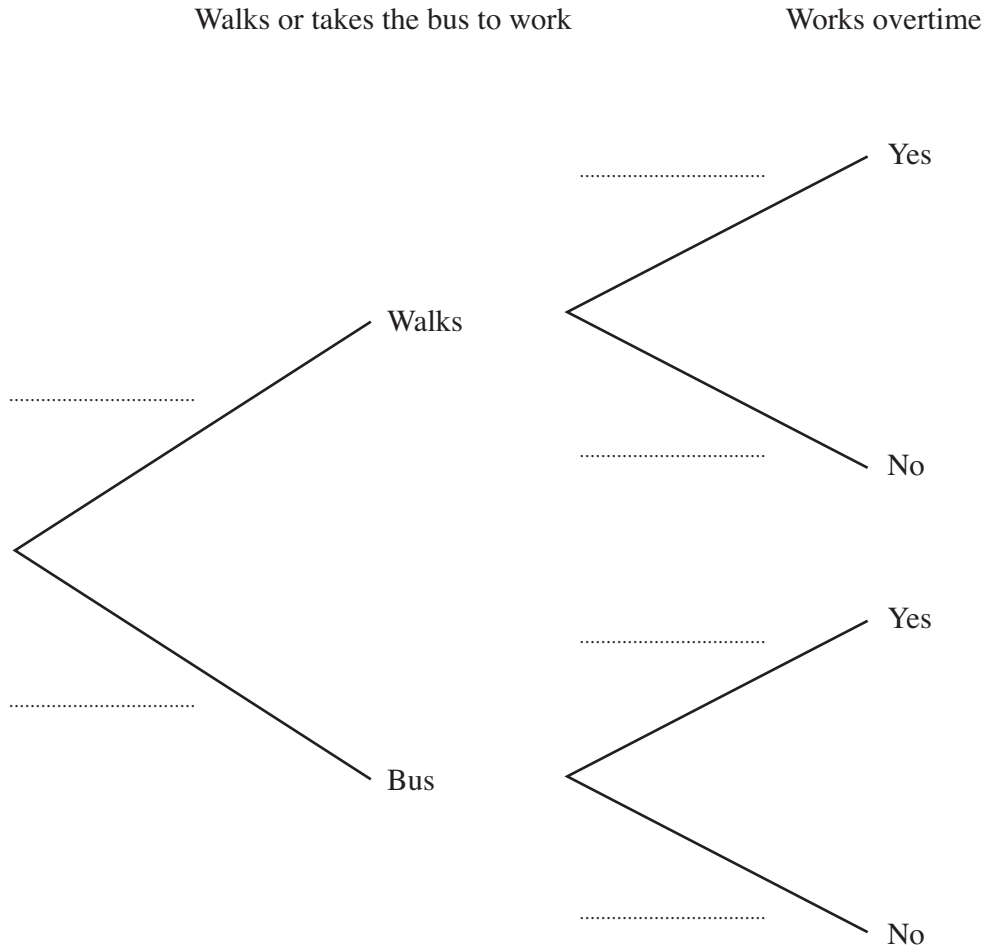
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[2]

13. Carly can either walk or take the bus to work.
The probability that she walks to work is 0.4.
The probability that she works overtime is 0.3.
These events are independent.

(a) Complete the following tree diagram.



[3]

- (b) Calculate the probability that Carly walks to work and works overtime.

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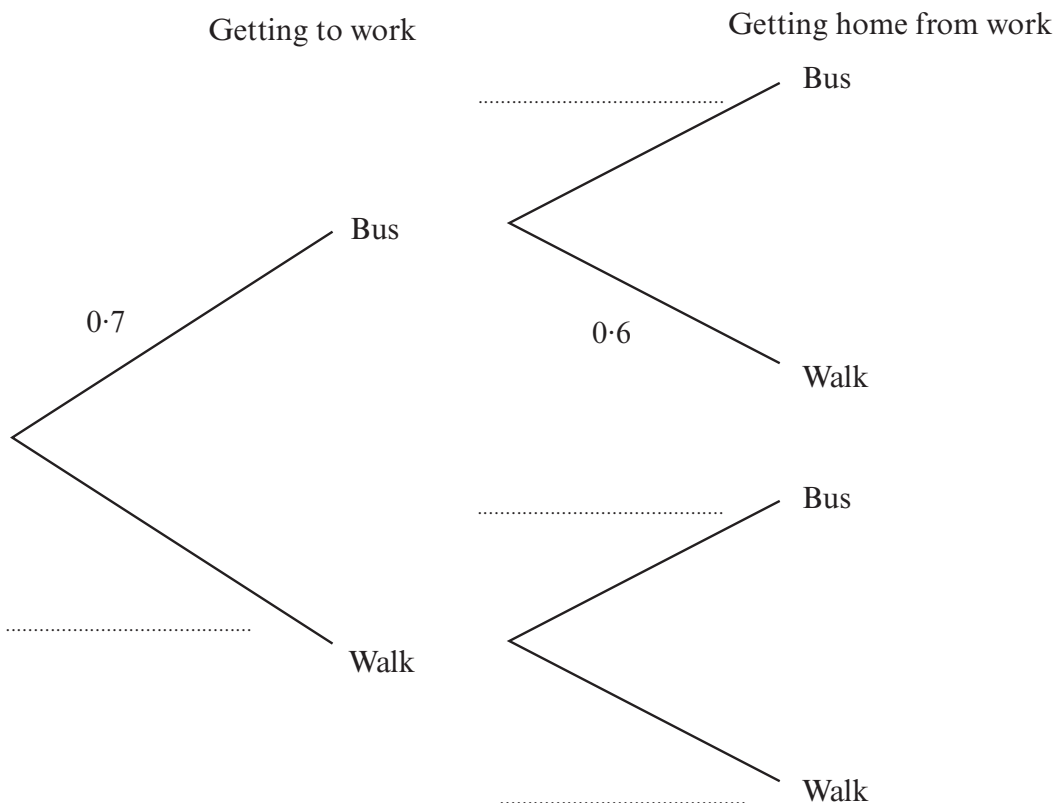
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[2]

