Year 1 and Year 2/Further Mechanics   Name: _____

1) MOMENTUM and IMPULSE

I am able to…..

	☹	😐	☺
1.1 Momentum in one direction			
1.2 Conservation of momentum			
1.3 Momentum as a vector			

2) WORK ENERGY AND POWER

I am able to…..

	☹	😐	☺
2.1 Work done			
2.2 Kinetic and potential energy			
2.3 Conservation of mechanical eneregy and the work-energy principle			
Understand how graphs and networks can be represented using matrices			
2.4 Power			

3) ELASTIC STRINGS AND SPRINGS

I am able to…..

	☹	😐	☺
3.1 Hooke's law and equalibrium problems			
3.2 Kooke's law and dynamics problems			
3.3 Elastic energy			
3.4 Problems involving elastic energy			

4) ELASTIC COLLISIONS IN ONE DIMENSION

I am able to…..

	☹	😐	☺
4.1 Direct impact and Newton's law of restitution			
4.2 Direct collision with a smooth plane			
4.3 Loss of kinetic energy			
4.4 Succesive direct impacts			

5) ELASTIC COLLISIONS IN TWO DIMENSIONS

I am able to…..

	☹	😐	☺
5.1 Oblique impact with a fixed surface			
5.2 Succesive oblique impacts			
5.3 Oblique impacts of smooth spheres			

Year 1 and 2/Further Stats 1   Name: _____

1) DISCRETE RANDOM VARIABLES

I am able to…..

	☹	😐	☺
1.1 Find the expected value of a discrete random variable X			
1.2 Find the variance of a discrete random variable			
1.3 Use the expected value and variance of a function of X			
1.4 Solve problems involving random variables			

2) POISSON DISTRIBUTIONS

I am able to…..

	☹	😐	☺
2.1 the Poisson distribution			
2.2 Use the Poisson distribution to model real-world situations			
2.3 Use the additive property of the Poisson distribution			
2.4 Understand and use the mean and variance of the Poisson distribution			
2.5 Understand and use the mean and variance of the binomial distribution			
2.6 Use the Poisson distribution as an approximation to the binomial distribution			

3) GEOMETRIC AND NEGATIVE BINOMIAL DISTRIBUTIONS

I am able to…..

	☹	😐	☺
3.1 Understand and use the geometric distribution			
3.2 Calculate and use the mean and variance of the geometric distribution			
3.3 Understand and use the negative binomial distribution			
3.4 Calculate and use the mean and variance of the negative binomial distribution			

4) HYPOTHESIS TESTING

I am able to…..

	☹	😐	☺
4.1 Use hypothesis tests to test for the mean λ of a Poisson distribution			
4.2 Find critical regions of a Poisson distribution using tables			
4.3 Use hypothesis tests to test for the parameter p in a geometric distribution			
4.4 Find critical regions of a geometric distribution			

5) CENTRAL LIMIT THEOREM

I am able to…..

	☹	😐	☺
5.1 Understand and apply the central limit theorem to approximate the sample mean of a random variable, X bar			
5.2 Apply the central limit theorem to other distributions			

6) CHI-SQUARED TESTS

I am able to…..

	☹	😐	☺
6.1 Measure goodness of fit of a model to observed data			
6.2 Understand degrees of freedom and use the chi-squared (χ^2) family of distributions			
6.3 Be able to test a hypothesis			
6.4 Apply goodness-of-fit tests to discrete data			
6.5 Use contingency tables			
6.6 Apply goodness-of-fit tests to geometric distributions			

7) PROBABILITY GENERATING FUNCTIONS

I am able to…..

	☹	😐	☺
7.1 Understand the use of probability generating functions			
7.2 Use probability generating functions for standard distributions			
7.3 Use probability generating functions to find the mean and variance of a distribution			
7.4 Know the probability generating function of the sum of independent random variables			

8) QUALITY OF TESTS

I am able to…..

	☹	😐	☺
8.1 Know about Type I and Type II errors			
8.2 Find Type I and Type II errors using the normal distribution			
8.3 Calculate the size and power of a test			
8.4 Draw a graph of the power function for a test			