Probability in Scratch

1a) Run your program each of the following number of times. Record the number of Heads and Tails you get as well as the percentage of each.

i) 10 times	ii) 100 times	iii) 1000 times
iv) 10000 times	v) 100000 times	vi) 1000000

b) What do you notice about the probability (%) for each as the number of trials increases? Why is this happening?

2a) Create a new program that simulates the rolling of a die. You can either create your own dice or upload some that you have found. You will need to use multiple 'if statements' to determine if you get a 1, 2, 3, 4, 5 or 6.

b) What is the theoretical probability of getting a 1? 2? 3? 4? 5? 6?

c) Run your program each of the following number of times. Record the number of 1s, 2s, 3s,etc.and you get as well as the percentage of each.

i) 10 times	ii) 100 times	iii) 1000 times
iv) 10000 times	v) 100000 times	vi) 1000000

3. Change the program so that you roll two dice at once and keep track of the sum of the dice.

4a) Using your knowledge of probability create a game, involving two dice. The game can either be fair, advantageous to the computer or advantageous to the user. Discuss which you chose, why and how you achieved the result.

b) Why would you want to create a game that is not fair? Why might you want your game to be almost fair?