8. Roger sometimes uses the bus to get to and from work. When Roger does not take the bus he walks. The probability that he takes the bus to work is 0.7. The probability that he walks home from work is 0.6. Getting to work and getting home from work are two independent events.

(a) Complete the following tree diagram.



[2]

(b) Calculate the probability that Roger takes the bus to work and walks home.

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[2]

(c) Which is the most unlikely way of Roger getting to and from work? Show your working and give a reason for your answer.

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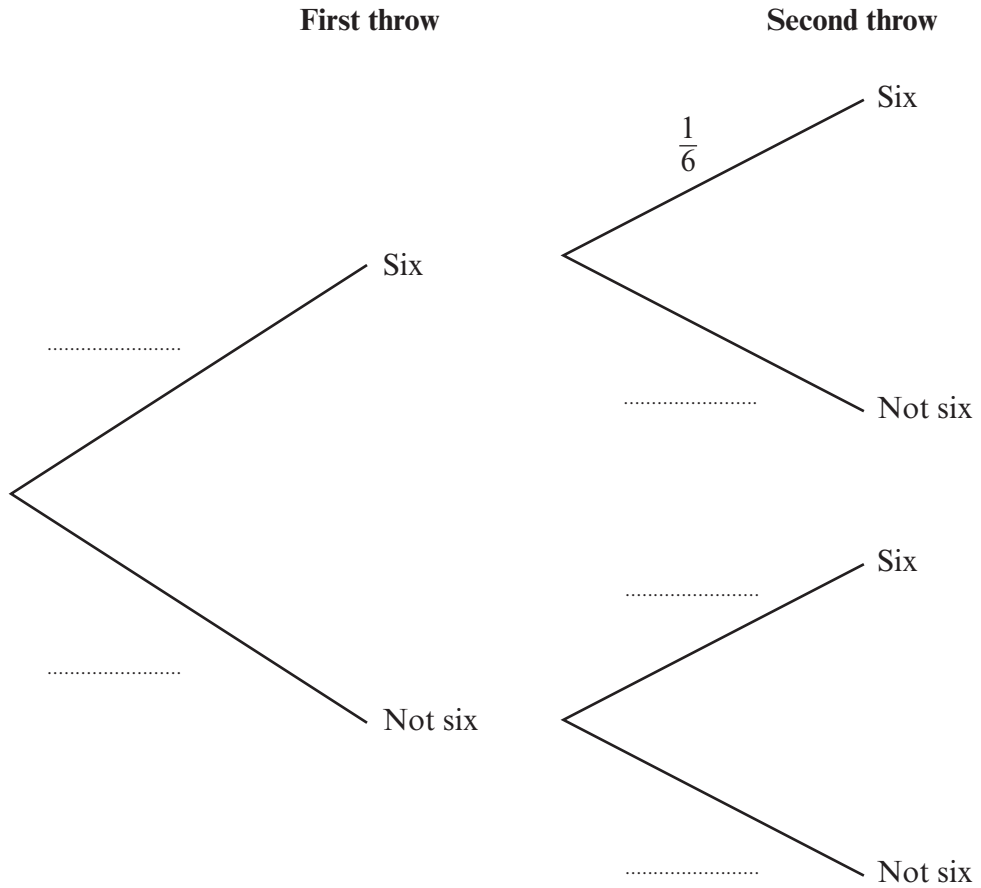
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[2]

(b) Carl is interested in scoring a six when throwing a fair dice.
He throws the same dice twice.

(i) Complete the probability tree below.



(ii) Calculate the probability that in the two throws of the dice Carl throws exactly one six.

