Question 1

Pauline flips a fair coin 3 times, and records the outcomes.
She writes H for each head and T for each tail.

(i)   Complete the table below to show all of the possible outcomes.
Two outcomes have already been filled in for you.

HHH	
HHT	

(ii)   Find the probability of getting two heads and one tail.

(iii)   Jamie says: "You have the same probability of getting three heads as you do of getting two heads and one tail."
Do you agree with Jamie? Give a reason for your answer.

Answer:

Reason:

(iv)   Max says: "You have the same probability of getting HHH as you do of getting HTH."
Do you agree with Max? Give a reason for your answer.

Answer:

Reason:

Question 2

The arrows represent the different routes that a skier can take when skiing down a mountain.
The circles on the diagram represent different points on the routes.

(a) When leaving any particular point on the mountain a skier is equally likely to choose any of the available routes from that point. Fill in the boxes in the diagram which represent the probability that the skier will take that route.

(b) **(i)** If the skier starts at point A, in how many different ways can the skier reach the point E?

(ii) If the skier starts at point A, find the probability that the skier will reach the point E.

Question 3

In a survey, 54 people were asked which political party they had voted for in the last three elections. The results are as follows:

30 had voted for the Conservatives

22 had voted for the Liberals

22 had voted for the Republicans
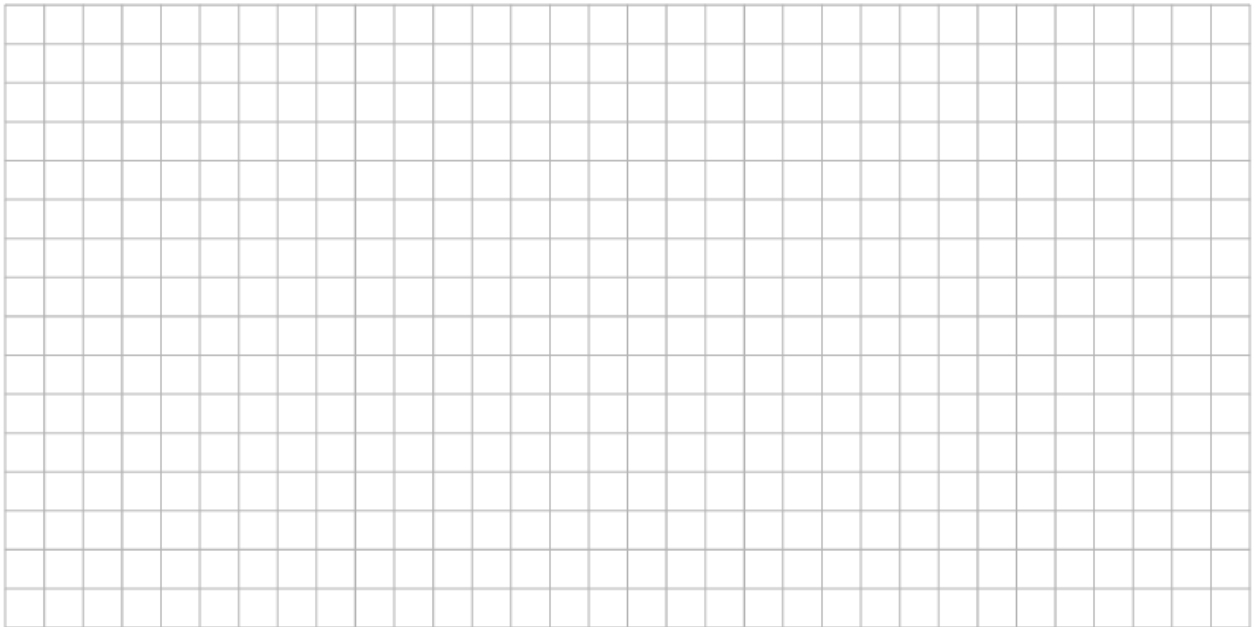
12 had voted for the Conservatives and for the Liberals

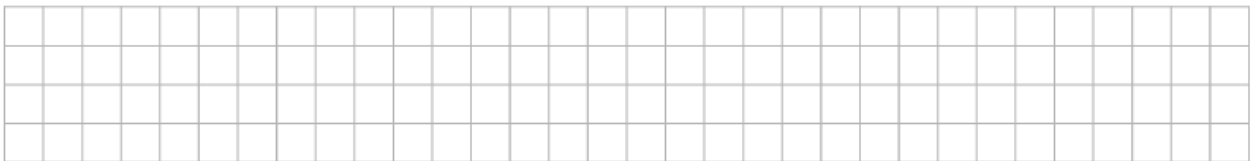9 had voted for the Liberals and for the Republicans

8 had voted for the Conservatives and for the Republicans
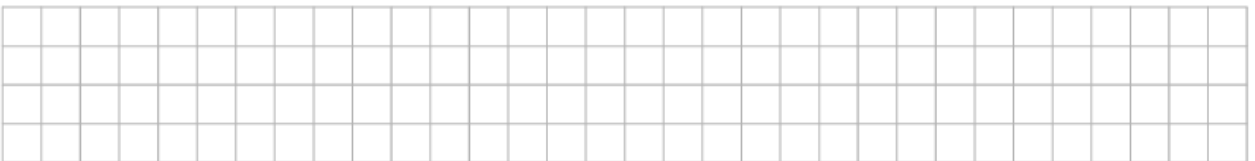
5 had voted for all three parties.

(a) Represent the information in a Venn diagram.

(b) If one person is chosen at random, what is the probability that the person chosen did not vote in any of the three elections?

(c) If one person is chosen at random, what is the probability that the person chosen voted for at least two different parties?

(d) If one person is chosen at random, what is the probability that the person chosen voted for the same party in all three elections?

Question 4

A, B, C, D and E represent the probabilities of certain events occurring.

(a) Write the probability of each of the events listed into the table below.

Event		Probability
A club is selected in a random draw from a pack of playing cards	A	
A tossed fair coin shows a tail on landing	B	
The sun will rise in the east tomorrow	C	
May will follow directly after June	D	
A randomly selected person was born on a Thursday	E	

(b) Place each of the letters A, B, C, D and E at its correct position on the probability scale below.

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Question 5

A fair circular spinner consists of three equal sectors. Two are coloured blue and one is coloured red.
The spinner is spun and a fair coin is tossed.

(a) What is the probability of the spinner landing on a blue sector?

(b) Find the probability of getting a head and a red.

(c) Find the probability of getting a tail and a blue.

Question 6

(a) What is the probability of getting a 1 when a fair die is tossed?

A fair die is tossed 500 times.
The results are partially recorded in the table below.

Number on die	1	2	3	4	5	6
Frequency	70	82		90	91	81
Relative Frequency						

(b) Calculate the number of times a 3 appeared. Write your answer in the table above.

(c) Calculate the relative frequency of each outcome and write it into the table above. Give your answers correct to 2 decimal places.

(d) Give a possible reason for the difference in value between the relative frequency for 1 in the table and your answer to part **(a)**.