BN001, BN009, BN012, BN117, BN121, BN903

Year 2

Hypothesis Testing – Worksheet 4

Question 1

In a study on the effects of smoking, a group of students counted the number of incidents of respiratory illness during each of the four seasons, among non-smokers (NS), light smokers (LS) and heavy smokers (HS). Determine whether there is a link between smoking and respiratory health across the four seasons. The results are shown in the following table.

	Winter	Spring	Summer	Autumn
NS	9	8	4	6
LS	28	22	6	7
HS	43	20	8	23

Question 2

A Study was carried out into what sports were played by residents of three environments; Dublin city, the Commuter Belt towns and Rural areas. A random sample of subjects were classified by where they live, and asked what sport they play on a regular basis. Determine whether there is a link between type of sport played and the urban/rural environment. The results are shown in the following table.

	GAA	Soccer	Rugby	Other
Dublin	39	31	23	12
Commuter	48	45	26	34
Rural	18	22	18	4

Question 3

A trial was conducted on the effects of cigarette smoking and pollution levels on the occurrence of respiratory infections. Subjects were selected at random from 5 cities, listed in order of the recorded levels of pollution, 1 to 5, and classified by smoking as in the previous question. The table below records the number of incidents of respiratory infection in the subjects. Determine whether the data suggests the smokers are suffering more illnesses because of pollution.

	City 1	*City 2*	*City 3*	*City 4*	*City 5*
HS	131	241	252	222	303
OS	52	54	68	63	85
NS	23	18	25	29	34

Question 4

A company are trying to establish if there is a link between the type of fault reported in production and the production method. The number of faulty components produced is recorded during one week, counted by production method and type of fault, shown in the table shown. Determine whether or not the 4 faults arise roughly equally from the 3 production methods.

	Fault A	Fault B	Fault C	Fault D
Method 1	126	154	169	178
Method 2	152	151	157	153
Method 3	175	142	145	125