



Maths
Leaving Certificate
Ordinary Level

Past Exam Questions
Marking Scheme on
Counting

Q1 2012 paper 2

Question 1

(25 marks)

Peter and Niamh go to a large school. One morning, they arrive early. While they are waiting, they decide to guess whether each of the next three students to come in the door will be a boy or a girl.

- (a) Write out the sample space showing all the possible outcomes. For example, BGG is one outcome, representing Boy, Girl, Girl.

BBB, BBG, BGB, GBB, BGG, GBG, GGB, GGG

- (b) Peter says these outcomes are equally likely. Niamh says they are not. What do you need to know about the students in the school to decide which of them is correct?

The number of boys and the number of girls in the school.

- (c) If all the outcomes are equally likely, what is the probability that the three students will be two girls followed by a boy?

$P(\text{GGB}) = \frac{1}{8}$ or 0.125 or 12.5%

- (d) Niamh guesses that there will be at least one girl among the next three students. Peter guesses that the next three students will be either three boys or two boys and a girl. Who is more likely to be correct, assuming all outcomes are equally likely? Justify your answer.

$P(\text{at least one girl}) = \frac{7}{8}$ or 0.875 or 87.5%

$P(\text{three boys or two boys and a girl}) = \frac{4}{8}$ or $\frac{1}{2}$ or 0.5 or 50%

Niamh is more likely to be correct because of the greater probability.