epiSTEMe

Probability

Problem Set 3

Please use CAPITAL letters

FIRST NAME

LAST NAME

SCHOOL

CLASS

DATE ____ /____ /____

Coin

A **fair** coin is one which is equally likely to come up ‘Heads’ or ‘Tails’ when it is given a spin.

Mark each of the statements below ✓ *or* ✗ *according to whether it is right or wrong.*

☐ When a fair coin is spun 20 times, it is **possible** for it to come up ‘Heads’ all 20 times.

☐ When a fair coin is spun 20 times, it is **impossible** for it to come up ‘Heads’ all 20 times.

☐ When a fair coin is spun 20 times, it is **certain** to come up ‘Heads’ at least once.

☐ When a fair coin is spun over and over again, it **averages** around one ‘Head’ for every two spins.

☐ When a fair coin has come up ‘Heads’ several times in a row, it is **more likely** to come up ‘Tails’ next time.

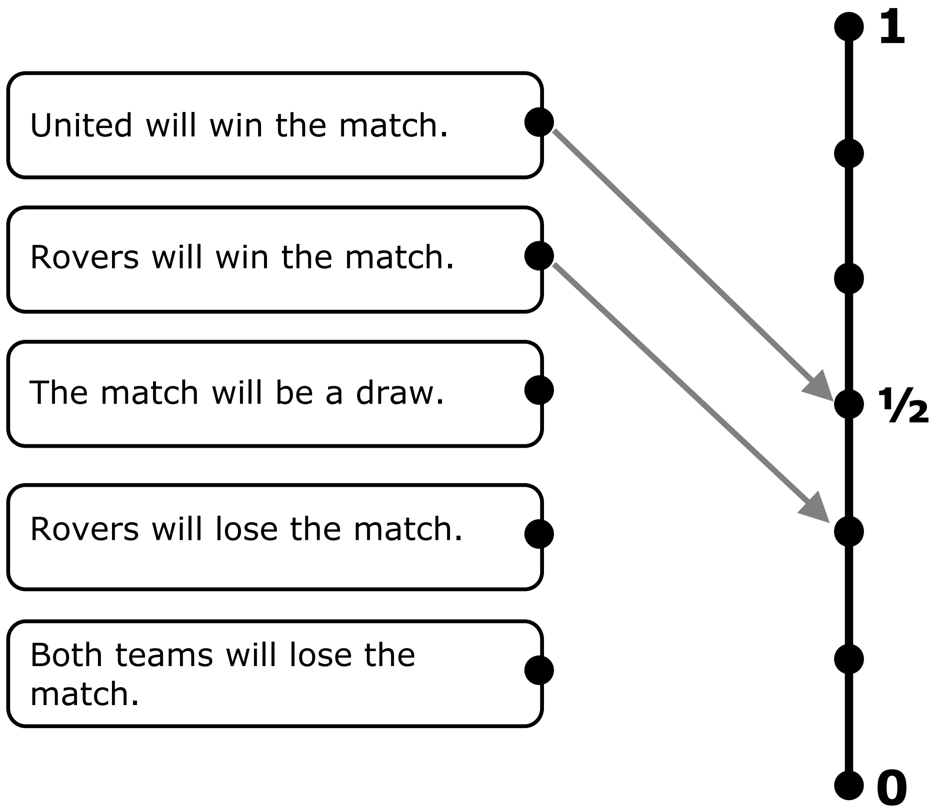
☐ When a fair coin has come up ‘Heads’ several times in a row, it is **as likely** to come up ‘Heads’ as ‘Tails’ next time.

Match

Two teams, United and Rovers, are due to play a football match. Someone has estimated the probability of each team winning the match. These probabilities are shown on the scale below.

Given these probabilities, it is possible to work out the chances of other results happening for the match.

Use the scale below to show the probabilities of the other results mentioned in the list.



FROM HERE ONWARDS
GIVE YOUR ANSWERS
IN TERMS OF
NUMBERS, FRACTIONS,
DECIMALS OR PERCENTAGES

Pin

Two students wanted to find the probability of a drawing pin landing point-up (rather than point-down) when it is thrown.

Each student threw the drawing pin 100 times to see how often it landed point-up. Their results are shown below:

Student	**Throws of the pin**	**Pin lands point-up**
A	100	31
B	100	29

With this information, the two students got together to find the probability of the drawing pin landing point-up.

What is the best estimate for the value of this probability?

Tiles

A child turns these tiles over to hide the letters and then mixes them around. She is going to take one tile **at random**.

