

1. Louise travels to work and home again by train.

The probability that her train to work is late is 0.7.

The probability that her train home is late is 0.4.

What is the probability that at least one of her trains is late?



Answer: $28\% = (0.7 \times 0.4)$



2. Some of the children at a nursery arrive by car.

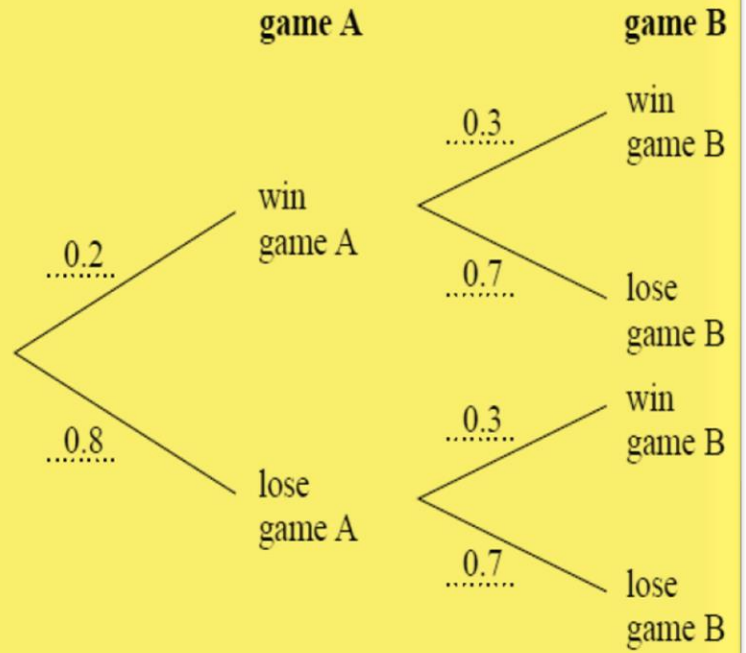
- 40% of the children at the nursery are boys.
- 70% of the boys at the nursery arrive by car.
- 60% of the girls at the nursery arrive by car.

What is the probability that a child chosen at random from the nursery arrives by car?

Answer: $(0.7 \times 0.4) + (0.6 \times 0.6) = 64\%$



3. Here is a probability tree diagram.



Work out the probability of winning both games.

Answer: 6% (0.2×0.3)

4. David has designed a game.

He uses a fair 6-sided dice and a fair 5-sided spinner.

The dice is numbered 1 to 6

The spinner is numbered 1 to 5

Each player rolls the dice once and spins the spinner once.

A player can win £5 or win £2

Win £5

roll a 5
and
spin a 5

Win £2

roll a 1
or
spin a 1
or
both

David expects 30 people will play his game.

Each person will pay David £1 to play the game.

(a) Work out how much profit David can expect to make.

£.....[4]

(b) Give a reason why David's actual profit may be different to the profit he expects to make.

[1]

Answer: £5 profit, 10/30 win £2 and 1/30 win £5

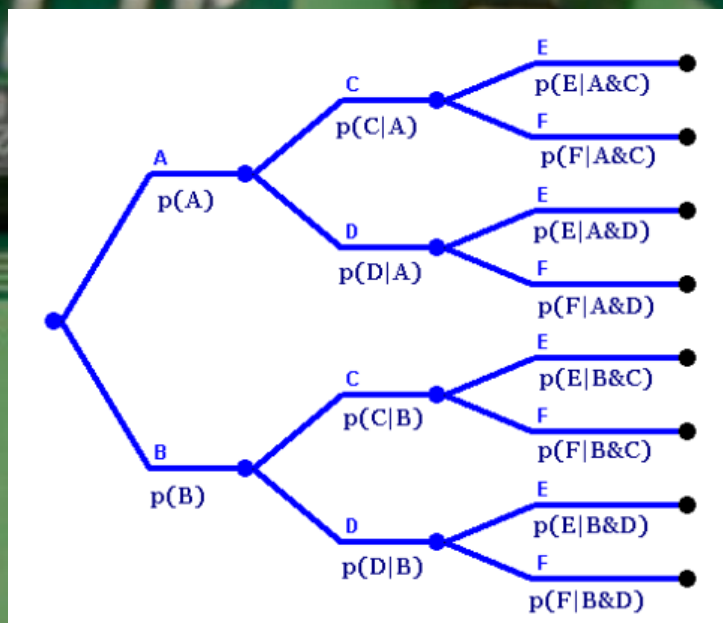
5. A bag contains counters that are red, blue, green or yellow.

	red	blue	green	yellow
Number of counters	9	$3x$	$x - 5$	$2x$

A counter is chosen at random.

The probability it is red is $\frac{9}{100}$

Work out the probability it is green.



Given $P(A)=0.2$, $P(C)=0.3$
and $P(E)=4xP(F)$

- Find $P(E/B\&C)'$
- Find $P(E/A\&C)$ or $P(F/A\&C)$
- Find $P(E/B\&D)$ and $P(F/B\&C)$

There are 5 red pens, 3 blue pens and 2 green pens in a box.

Gary takes at random a pen from the box and gives the pen to his friend.
Gary then takes at random another pen from the box.

Work out the probability that both pens are the same colour.



Carolyn has 20 biscuits in a tin.

