

Walking Talking - Tree Diagrams

1.

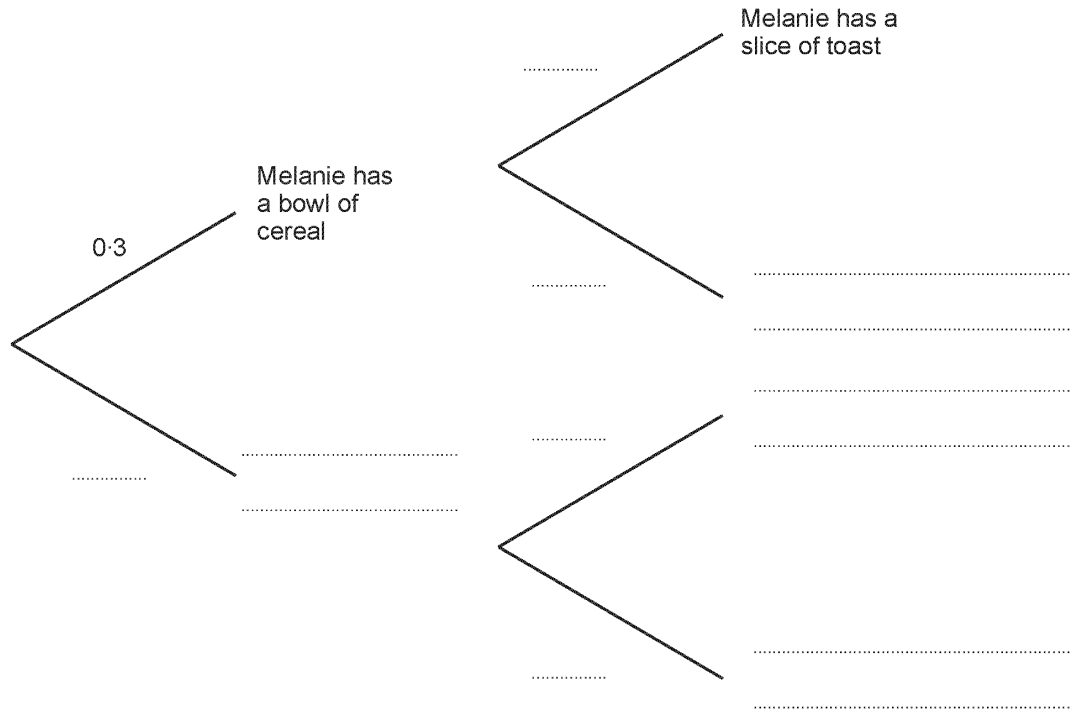
At breakfast, the probability that Melanie has a bowl of cereal is 0.3 and the probability that Melanie has a slice of toast is 0.2.
Melanie having a bowl of cereal and Melanie having a slice of toast are independent events.

(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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2.

A bowl contains 25 beans.
There are 6 kidney beans, 9 pinto beans and 10 black-eyed beans.
Two beans are selected at random from the bowl, without replacement.

(a) Calculate the probability that both of the beans are black-eyed beans.

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[2]

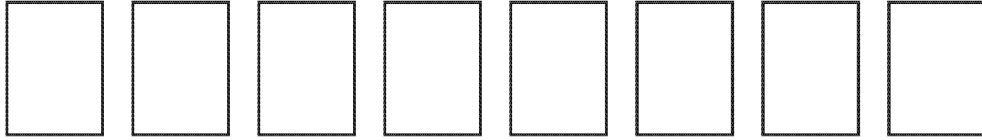
(b) Calculate the probability that at least one pinto bean is selected.

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[3]

3.

Each of eight cards has one factor of 70 on it.
The eight numbers are all different.



Two cards are selected at random without replacement.

(a) Calculate the probability that the **difference** of the two numbers on the selected cards is odd.

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[5]

(b) Calculate the probability that at least one of the selected cards is even.

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[3]

4.

A bag contains four red counters and four yellow counters.
Three counters are picked from the bag at random, **without** being replaced.

Find the probability that the three counters picked are of the same colour. [3]

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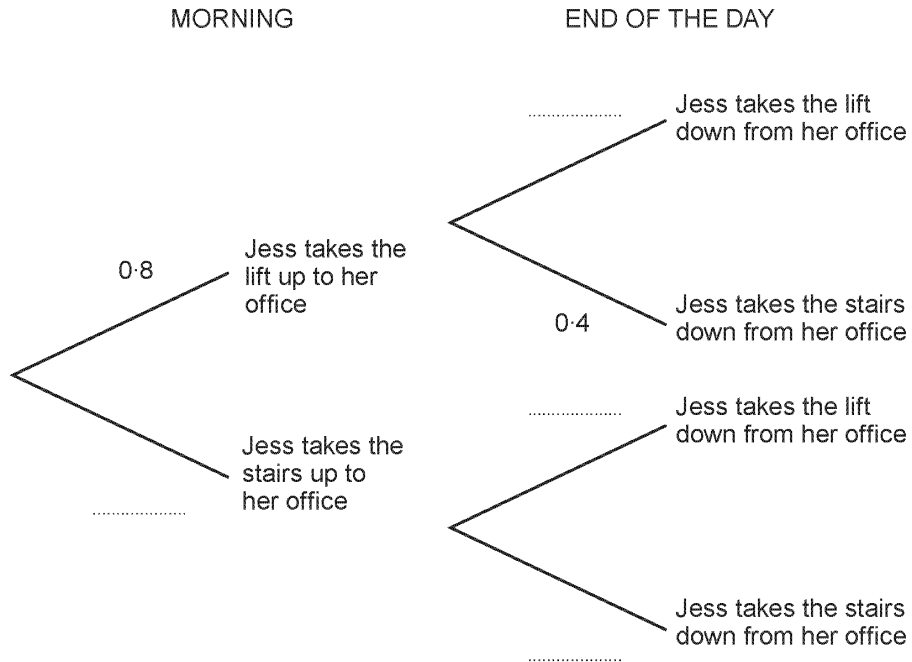
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5.