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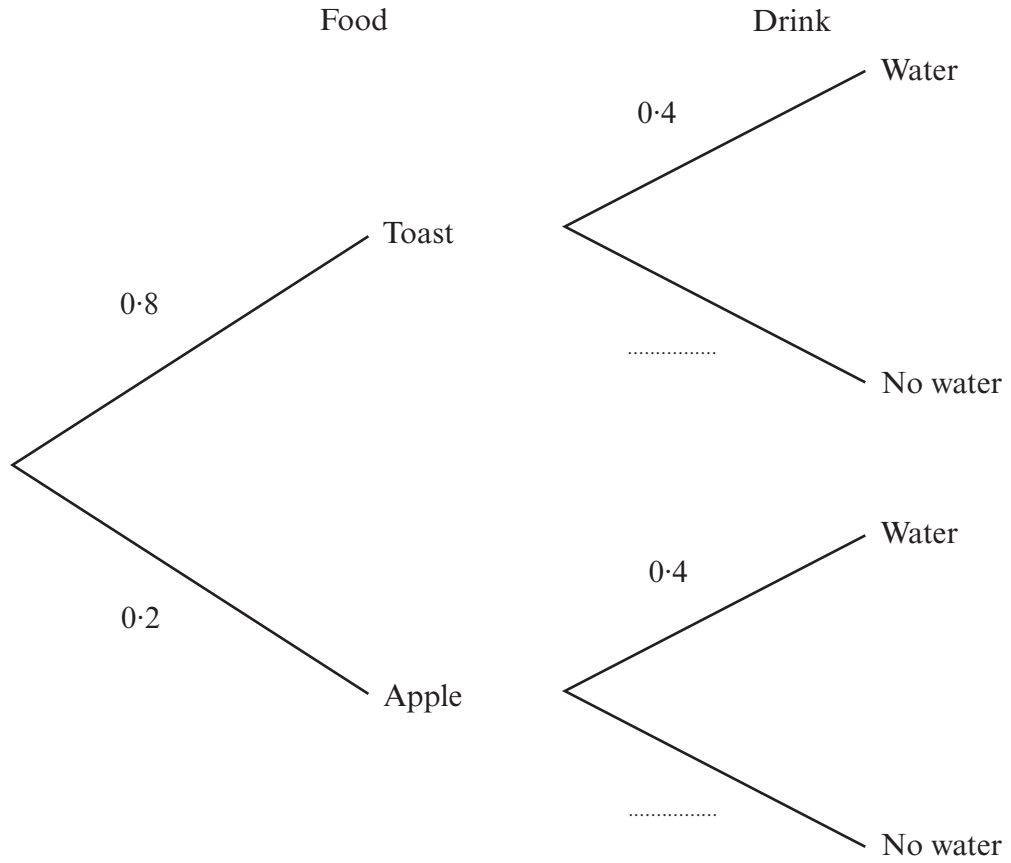
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[5]

10. Each morning break, Robert buys either a slice of toast or an apple in the school snack bar. The probability that he buys a slice of toast is 0.8. Whatever he eats, the probability that he buys a bottle of water is 0.4.

(a) Complete the following tree diagram.



[1]

(b) Calculate the probability that Robert buys an apple but does not buy a bottle of water.

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[2]

11. Katlyn throws two fair dice, one coloured red and the other coloured black. She makes a note of the score on each dice.

(a) Calculate the probability that Katlyn gets a double five.

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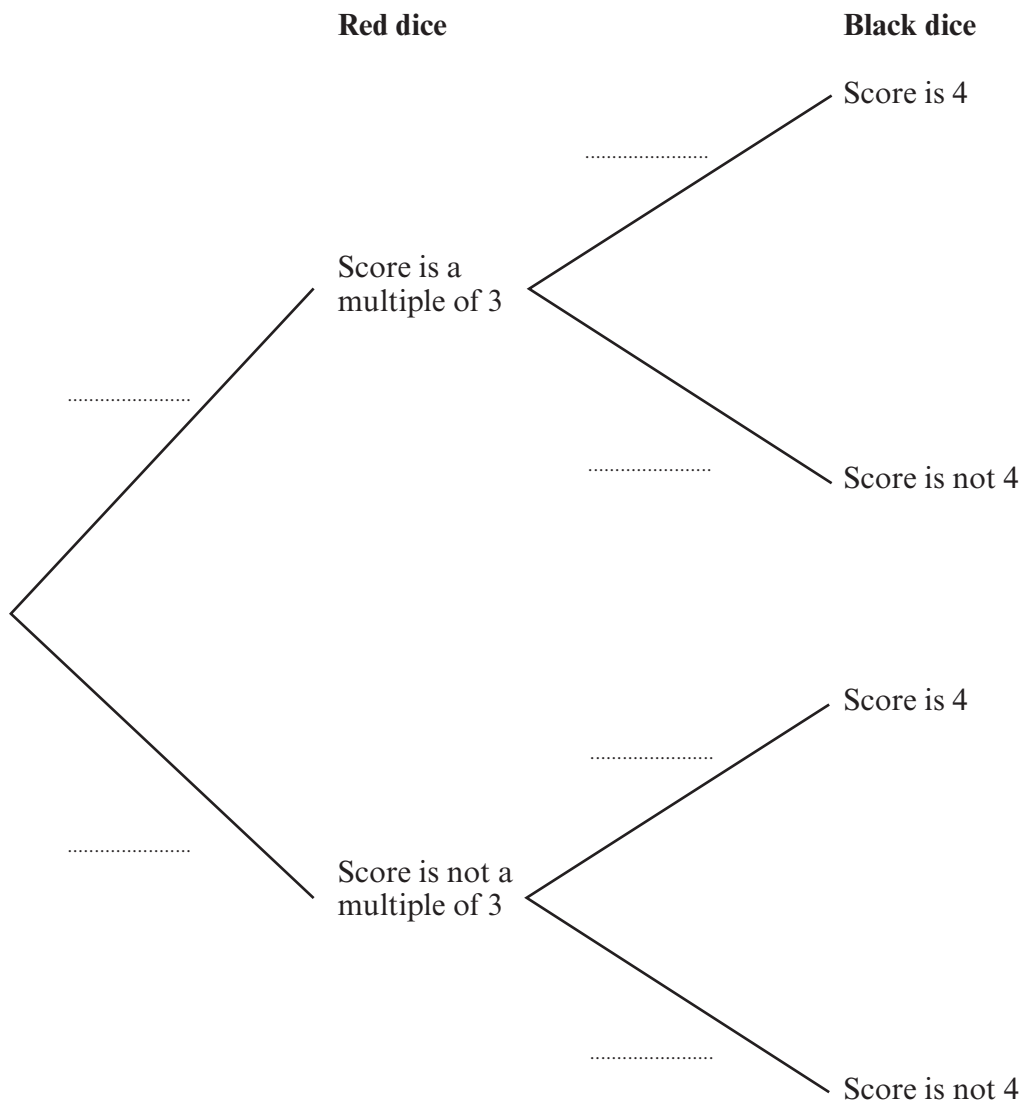
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(b) (i) Complete the following probability tree diagram to show the probabilities of events.



