

Chi squared test for association – AS Further Mathematics Statistics

1. **June/2022/Paper_7366/02S/No.7**

Wade and Odelia are investigating whether there is an association between the region where a person lives and the brand of washing powder they use.

They decide to conduct a χ^2 -test for association and survey a random sample of 200 people.

The expected frequencies for the test have been calculated and are shown in the contingency table below.

		Brand of washing powder		
		A	B	C
Region	North	14.14	9.66	4.2
	South	20.705	14.145	6.15
	East	32.32	22.08	9.6
	West	33.835	23.115	10.05

Wade conducts a hypothesis test where the number of degrees of freedom for the test is 4

Odelia states that the number of degrees of freedom for the test should be 3

- (a) Explain why **both** Wade’s value and Odelia’s value for the number of degrees of freedom for the test could be valid.

[3 marks]

(b) The test statistic for Wade's test is 13.6

Investigate whether there is an association between region and brand of washing powder, using the 1% level of significance.

[5 marks]