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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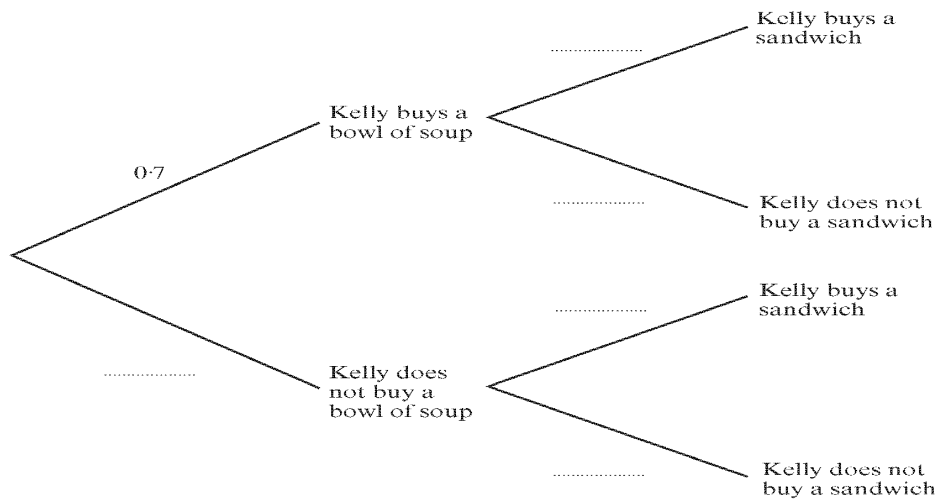
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6.

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.

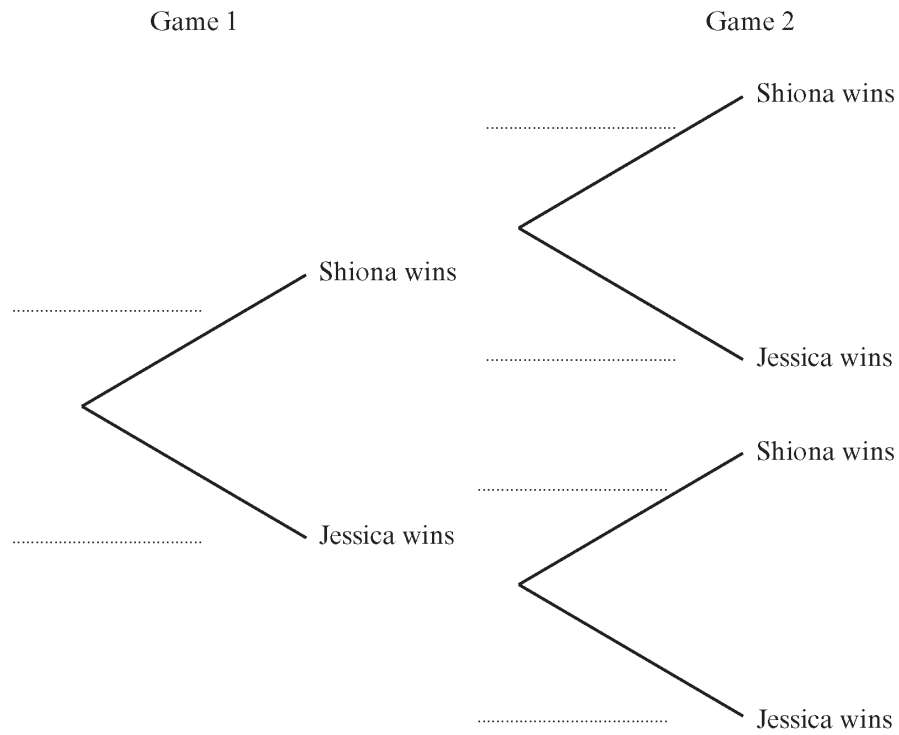
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[2]

7.