[3]

- (ii) Calculate the probability of Katlyn scoring a multiple of 3 on the red dice and getting a score of 4 on the black dice.

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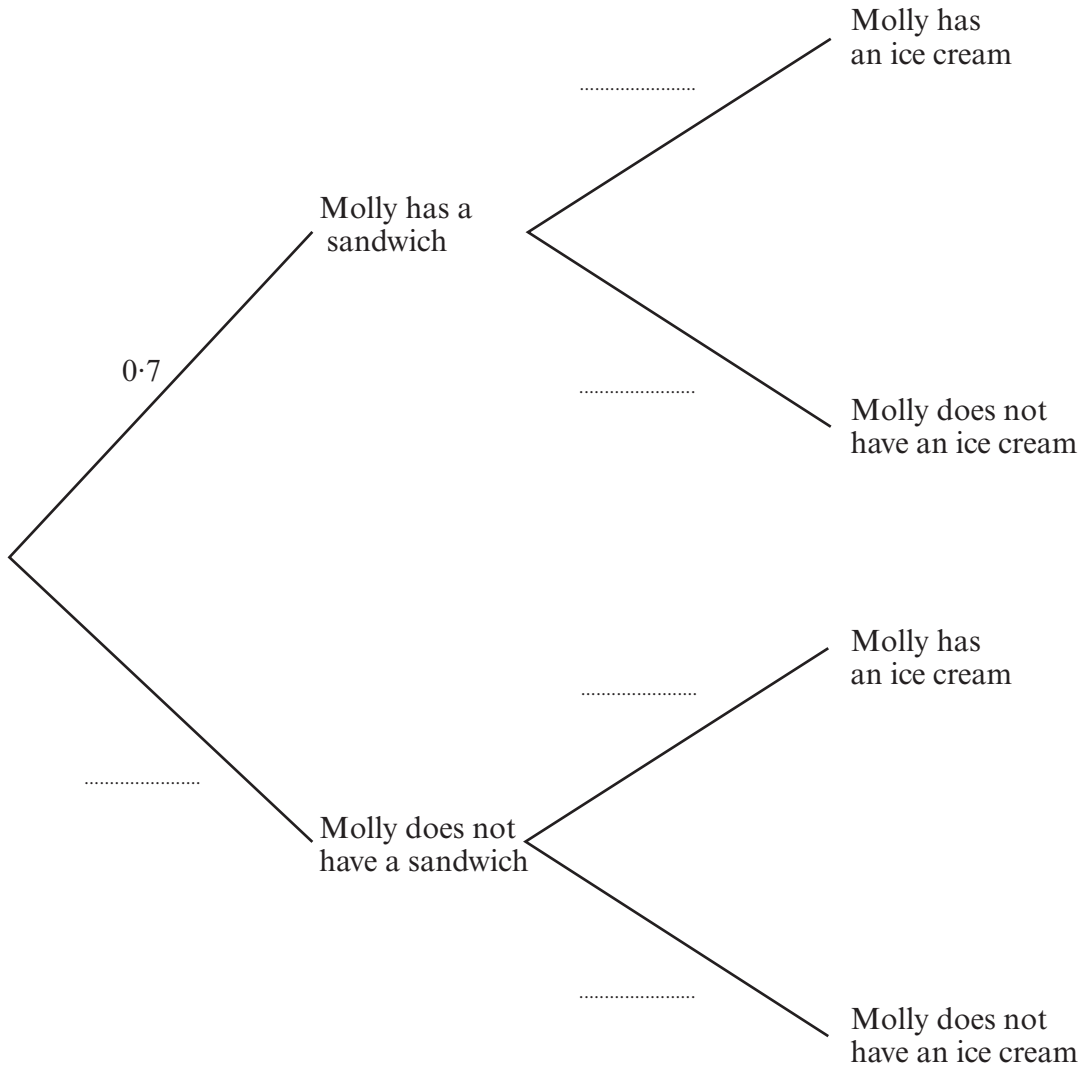
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[2]

12. At lunchtime, the probability that Molly has a sandwich is 0.7. Whether or not Molly has a sandwich, the probability that Molly has an ice cream mid-afternoon is 0.2.

(a) Complete the following tree diagram.



[2]

- (b) Calculate the probability that Molly has a sandwich for lunch and has an ice cream mid-afternoon.

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[2]

12. 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.

