

Topic 11 Probability (Pre-TT) [44]

1.

A game involves choosing tiles from a bag.
There are eight tiles in the bag, as shown.



Chris chooses two tiles at random from the bag.

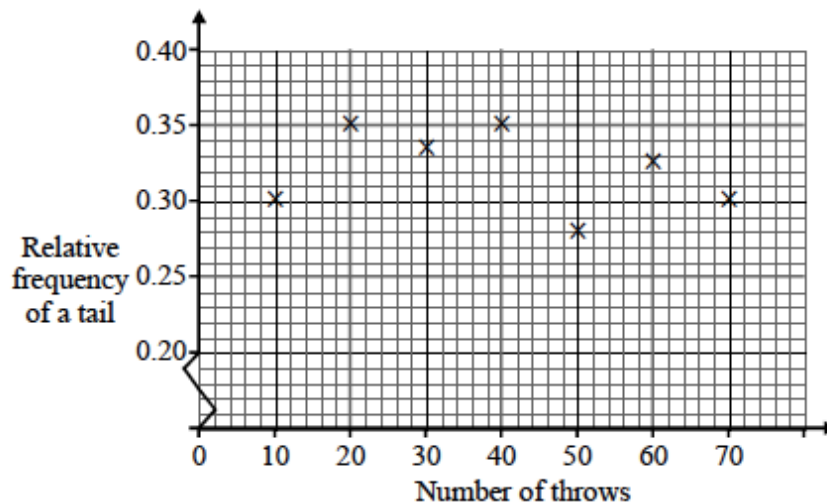
What is the probability that they have different letters?

You **must** show working to support your answer.

(Total 5 marks)

2.

Geoff throws a coin 70 times.
He plots the relative frequency of the number of tails after every 10 throws.



(a) How many tails were obtained in 50 throws?

(2)

(b) Use the diagram to estimate the probability of obtaining a tail.

(1)

(c) Do you think the coin was biased?
Give a reason for your answer.

(1)

(Total 4 marks)

3.

A restaurant menu has 8 starters, 12 mains and 6 desserts.
A customer can choose from the following meals

- a starter and a main,
- a main and a dessert,
- a starter, a main and a dessert.

Show that there are 744 different ways of choosing a meal at this restaurant.

[3]

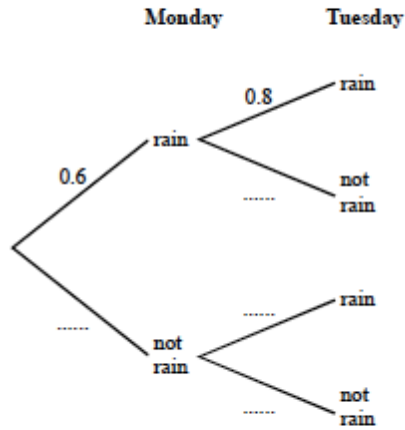
4.

A weather forecast says

The probability that it will rain on Monday is 0.6

The probability that it will rain on Tuesday is 0.8

(a) Copy and complete the tree diagram showing the possible outcomes



(1)

(b) Calculate the probability that it rains on just one of the two days.

(3)

(Total 4 marks)

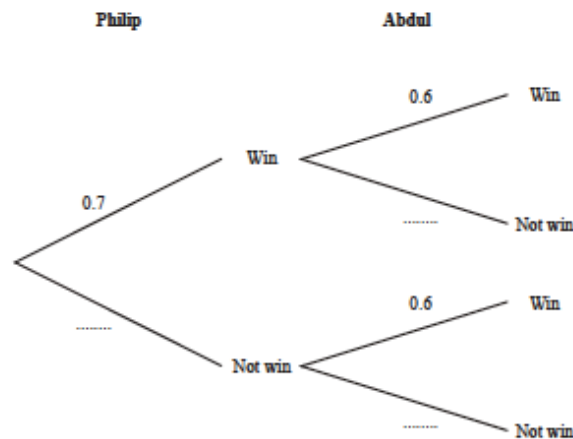
5.