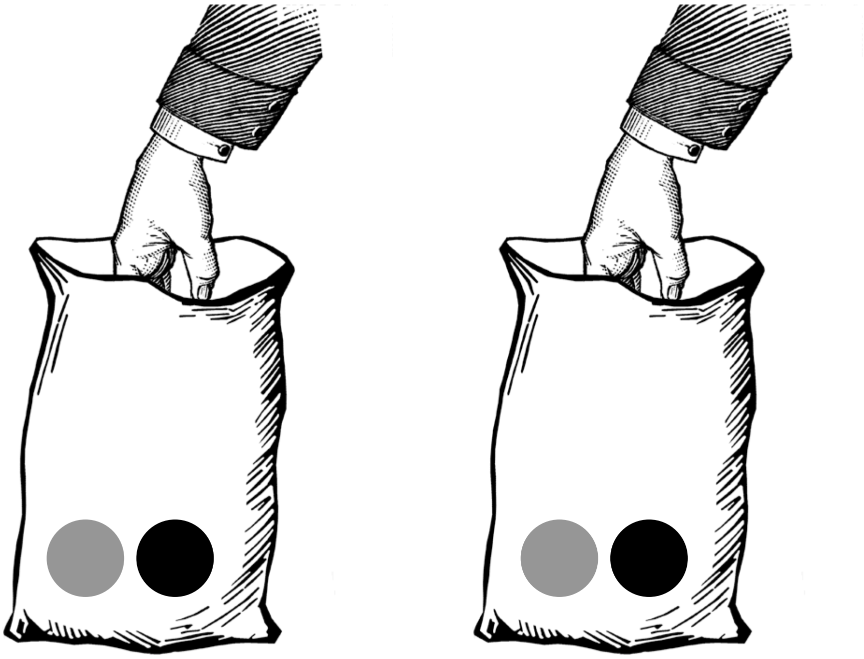
C A A A T

The table below contains some statements that might apply to this random tile.

Work out the probability of each statement coming true.

Statement	Probability
The tile will show a ‘C’.	
The tile will show a ‘B’.	
The tile will show an ‘A’.	
The tile will **not** show a ‘T’.	
The tile will show a letter that appears in the word ‘CAT’.	

Draw



Two bags each hold 1 grey ball and 1 black ball. Apart from their colour, the balls are exactly the same.

Without looking, someone is going to shake each bag, and take one ball from it. So the person will have two balls, one from each bag.

(a) What is the probability that both of these balls will be black?

🖉

(b) What is the probability that at least one of these balls will be black?

🖉

Weather

Weather forecasters try to predict how high the temperature will go on a particular day. To make things simple, they measure the temperature as a whole number.

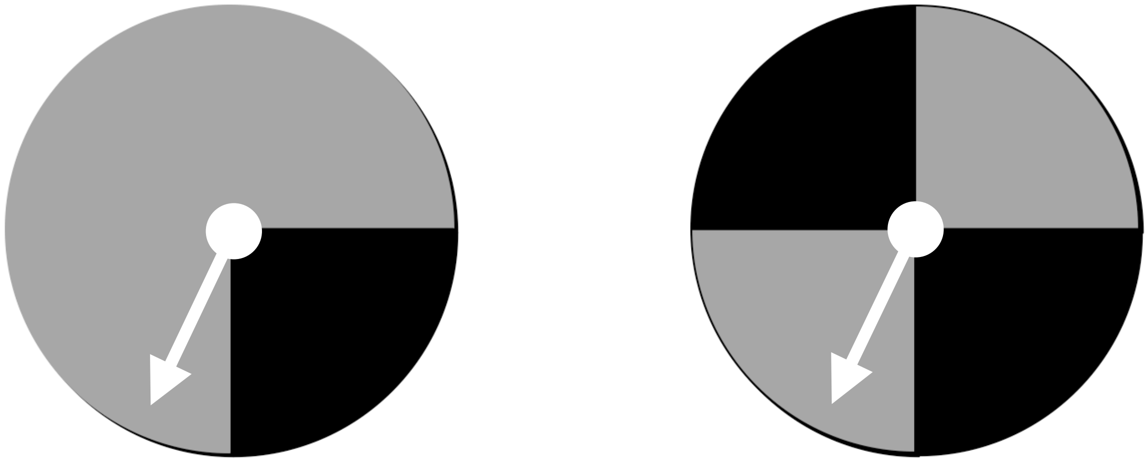
Because they can't be sure about their predictions, the forecasters sometimes give the probability of the temperature being one of several values. For example, here is part of a forecast made in November for the temperature three days later.

Temperature	**Probability**
8^{o} C or lower	10%
9^{o} C or 10^{o} C	20%
11^{o} C or 12^{o} C	50%

(a) What is the probability that the temperature will be 10^{o} C or lower?

(b) What is the probability that the temperature will be 13^{o} C or higher?

Spinners



These two spinners are each divided into four equal parts. On the left-hand spinner, three of these parts are coloured grey and the other one black. On the right-hand spinner, two of the parts are coloured grey and the other two black.

Someone is going to give the pointer of each spinner a random flick so that it spins round and round until it comes to a stop.

(a) What is the probability that the two pointers will both stop on black?

(b) What is the probability that the two pointers will both stop on grey?

WELL DONE –
NOW YOU'VE FINISHED

