Statistical Distribution : Binomial Distribution - Edexcel Past Exam Questions

1.   A fair coin is tossed 4 times.

Find the probability that

(*a*) an equal number of head and tails occur   **(2)**

(*b*) all the outcomes are the same,   **(3)**

(*c*) the first tail occurs on the third throw.   **(2)**
                                                                      Jan 06 Q1

2.   For a particular type of plant 45% have white flowers and the remainder have coloured flowers. Gardenmania sells plants in batches of 12. A batch is selected at random.

Calculate the probability this batch contains

(*a*) exactly 5 plants with white flowers,   **(3)**

(*b*) more plants with white flowers than coloured ones.   **(2)**

Gardenmania takes a random sample of 10 batched of plants.

(*c*) Find the probability that exactly 3 of these batches contain more plants with white flowers than coloured ones.   **(3)**
                                                                Jan 07 Q3*(edited)*

3.   The probability of a bolt being faulty is 0.3. Find the probability that in a random sample of 20 bolts there are

(*a*) exactly 2 faulty bolts,   **(2)**

(*b*) more than 3 faulty bolts.   **(2)**

These bolts are sold in bags of 20. John buys 10 bags.

(*c*) Find the probability that exactly 6 of these bags contain more than 3 faulty bolts.   **(3)**
                                                                      Jan 08 Q2

4. A factory produces components of which 1% are defective. The components are packed in boxes of 10. A box is selected at random.

(*a*) Find the probability that the box contains exactly one defective component. **(2)**

(*b*) Find the probability that there are at least 2 defective components in the box. **(3)**

Jan 09 Q5 *(edited)*

5. A manufacturer supplies DVD players to retailers in batches of 20. It has 5% of the players returned because they are faulty.

(*a*) Write down a suitable model for the distribution of the number of faulty DVD players in a batch. **(2)**

Find the probability that a batch contains

(*b*) no faulty DVD players, **(2)**

(*c*) more than 4 faulty DVD players. **(2)**

Jan 10 Q1 *(edited)*

6. Bhim and Joe play each other at badminton and for each game, independently of all others, the probability that Bhim loses is 0.2.

Find the probability that, in 9 games, Bhim loses

(*a*) exactly 3 of the games, **(3)**

(*b*) fewer than half of the games. **(2)**

June 10 Q2 *(edited)*

7. A disease occurs in 3% of a population.

(*a*) State any assumptions that are required to model the number of people with the disease in a random sample of size n as a binomial distribution. **(2)**

(*b*) Using this model, find the probability of exactly 2 people having the disease in a random sample of 10 people. **(3)**

Jan 11 Q1 *(edited)*