Random and stratified sampling

Grade 4 | Foundation and Higher | 5 questions, 20 marks

GCSE Statistics topic practice

Name: _____ **Date:** _____ **Score:** _____ **/ 20**

1 A dental surgery has 80 patients. Each patient is given a two-digit number from 01 to 80.

The receptionist wants a simple random sample of 5 patients. She uses this list of random numbers, reading from left to right.

47 93 08 47 62 85 15 00 31 26

a. Write down the numbers of the 5 patients in her sample. (2)

b. Explain what makes a sample a simple random sample. (1)

(3 marks)

2 A school has 720 students in Years 7 to 11. The headteacher wants a sample of 60 students, stratified by year group.

Year group	Year 7	Year 8	Year 9	Year 10	Year 11	Total
Number of students	168	156	144	132	120	720
Number in sample	14					60

a. Complete the table. (3)

b. Write down a suitable sampling frame for this survey. (1)

(4 marks)

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3 A leisure centre has 600 members. The table shows the number of members in each age group.

Age group	Under 18	18 to 39	40 to 59	60 and over
Number of members	180	240	120	60

The manager wants to survey a sample of 50 members, stratified by age group.

a. Work out the number of members aged 18 to 39 that should be in the sample. (2)

b. There should be 15 members aged under 18 in the sample. Describe how the manager could choose these 15 members using simple random sampling. (2)

c. Give one reason why a stratified sample is better here than a simple random sample of all 600 members. (1)

(5 marks)

4 A company has 250 employees. The table shows the number of employees in each department.

Department	Factory	Office	Sales
Number of employees	143	62	45

The manager wants a sample of 40 employees, stratified by department.

a. Work out the number of employees from each department that should be in the sample. (3)

b. The manager decides instead to ask the first 40 employees who arrive at work on Monday. Give one reason why this sample may be biased. (1)

(4 marks)

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5 A gym has 750 members. Each member has one type of membership: Full, Off-peak or Student.

The manager takes a sample of the members, stratified by type of membership. There are 180 Off-peak members at the gym and 12 Off-peak members in the sample.

a. Work out the total number of members in the sample. (2)

b. There are 21 Full members in the sample. Work out the number of Full members at the gym. (1)

c. Tom says, "A stratified sample must have the same number of members of each type." Is Tom correct? Give a reason for your answer. (1)

(4 marks)

End of questions | Total 20 marks

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