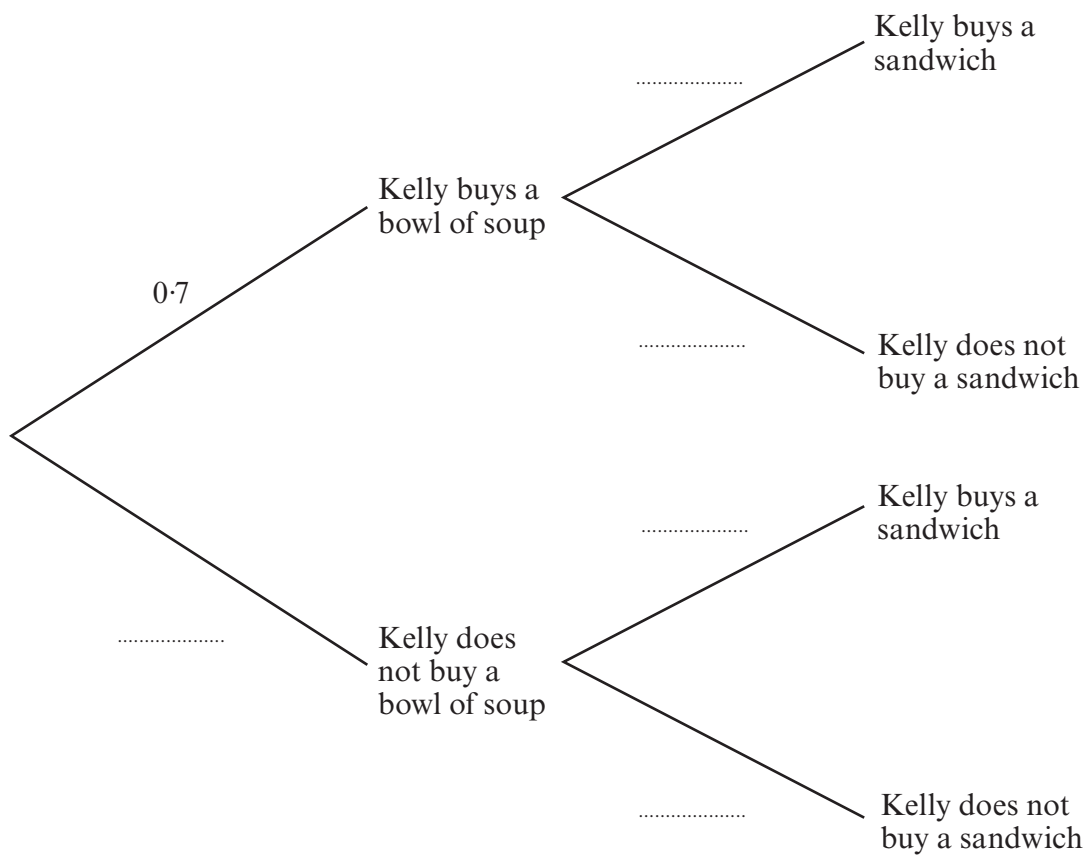
(a) Complete the tree diagram.

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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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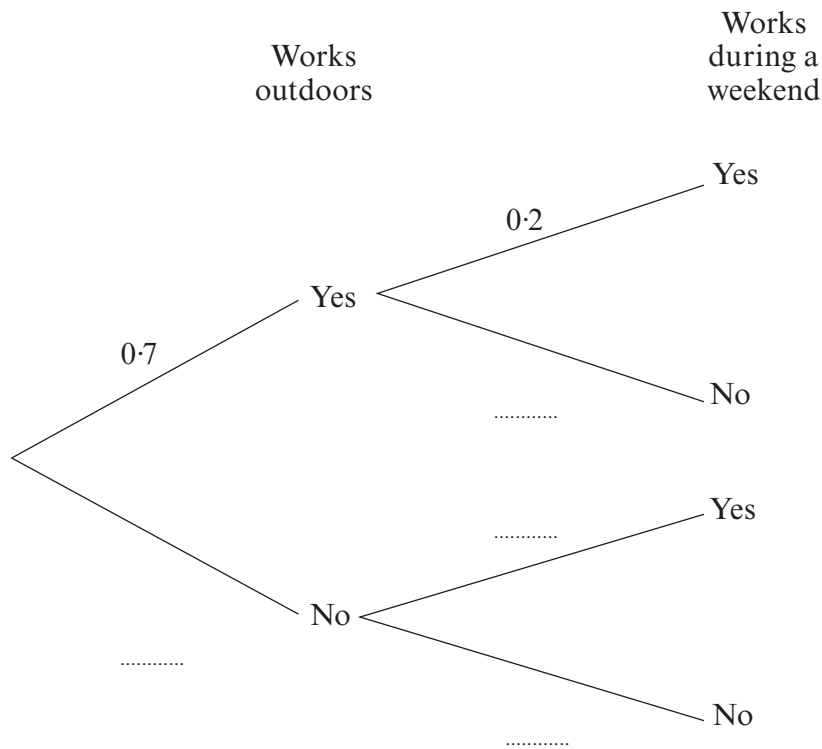
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[2]

7. Sasha works for a garden centre.
 In any given week the probability that she works outdoors is 0.7.
 The probability that she works during a weekend is 0.2.
 Working outdoors and working weekends are independent events.

(a) Complete the following tree diagram.



[2]

(b) Calculate the probability that next weekend Sasha will work outdoors.

