

Question 9**(8 marks)**

A cake shop makes birthday cakes. The probability distribution of the number of birthday cakes sold in a day, X , is given below.

x	0	1	2	3	4
$P(X = x)$	0.1	0.2	0.25	0.35	0.1

- (a) Calculate the mean number of birthday cakes sold in a day. (1 mark)
- (b) On Monday, the cake shop makes four birthday cakes. If each birthday cake costs \$20 to make and sells for \$50, what is the expected profit or loss on that day? (3 marks)

On Tuesday, the shop makes three birthday cakes. Let the random variable Y denote the number of birthday cakes **not** sold on that day.

- (c) Explain why $P(Y = 0) = 0.45$. (2 marks)

(d) Obtain the probability distribution of Y .

(2 marks)