

**Chi squared test for association – A2 Further Mathematics Statistics**

1. *June/2022/Paper\_7367/03S/No.7*

A scientist is investigating the air quality in two countries, *A* and *B*

Measurements of the air quality are taken at sites throughout both countries and assigned a rank.

The air quality is given Rank 1 if the level of air pollution is lower than a specified threshold.

The air quality is given Rank 2 if the level of air pollution is higher than the specified threshold.

A random sample of 500 measurements is collected.

The results are summarised in the following table.

		Air Quality		
		Rank 1	Rank 2	Total
Country	<i>A</i>	87	101	188
	<i>B</i>	167	145	312
	Total	254	246	500

The scientist claims that there is an association between country and air quality.

(a) Test the scientist’s claim, using the 10% level of significance.

[8 marks]

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- (b) For the context of the test carried out in part (a), state the meaning of a Type I error. [1 mark]

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