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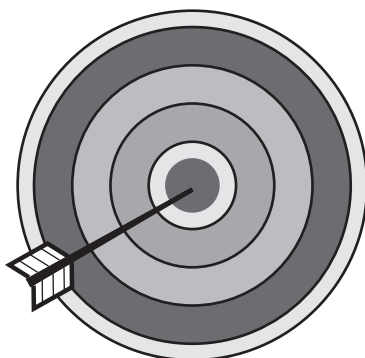
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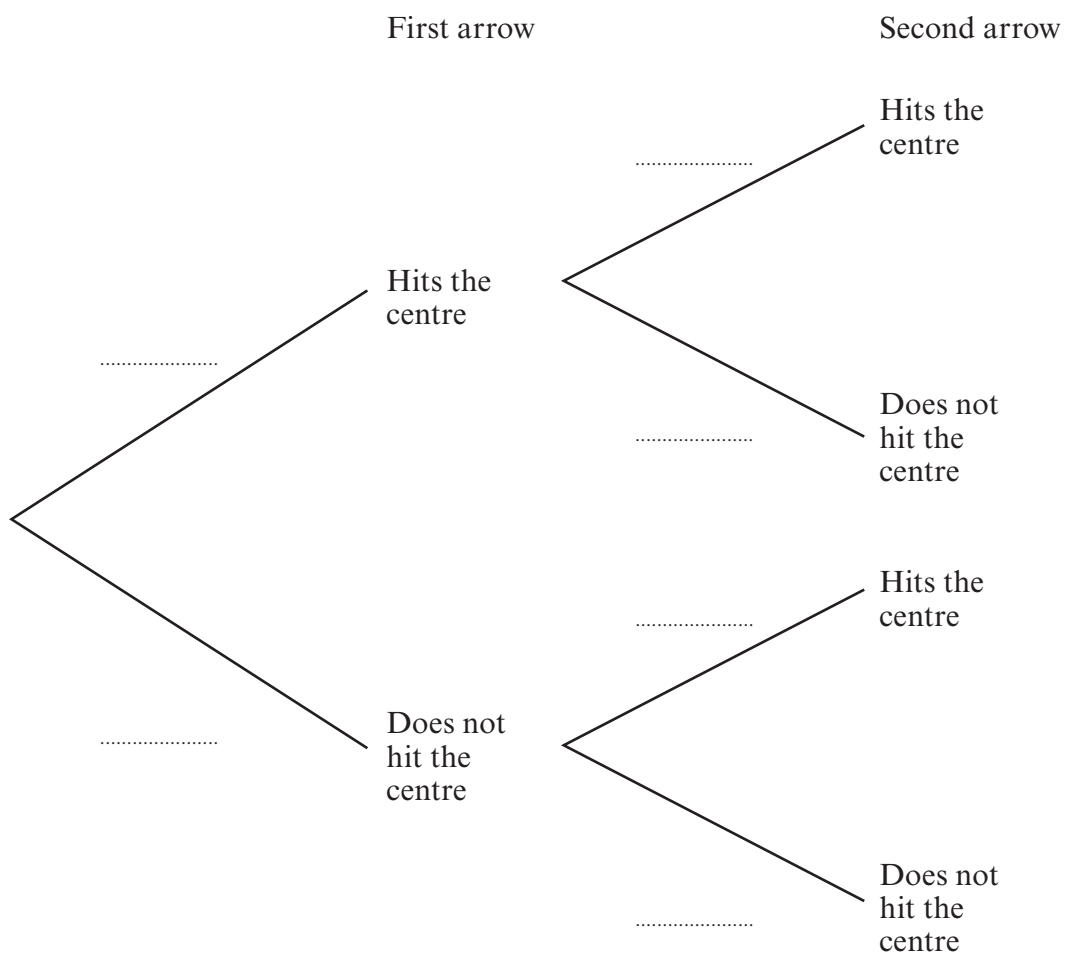


7. Each time George fires an arrow at a target, the probability that it hits the centre of the target is 0.3.



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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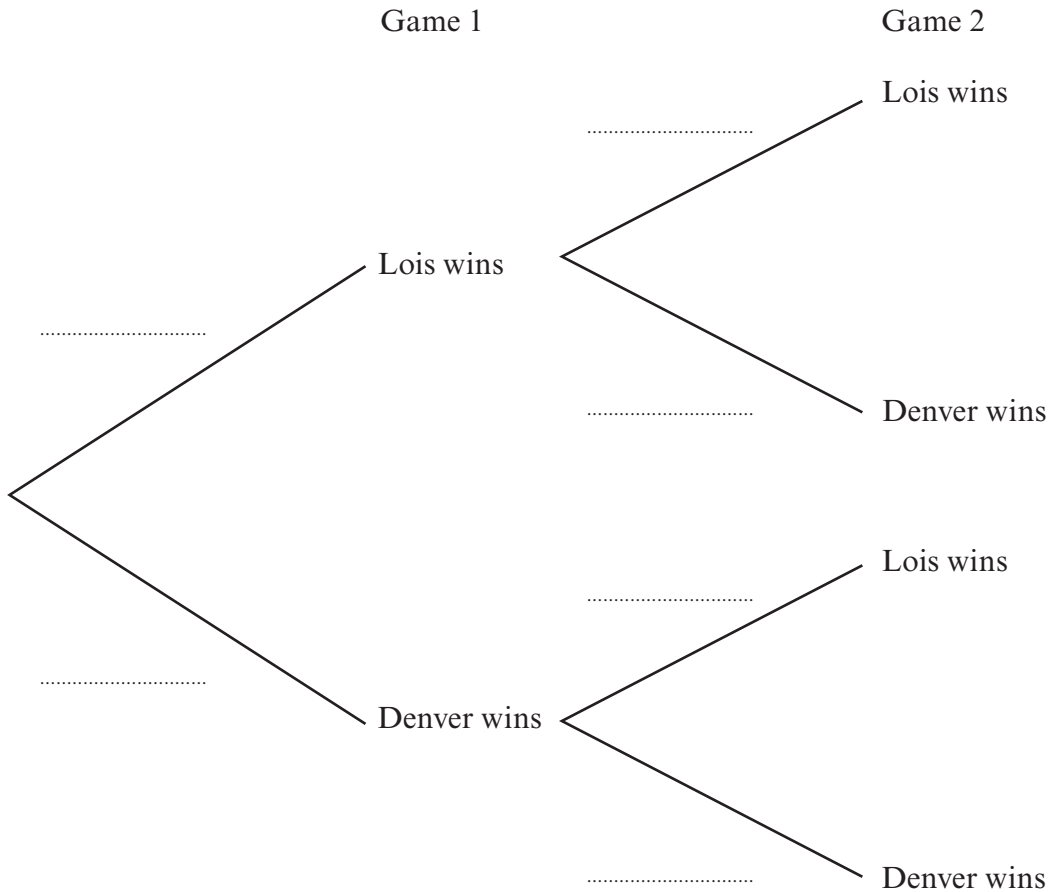
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10. Whenever Lois and Denver play a game of Bubble on their computer, the probability that Lois wins is 0.3. No game of Bubble ever ends in a draw.

