Question 2 (25 marks)

A biased die is used in a game. The probabilities of getting the six different numbers on the die are shown in the table below.

Number	1	2	3	4	5	6
Probability	0.25	0.25	0.15	0.15	0.1	0.1

(a) Find the expected value of the random variable X, where X is the number thrown.



(b) There is a game at a funfair. It costs €3 to play the game. The player rolls a die once and wins back the number of euro shown on the die. The sentence below describes the difference between using the above biased die and using a fair (unbiased) die when playing this game. By doing the calculations required, complete the sentence.

"If you play the game many times with a fair die, you will win an average of ______ per game, but if you play with the biased die you will lose an average of _____ per game."