Philip and Abdul run in different races.

The probability that Philip wins his race is 0.7

The probability that Abdul wins his race is 0.6

(a) Copy and complete the following tree diagram.



(1)

(b) Calculate the probability that only one of the boys wins his race.

(3)

(Total 4 marks)

6.

Thelma spins a biased coin twice.

The probability that it will come down heads both times is 0.09

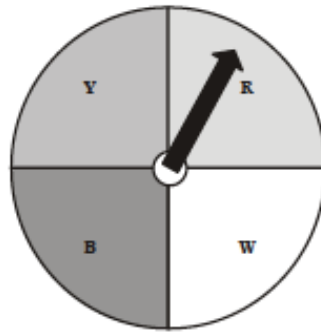
Calculate the probability that it will come down tails both times.

(Total 3 marks)

7.

A fair spinner has four equal sections.

The sections are coloured red (R), white (W), blue (B) and yellow (Y).



The arrow on the spinner is spun three times.

Calculate the probability that the arrow lands on the same colour at least twice.

(Total 5 marks)

8. **Non-calculator**

A prime number between 300 and 450 is chosen at random.

The table shows the probability that the number lies in different ranges.

Prime number, n	Probability
$300 \leq n < 330$	0.16
$330 \leq n < 360$	0.24
$360 \leq n < 390$	x
$390 \leq n < 420$	0.16
$420 \leq n < 450$	0.24

(a) Work out the value of x .

[2 marks]

(b) Work out the probability that the prime number is greater than 390

[1 mark]

(c) There are four prime numbers between 300 and 330

How many prime numbers are there between 300 and 450?

[2 marks]

9.

Shaz has ten one pound coins.

Six have a thistle design and four have a leek design.



She chooses a one pound coin at random.

If the first coin has a thistle design she replaces it, and chooses again.

If the first coin has a leek design she does not replace it, but chooses again.

What is the probability that the second coin has a leek design?

(Total 4 marks)

10.

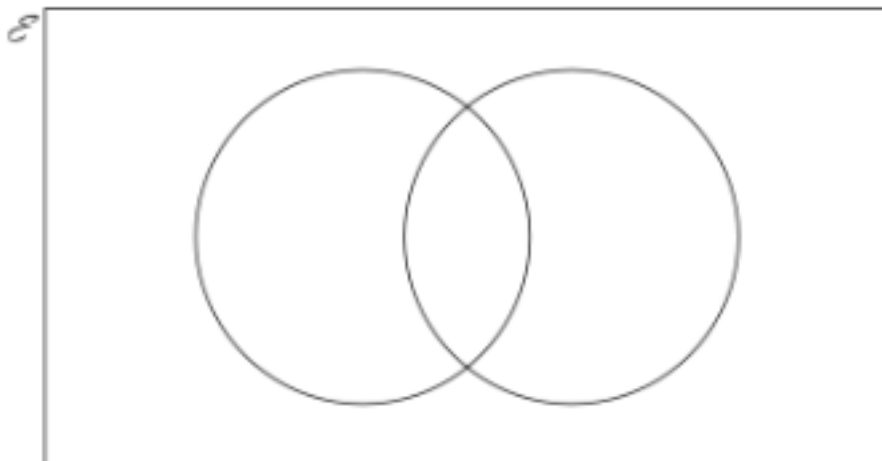
A skills test has two sections, literacy (L) and numeracy (N).

One day everyone who took the skills test passed at least one section.

88% passed the literacy section and 76% passed the numeracy section.

(a) Represent this information on a Venn diagram.

Show clearly the **percentage** in each section of the diagram.



[3]

(b) One person is chosen at random from all the people who took the skills test that day.

What is the probability that this person

(i) passed the numeracy section, given that they passed the literacy section,

(ii) passed the literacy section, given that they passed only one section?

(Total 7 marks)