**Further Statistics 1 Self-Assessment Sheets**

**BOLD items are in the A Level only**

Chapter 1 – Discrete Random Variables

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| **Progress Descriptor** | **☺** | **☹** |
| Find the expected value of a discrete random variable ***X*** |  |  |
| Find the expected value of ***X2*** |  |  |
| Find the variance of a discrete random variable |  |  |
| Use the expected value and variance of a function of ***X*** |  |  |
| Solve problems involving random variables |  |  |
| What I need to do to improve… |

Chapter 2 – Poisson Distributions

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| **Progress Descriptor** | **☺** | **☹** |
| Use the Poisson distribution to model real-world situations |  |  |
| Use the additive property of the Poisson distribution |  |  |
| Understand and use the mean and variance of the Poisson distribution |  |  |
| Understand and use the mean and variance of the binomial distribution |  |  |
| Use the Poisson distribution as an approximation to the binomial distribution |  |  |
| What I need to do to improve… |

Chapter 3 – Geometric and negative binomial distributions

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| **Progress Descriptor** | **☺** | **☹** |
| **Understand and use the geometric distribution** |  |  |
| **Calculate and use the mean and variance of the geometric distribution** |  |  |
| **Understand and use the negative binomial distribution** |  |  |
| **Calculate and use the mean and variance of the negative binomial distribution** |  |  |
| What I need to do to improve… |

Chapter 4 – Hypothesis testing

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| **Progress Descriptor** | **☺** | **☹** |
| Use hypothesis tests to test for the mean λ of a Poisson distribution |  |  |
| Find critical regions of a Poisson distribution using tables |  |  |
| **Use hypothesis tests to test for the parameter *p* in a geometric distribution** |  |  |
| **Find critical regions of a geometric distribution** |  |  |
| What I need to do to improve… |

Chapter 5 – Central Limit Theorem

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| **Progress Descriptor** | **☺** | **☹** |
| **Understand and apply the central limit theorem to approximate the sample mean of a random variable, *X̄*** |  |  |
| **Apply the central limit theorem to other distributions** |  |  |
| What I need to do to improve… |

Chapter 6 – Chi-squared tests

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| **Progress Descriptor** | **☺** | **☹** |
| Form hypotheses about how well a distribution fits as a model for an observed frequency distribution and measure goodness of fit of a model to observed data |  |  |
| Understand degrees of freedom and use the chi-squared (***χ*2**) family of distributions |  |  |
| Be able to test a hypothesis |  |  |
| Apply goodness-of-fit tests to discrete data |  |  |
| Use contingency tables |  |  |
| **Apply goodness-of-fit tests to geometric distributions** |  |  |
| What I need to do to improve… |

Chapter 7 – Probability generating functions

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| **Progress Descriptor** | **☺** | **☹** |
| **Understand the use of probability generating functions** |  |  |
| **Use probability generating functions for standard distributions** |  |  |
| **Use probability generating functions to fin the mean and variance distribution** |  |  |
| **Know the probability generating function of the sum of independent random variables** |  |  |
| What I need to do to improve… |

Chapter 8 – Quality of tests

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| **Progress Descriptor** | **☺** | **☹** |
| **Know about Type I and Type II errors** |  |  |
| **Find Type I and Type II errors using the normal distribution** |  |  |
| **Calculate the size and power of a test** |  |  |
| **Draw a graph of the power function for a test** |  |  |
| What I need to do to improve… |