## Higher Maths Sample 1 P2 Q5

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]

| | Works every day from Monday to Friday | Works both days during a weekend |
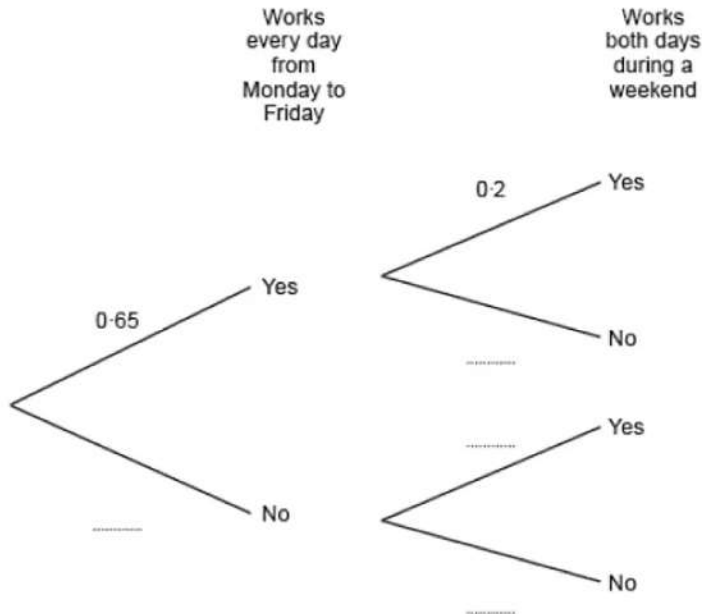
(b)   Calculate the probability that next week Carys will work every day from
        Monday to Sunday.   [2]

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Higher Maths Nov 2017 P2 Q8

All the members of a farming club visited the Royal Welsh Agricultural Show.
They all travelled to the show either by bus or by car.
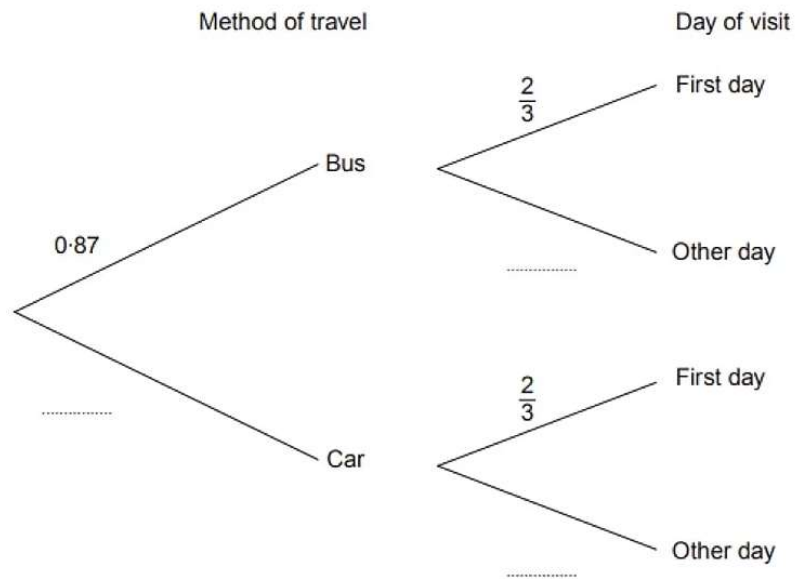None of them visited the show on more than one day.
The decision to travel by car or by bus was independent of the day of the visit.

A member of the club was selected at random.
The probability that this member travelled by bus was 0·87.

The probability that this member visited the show on the first day was $\frac{2}{3}$.