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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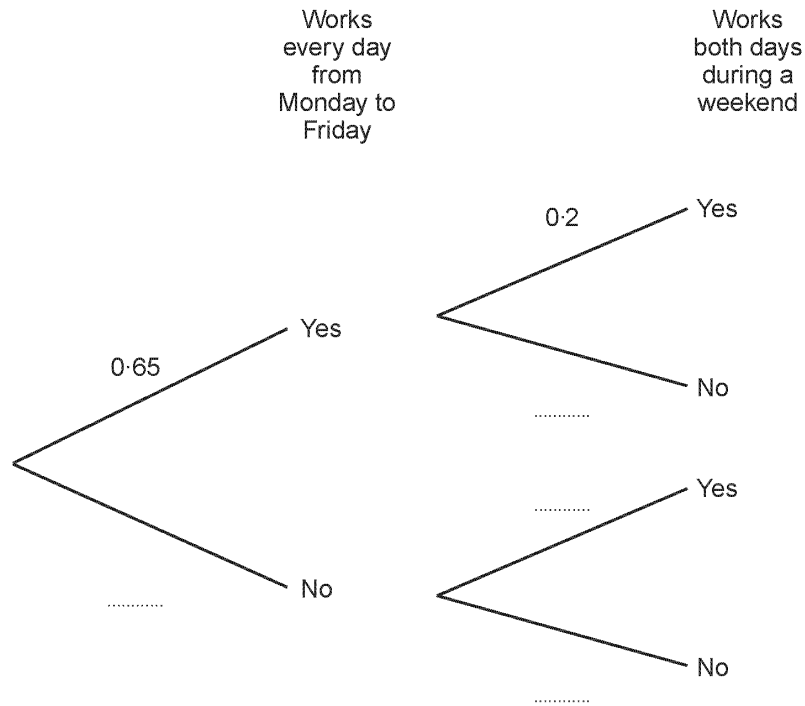
[3]

8.

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]

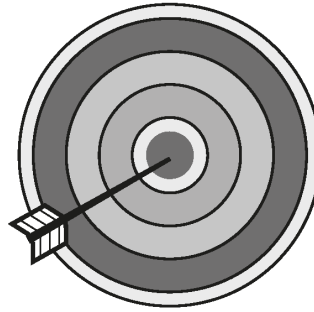
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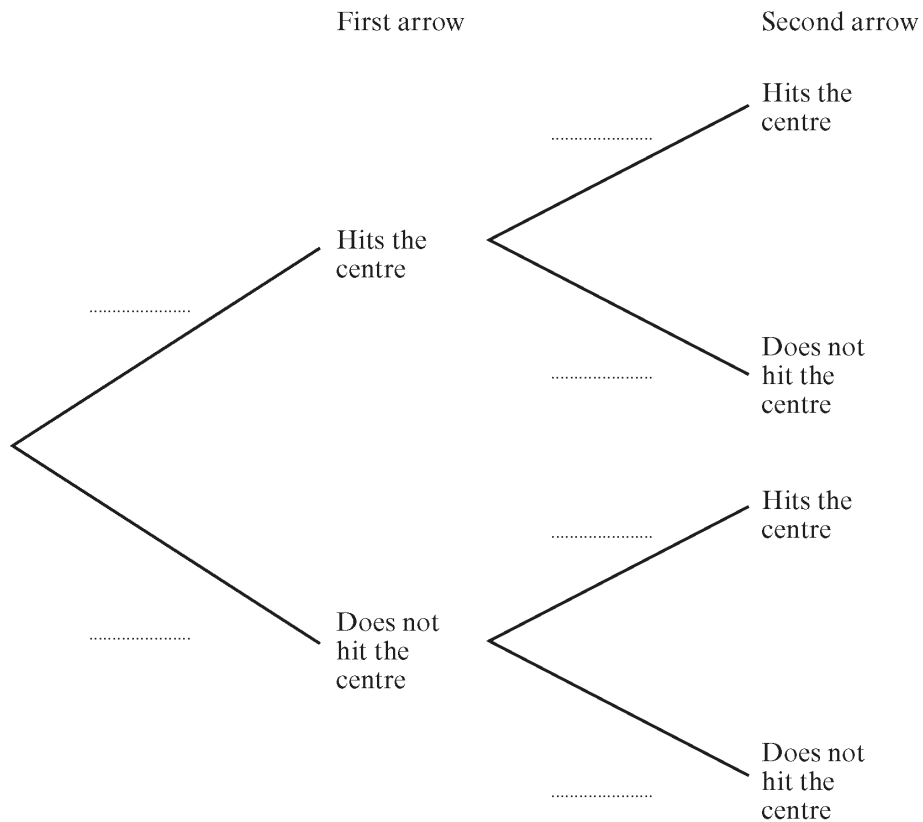
9.

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]

10.

In a group of 15 people there are 5 men and 10 women.
One of the men and three of the women are wearing red jumpers.
A man is selected at random from the group.
Then a woman is selected at random from the group.

Is the probability that the people selected are both wearing red jumpers greater or less than 5%?
You must show your working and give a reason for your answer.

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11.

A box contains 20 marbles, of which 2 are red, 3 are yellow and 15 are black.
Two marbles are selected at random, without replacement, from the box.
What is the probability that exactly one of the marbles is black?

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[4]