She has

- 12 plain biscuits
- 5 chocolate biscuits
- 3 ginger biscuits

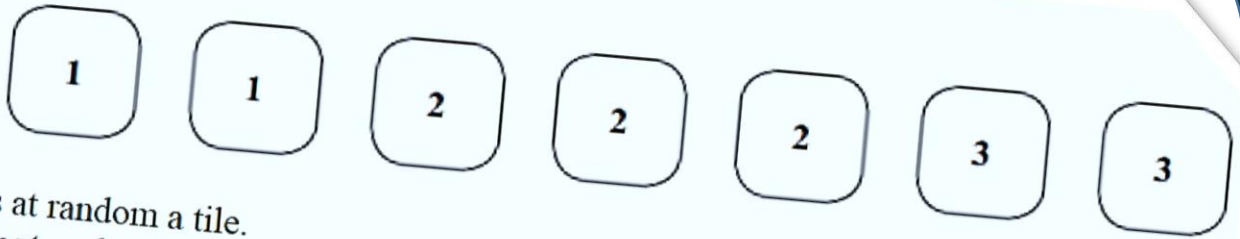
Carolyn takes at random two biscuits from the tin.

Work out the probability that the two biscuits were **not** the same type.



Work out the probability that the two biscuits were not the same type.

Here are seven tiles.



Jim takes at random a tile.
He does **not** replace the tile.

Jim then takes at random a second tile.

Calculate the probability that both the tiles Jim takes have the number 1 on them.

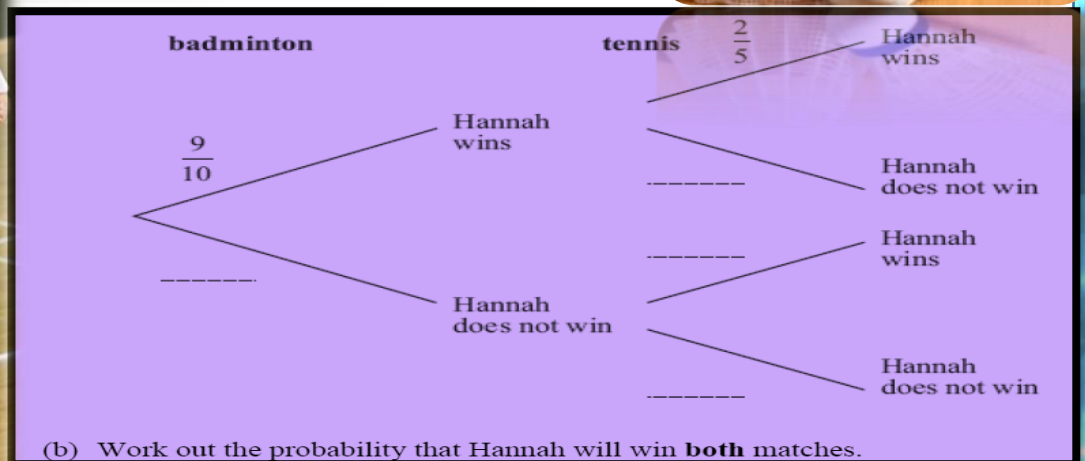


Hannah is going to play one badminton match and one tennis match.

The probability that she will win the badminton match is $\frac{9}{10}$

The probability that she will win the tennis match is $\frac{2}{5}$

(a) Complete the probability tree diagram.



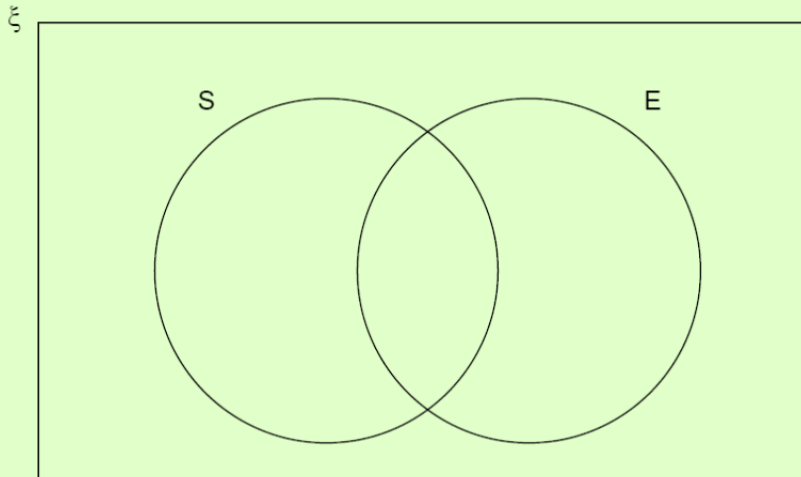
(b) Work out the probability that Hannah will win **both** matches.

$\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

S = square numbers

E = even numbers

(a) Complete the Venn diagram.



(b) One of the numbers is chosen at random.

Write down $P(S \cap E)$

Four friends each throw a biased coin a number of times.

The table shows the number of heads and the number of tails each friend got.

	Ben	Helen	Paul	Sharif
heads	34	66	80	120
tails	8	12	40	40

The coin is to be thrown one more time.

(a) Which of the four friends' results will give the best estimate for the probability that the coin will land heads?

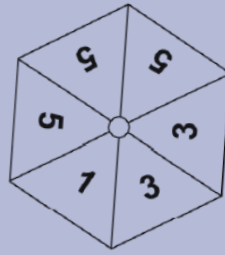
Justify your answer.

Paul says: "With this coin you are twice as likely to get heads as to get tails."

(b) Is Paul correct? Justify your answer.



An unbiased spinner is shown below.



(a) Write a number to make each sentence true.

(i) It is evens that the spinner will land on number

(ii) There is a probability of that the spinner will land on number
33%

(iii) It is impossible that the spinner will land on number

Three friends, Ann (A), Bob (B) and Carol (C), go on holiday together.

a) They book a row of three seats on the plane.

When they arrive at the plane they sit in a random order.

(i) List all the different orders they could sit on the three seats.

The first one has been done for you.

Seat 1	Seat 2	Seat 3
A	B	C



a) What is the probability Ann sits next to Carol?

b) What are the chances that Bob sits between Ann and Carol