(a) Complete the following tree diagram to show the probabilities of what can happen when Lois and Denver play two games of Bubble.



[2]

(b) Calculate the probability that Denver wins both games of Bubble.

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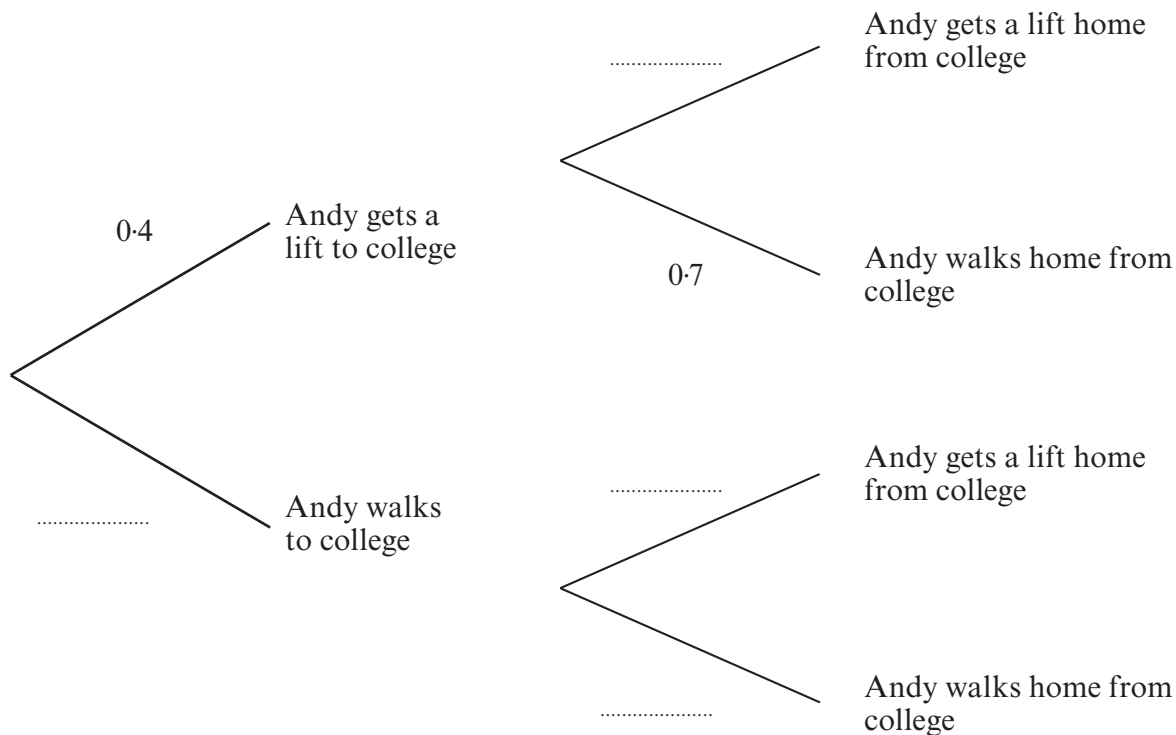
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[2]

9. Andy sometimes gets a lift to and from college.
 When he does not get a lift he walks.
 The probability that he gets a lift to college is 0.4.
 The probability that he walks home from college is 0.7.
 Getting to college and getting home from college are independent events.

(a) Complete the following tree diagram.



[2]

- (b) Calculate the probability that Andy gets a lift to college and walks home from college.

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[2]

- (c) Calculate the probability that Andy **does not** get a lift to or from college.

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[2]

11. 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.