(a)   Complete the tree diagram shown below.   [2]

Method of travel

Day of visit

$\frac{2}{3}$ First day

Bus

Other day

0·87

.... First day

$\frac{2}{3}$

Car

Other day

(b) What is the probability that a member, chosen at random, was **not** one of those who travelled by bus on the first day of the show? [3]

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Higher Maths Summer 2018 P2 Q6

Visitors to the top of Snowdon can either walk up the mountain or take the mountain railway from Llanberis.
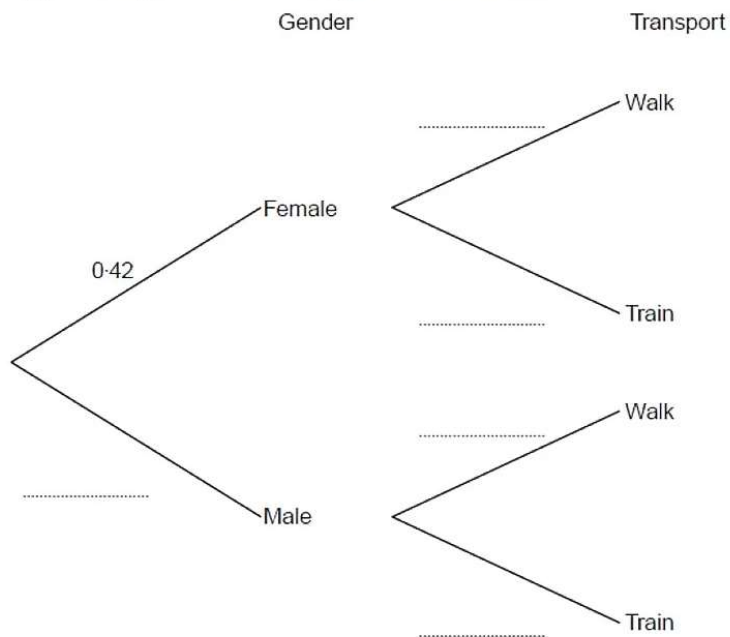On a particular day, a visitor to the top of Snowdon is chosen at random.
The probability that this person is female is 0·42.
The probability that this person took the train is 0·35.

The decision to walk or take the train is independent of gender.

(a) Complete the tree diagram shown below. [3]

Gender   Transport

.... Walk

Female

0·42

.... Train

.... Walk

Male

.... Train

(b)   The person chosen at random receives a gift voucher.
What is the probability that this person is female and travelled up the mountain by train?
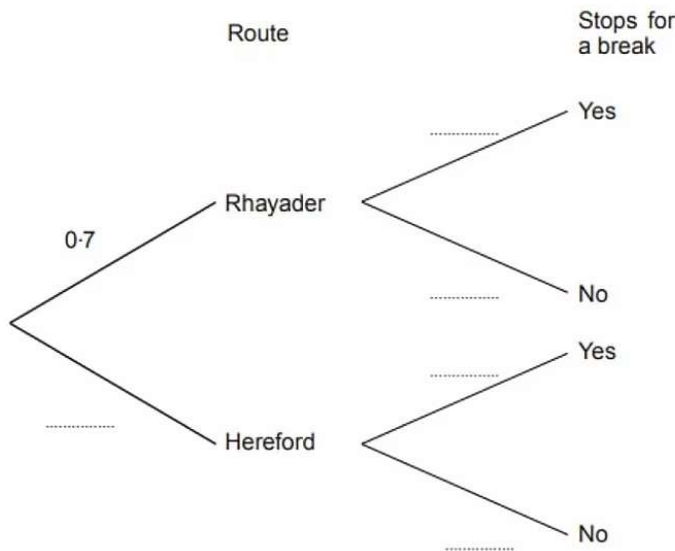[2]

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Higher Maths Nov 2016 P1 Q7

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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          Route                    Stops for
                                   a break

