Revision - Probability

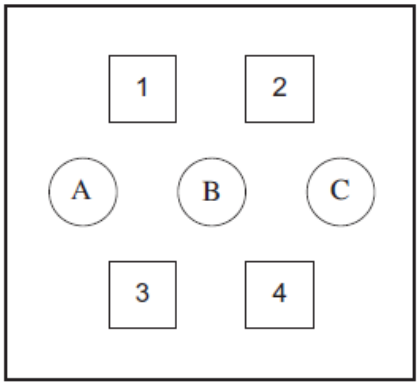
1.

A bag contains 4 blue, 4 red and 4 white counters.
Two counters are chosen at random without replacement.

What is the probability that the counters are different colours?

2.

The diagram shows a door lock.



The code (number, letter, number) is entered by pressing a button from each row in turn (top row, middle row, bottom row).

Sarah knows that the code begins with 1.
She presses 1 and then enters the rest of the code at random.

Work out the probability that she enters the correct code.

3.

Two ordinary fair dice are thrown.
One dice shows a number greater than 3.
The other dice shows a number less than 3.

Put these statements in order, starting with the least likely.

A Both dice show an even number.

B Both dice show an odd number.

C One dice shows an odd number and one dice shows an even number.

You **must** show your working.

4.

The table shows the probabilities that I am on time or late for work each day.

It also shows the amount of pay deducted for being late each day.

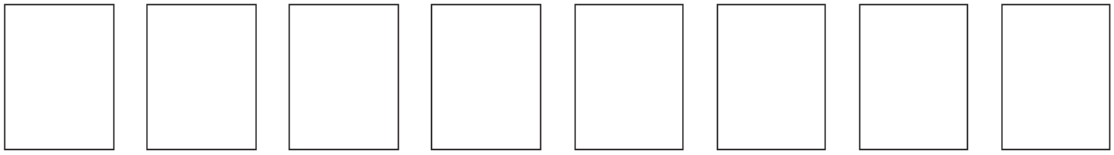
	On time	Up to 30 minutes late	30 minutes to 1 hour late
Probability	0.6	0.3	0.1
Amount deducted	———	£8	£16

Work out the probability that I have exactly £16 deducted **over two days**.

5.

Put the numbers 1, 2 or 3 on each card so that when a card is picked at random

- the probability of picking a 2 is greater than $\frac{1}{2}$
- the probability of picking a 1 is twice the probability of picking a 3.



6.

(a) A school has 400 boys and 500 girls.

The probability that a boy is vegetarian is 0.1
The probability that a girl is vegetarian is 0.2

Estimate the total number of vegetarians in the school.

(b) There are ten prefects in the school.
Four of the prefects are vegetarian.

Two of the prefects are chosen at random to have lunch with a visitor.

Show that the probability that they are **both** vegetarian is $\frac{2}{15}$

7.

A bag contains 12 counters.
Five of the counters are white.

A counter is taken out of the bag at random and **not** replaced.
A second counter is taken out of the bag at random.

Calculate the probability that **only one** of the two counters is white.

8.

Here are 9 cards.
Each card has a number on it.

20	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**

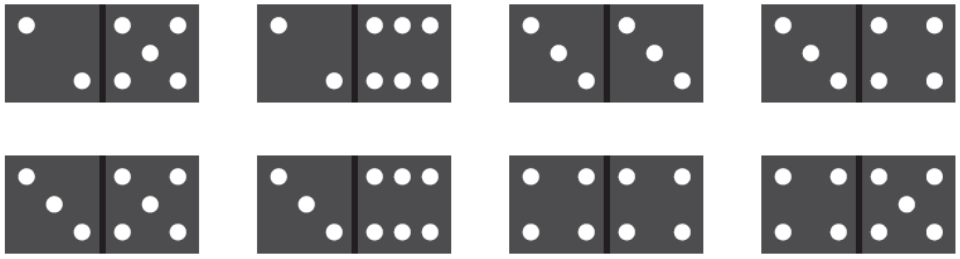
Lee takes a card at random.
He records the number which is on the card and replaces the card.
He then takes a second card at random and records the number which is on the card.

(a) Calculate the probability that he will take two even numbers.

(b) Calculate the probability that he will take two numbers with a sum of 43

9.

Here are 8 dominoes.



The 8 dominoes are put in a bag.

Riaz takes at random a domino from the bag.

(a) Find the probability that he takes a domino with a total of 8 spots or a domino with a total of 9 spots.

Helima takes at random 2 dominoes from the bag of 8 dominoes without replacement.

(b) Work out the probability that

(i) the total number of spots on the two dominoes is 18

(ii) the total number of spots on the two dominoes is 17

10.

Bill and Jo play some games of table tennis.
The probability that Bill wins the first game is 0.7
When Bill wins a game, the probability that he wins the next game is 0.8
When Jo wins a game, the probability that she wins the next game is 0.5

The first person to win two games wins the match.

Calculate the probability that Bill wins the match.