

QQQ – Further Statistics 1 – Chapter 5 – Central Limit Theorem (Version 1)

Total Marks: 24

(24 = Platinum, 22 = Gold, 19 = Silver, 16 = Bronze)

1. Explain what you understand by the Central Limit Theorem. (3)

(Total 3 marks)

Edexcel S3 June 2011 Q1

2. A courier delivers parcels. The random variable X represents the number of parcels delivered successfully each day by the courier where $X \sim B(400, 0.64)$

A random sample $X_1, X_2, \dots, X_{100}$ is taken.

- Estimate the probability that the mean number of parcels delivered each day by the courier is greater than 257 (4)

(Total 4 marks)

Edexcel A2 October 2021 Q3

3. A random sample of 150 observations is taken from a geometric distribution with parameter 0.3

- Estimate the probability that the mean of the sample is less than 3.45 (5)

(Total 5 marks)

Edexcel A2 June 2022 Q5

4. A report on the health and nutrition of a population stated that the mean height of three-year old children is 90 cm and the standard deviation is 5 cm. A sample of 100 three-year old children was chosen from the population.

- (a) Write down the approximate distribution of the sample mean height. Give a reason for your answer. (3)

- (b) Hence find the probability that the sample mean height is at least 91 cm. (3)

(Total 6 marks)

Edexcel S3 June 2006 Q2

5. A biased spinner can land on the numbers 1, 2, 3, 4 or 5 with the following probabilities.

Number on spinner	1	2	3	4	5
Probability	0.3	0.1	0.2	0.1	0.3

The spinner will be spun 80 times and the mean of the numbers it lands on will be calculated.

Find an estimate of the probability that this mean will be greater than 3.25 **(6)**

(Total 6 marks)