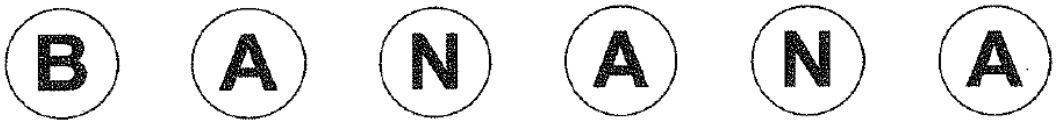
Probability Tree Diagrams - 2

1.

The diagram shows six counters.



Each counter has a letter on it.

Bishen puts the six counters into a bag.
He takes a counter at random from the bag.
He records the letter which is on the counter and replaces the counter in the bag.
He then takes a second counter at random and records the letter which is on the counter.

(a) Calculate the probability that the first letter will be A and the second letter will be N.

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(2)

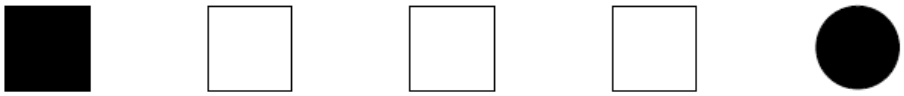
(b) Calculate the probability that both letters will be the same.

.....

(4)

2.

Here are five shapes.



Four of the shapes are squares and one of the shapes is a circle.
One square is black.
Three squares are white.
The circle is black.
The five shapes are put in a bag.

Alec takes a shape at random from the bag and does **not** replace it.
Bashir then takes a shape at random from the bag.

Work out the probability that

(i) they both take a square.

.....

(ii) they take shapes of the same colour.

.....

(5)

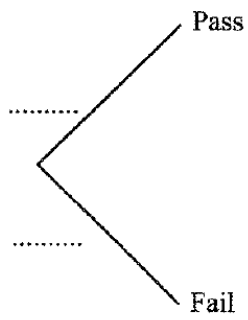
3.

In order to start a course, Bae has to pass a test.
He is allowed only two attempts to pass the test.

The probability that Bae will pass the test at his first attempt is $\frac{2}{5}$.

If he fails at his first attempt, the probability that he will pass at his second attempt is $\frac{3}{4}$.

(a) Complete the probability tree diagram.



(b) Calculate the probability that Bae will be allowed to start the course.

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(3)

4.

The probability that Gill will walk to school on Monday is $\frac{3}{5}$.
If Gill walks to school on Monday, the probability that she will walk to school on Tuesday is $\frac{1}{6}$.
If she does not walk to school on Monday, the probability that she will walk to school on Tuesday is $\frac{7}{10}$.

(a) Calculate the probability that she walks to school on Monday but not on Tuesday.

.....

(2)

(b) Calculate the probability that she walks to school on at least one of the two days.

.....

(3)

5.

Here are five counters.
Each counter has a number on it.

Layla puts the five counters in a bag.
She takes two counters at random from the bag without replacement.

Calculate the probability that

(i) **both** counters will have the number 3 on them,

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(ii) the sum of the numbers on the two counters will be 6

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Question 6 is on the next page.

6.

Box A Box B

In Box A, there are 3 black counters and 2 white counters.
In Box B, there are 2 black counters and 1 white counter.

Farah takes at random a counter from Box A and puts it in Box B.
She then takes at random a counter from Box B.

Work out the probability that the counter she takes from Box B will be a black counter.

7.

A box contains 7 good apples and 3 bad apples.

Nick takes two apples at random from the box, **without** replacement.

(a) (i) Calculate the probability that both of Nick's apples are bad.

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(ii) Calculate the probability that at least one of Nick's apples is good.

.....

(4)

Another box contains 8 good oranges and 4 bad oranges.

Crystal keeps taking oranges at random from the box one at a time, **without** replacement, until she gets a good orange.

(b) Calculate the probability that she takes exactly three oranges.

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(2)

8.

Younis spins a biased coin twice.
The probability that it will come down heads both times is 0.36

Calculate the probability that it will come down tails both times.

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