MATHEMATICS

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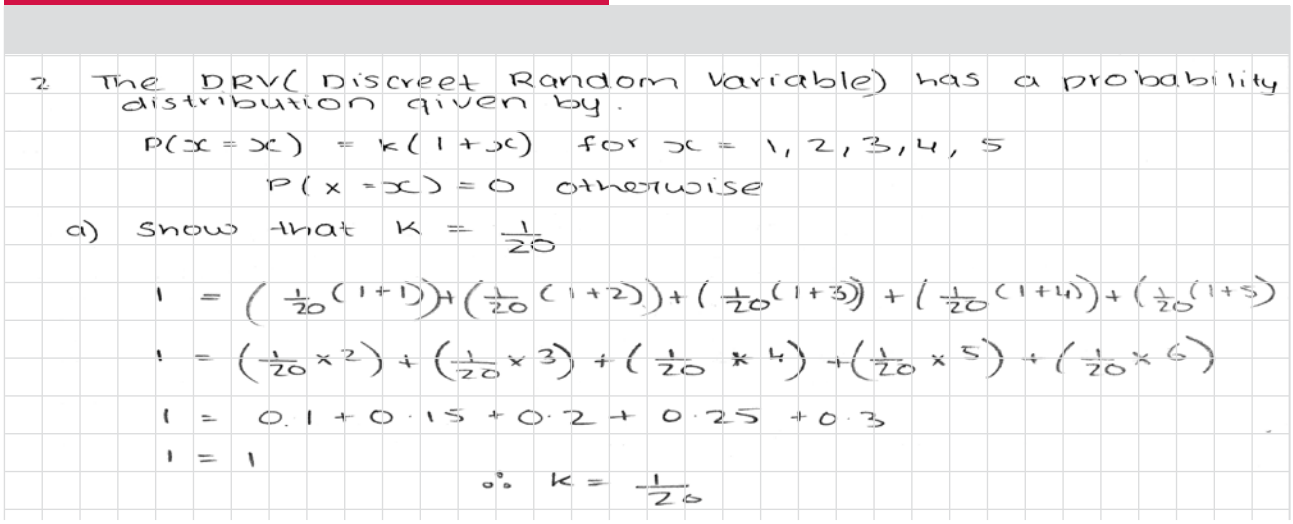
Teachers: Mr M Tinkler, Mrs L Rixon, Miss E Chamberlain
Examination Board: WJEC


2 The DRV(Discreet Random Variable) has a probability distribution given by.

$P(x = x) = k(1 + x)$ for $x = 1, 2, 3, 4, 5$

$P(x = x) = 0$ otherwise

a) Show that $k = \frac{1}{20}$

$1 = \left(\frac{1}{20}(1+1)\right) + \left(\frac{1}{20}(1+2)\right) + \left(\frac{1}{20}(1+3)\right) + \left(\frac{1}{20}(1+4)\right) + \left(\frac{1}{20}(1+5)\right)$

$1 = \left(\frac{1}{20} \times 2\right) + \left(\frac{1}{20} \times 3\right) + \left(\frac{1}{20} \times 4\right) + \left(\frac{1}{20} \times 5\right) + \left(\frac{1}{20} \times 6\right)$

$1 = 0.1 + 0.15 + 0.2 + 0.25 + 0.3$

$1 = 1$

$\therefore k = \frac{1}{20}$

Course Outline

Mathematics at AS and A Level is interesting and challenging – it builds on some of the work you have met at GCSE but also involves new ideas which will give you the skills to solve more complex problems.

Mathematics is a subject that is highly regarded by universities and employers alike. A possible explanation is that the maths skills learned at A Level, such as logical thinking, problem solving and statistical analysis, may be closer to those actually used in the workplace than skills learned in other subjects. Successfully studying Maths at A Level will put you in a strong position for your future

Entry Requirements

Mathematics is demanding at this level and you will need a keen interest in it, as well as enjoying the challenge that Maths provides. You will need to have studied GCSE Maths at Higher Tier and have a desire to extend your knowledge and skills further.

Students who are well organised, determined and resilient are very successful and find their teachers supportive. The department has a whole class interactive style of teaching, where you are expected to listen, think, discuss and contribute regularly in lessons in order to maximise understanding and learning. Homework is set and marked regularly and is a key element of any student's success.

What Will I Study?

Maths at St Joseph's is divided into three branches – Pure, Statistics and Mechanics. In Pure Maths, you will develop a broader understanding of mathematical processes and, importantly, how to apply these to solve problems. In Statistics, you will learn to analyse data and use new probability techniques to arrive at conclusions about it. Studying Mechanics is a vital step towards any Engineering course and you will discover how to use mathematics to 'model' the motion of objects and predict what will happen to them.

In Year 12 you will study three modules to make up your final AS grade.

PURE MATHS C1:

In this module you will learn about indices and surds, inequalities, quadratic functions and their graphs, coordinate geometry, the factor theorem and differentiation.

PURE MATHS C2:

In the second pure maths module you will study sequences and series, the log function, equations of circles, solving trig equations and integration

STATISTICS S1:

This module covers the laws of probability, discrete probability distributions – binomial, Poisson and continuous random variables.

In Year 13 you will study two more Pure mathematics modules that build upon many of the techniques that you will have learned in your first year. You will also complete a Mechanics module, resulting in a broad balance of

Please note that some courses might be subject to change

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knowledge and skills in three vital areas of mathematics, thus opening up many options to you.

PURE MATHS C3:

In this module you will develop your knowledge of functions, equations, differentiation and integration of more complex functions as well as numerical methods.

PURE MATHS C4:

In the final pure maths module, you will study the binomial function, partial fractions, double angle formulae, further integration, vectors and proof.

MECHANICS M1:

This module covers rectilinear motion, uniform acceleration, Newton's Laws of Motion, friction, collisions and statics of a body.

How Will I Be Assessed?

Each module listed above is assessed by a written exam that is 1½ hours long.

In Year 12 students sit the three modules (C1, C2, S1) in the Summer examination session to achieve an AS Level qualification.

Most students then continue with their study of Maths into Year 13 where they sit the C3 Pure module in January and the final two modules (C4, M1) at the end of the year.

There is no coursework element in Maths at this level.

Results at both AS and full A Level have continued to be of an excellent standard due to the hard work of maths students and teachers.

Career Opportunities And Progression

Mathematics A Level open doors to many rewarding and competitive careers, and you may want to go on to study maths at Degree or Postgraduate Level. You will also find maths invaluable if you want to study engineering, architecture, teaching, medicine, accountancy, banking, economics, information technology and any science subject at University. You will have gained skills in clear thinking and problem solving which will stand you in excellent stead whichever path you should choose.

As well as being a fascinating and exciting subject in its own right, you could also say Maths is 'BEST' – Mathematics is the language of modern Business, Engineering, Science and Technology. A shortage of highly numerate candidates in the jobs market means employers pay a premium for the problem solving skills of A Level mathematicians.