                            .............. — Yes

                  Rhayader  <
      0·7   /                .............. — No

        <
              \             .............. — Yes
     ..........  Hereford  <
                            .............. — No
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(b)   Calculate the probability that Alwyn travels through Hereford but **does not** stop for a
break.   [2]
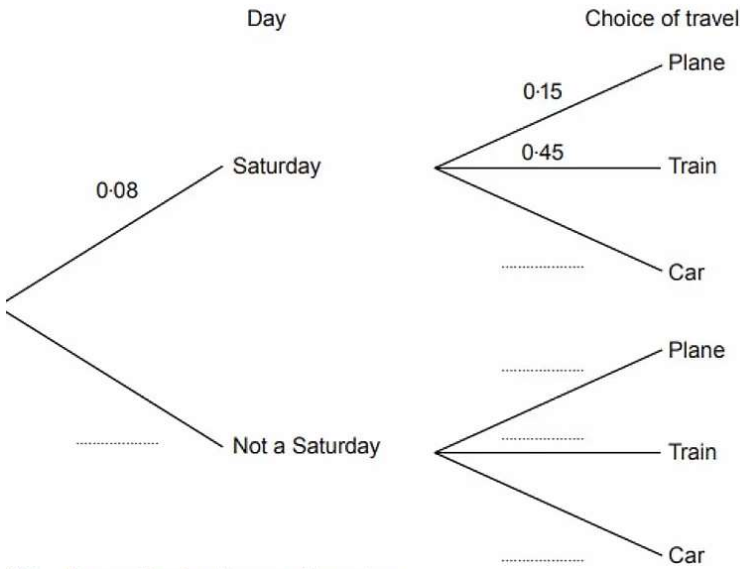
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Higher Maths Nov 2018 P2 Q8

Alwena regularly travels from Anglesey to Cardiff to attend meetings.
For each meeting, she chooses one of three ways to travel: by plane, train or car.

The probability of a meeting being held on a Saturday is 0·08.

The probability that Alwena travels by plane to a meeting is 0·15.
The probability that she travels by train is 0·45.

Her decision on how to travel is independent of the day on which the meeting is held.

(a)   Complete the following tree diagram.   [3]

Day   Choice of travel

Plane

0·15

0·45
Train

Saturday

0·08

Car

Plane

Not a Saturday

Train

Car

(b)   A meeting is chosen at random.
       Calculate the probability that the meeting is held on a Saturday and that Alwena travels
       by plane or by car.   [3]

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Higher Maths June 2017 P2 Q7

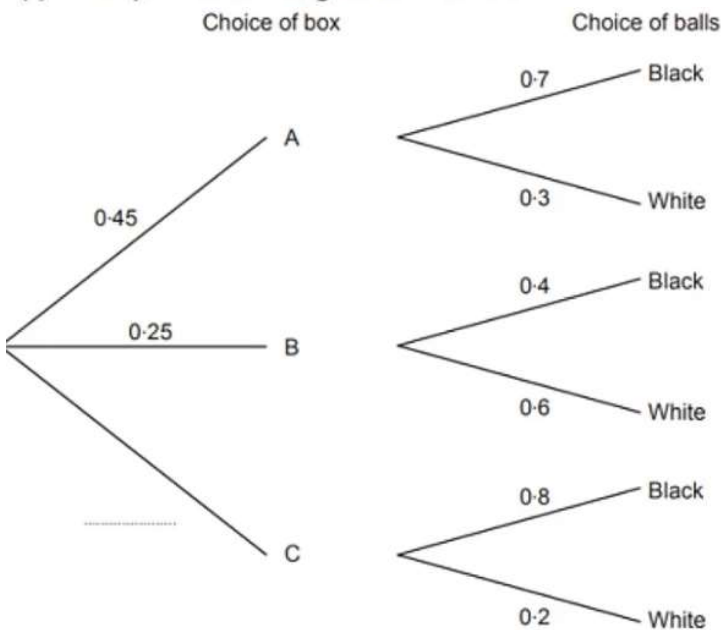100 boxes each contain 10 balls.

45 of the boxes are labelled A.
They each contain 7 black balls and 3 white balls.

25 of the boxes are labelled B.
They each contain 4 black balls and 6 white balls.

The rest of the boxes are labelled C.
They each contain 8 black balls and 2 white balls.

In a game, a player chooses a box at random, and then chooses a ball at random from that box.