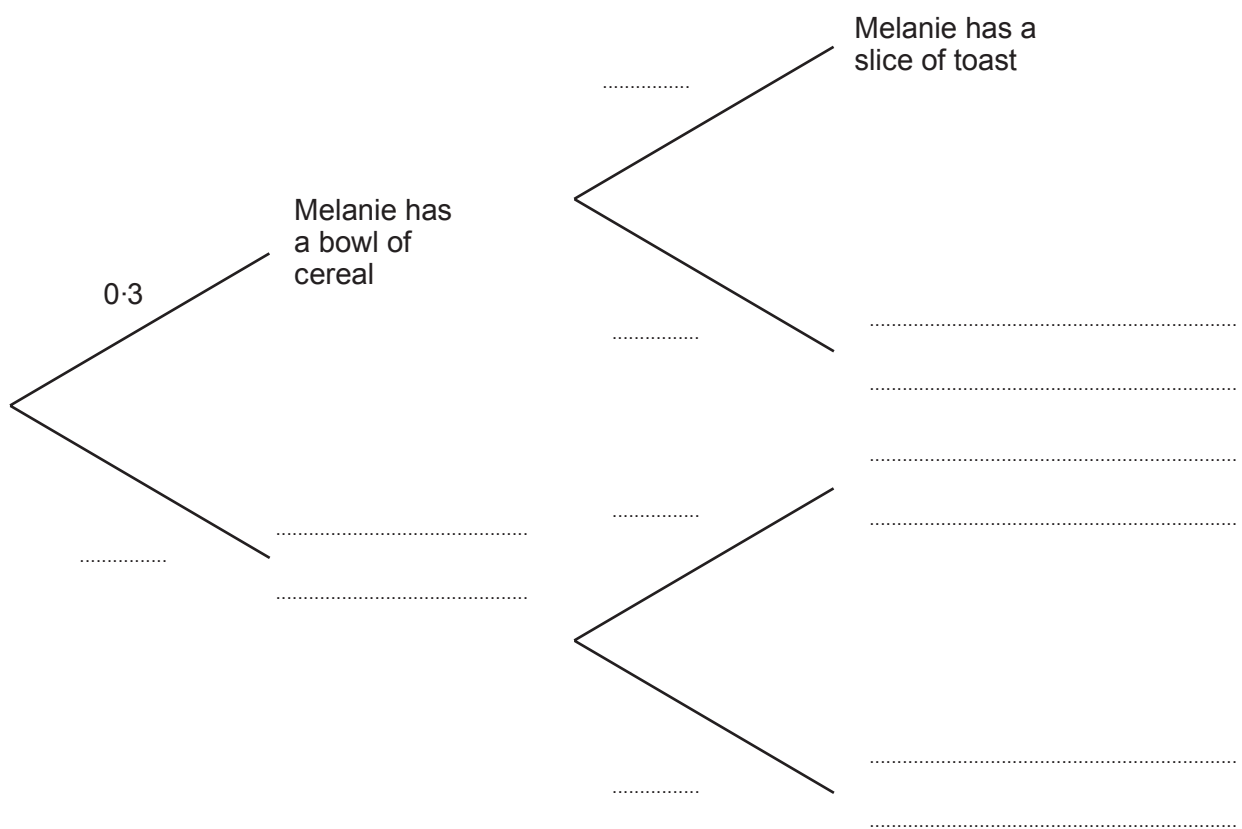
(a) Complete the tree diagram.

[3]

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

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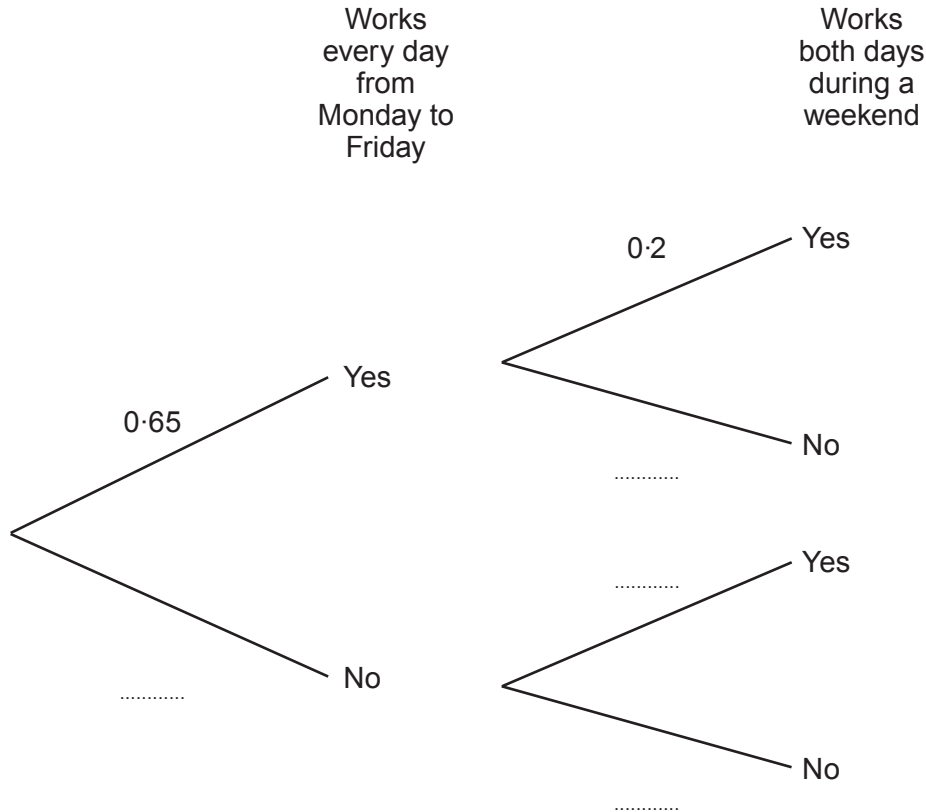
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14. Carys has a Monday to Friday job and a weekend job.
Working Monday to Friday and working weekends are independent events.

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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