(a)   Complete the tree diagram shown below.   [1]

Choice of box   Choice of balls

0·7   Black

A

0·45

0·3   White

0·25
B

0·4   Black

0·6   White

0·8   Black

C

0·2   White

(b)   What is the probability that a player will select a black ball?   [3]

(c)   If a large number of people played the game, approximately what fraction of them would you expect to choose a white ball?
Circle your answer.   [1]

$$\frac{1}{10} \qquad\qquad \frac{1}{5} \qquad\qquad \frac{1}{4} \qquad\qquad \frac{1}{3} \qquad\qquad \frac{1}{2}$$

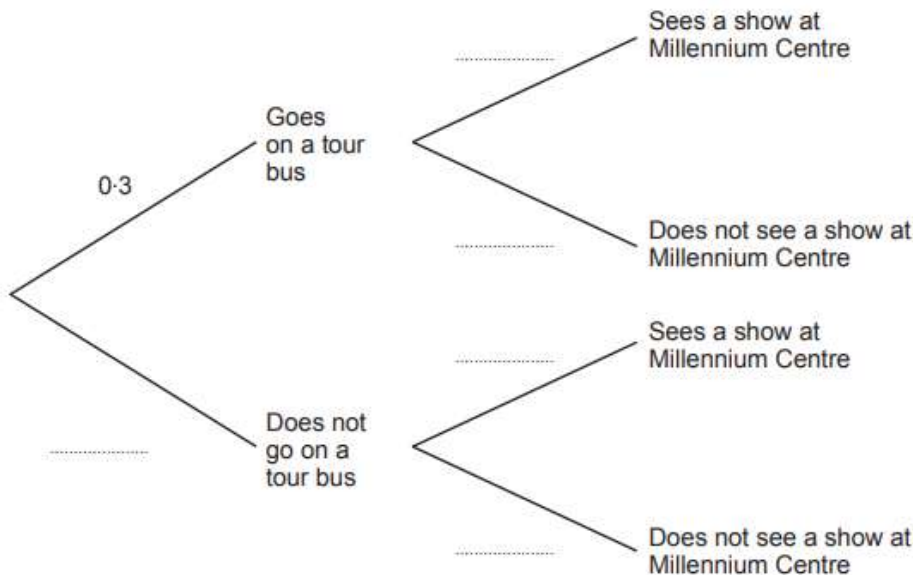### Higher Maths Summer 2019 P1 Q8

Leah is visiting Cardiff.
The probability that she will go on a tour bus is 0·3.
The probability of Leah seeing a show at the Millennium Centre is independent of her going on a tour bus.

The probability that she goes on a tour bus and sees a show at the Millennium Centre is 0·24.

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

(b)   Calculate the probability that Leah does not go on a tour bus and does not see a show at the Millennium Centre.   [2]

Higher Maths June 2017 P2 Q16

The table below shows the three-day rain forecast for Monday, Tuesday and Wednesday in Eglwyswrw.

Day	Probability of rain
Monday	80%
Tuesday	80%
Wednesday	80%

For these three days,

(a)   calculate the probability that it will rain on all three days.   [2]

(b)   calculate the probability that it will rain on exactly 2 consecutive days.   [3]

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Higher Maths Nov 2018 P1 Q17

A box contains 4 red balls, 5 yellow balls and 1 green ball.
Two balls are to be chosen at random, without replacement.

(a)   Find the probability of choosing 1 red ball and 1 green ball.   [3]

(b)   Find the probability that the two balls chosen will **not** be the same colour.   [4]

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Higher Maths Summer 2018 P1 Q17

At a children's party, the children play a number of games.
The winner of each game chooses a ticket for a prize, at random, from a box.
The ticket is not returned to the box.
At the start of the party, there are 12 prizes available: 1 book, 3 key-rings and 8 pencils.

(a)   Find the probability that the winners of the first two games choose the same type of
        prize.   [3]

(b)   After the winners of the first **three** games have chosen their prizes, find the probability
        that the ticket for the book is still in the box.   [2]

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