



F11-test Stratified Sampling (Foundation): Test Pack

EDEXCEL 1ST0 · Calculator allowed · about 20 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Which of these correctly calculates the number of people to include from one group in a stratified sample?

- ☐ A) group size + sample size
- ☐ B) (group size / total population) x sample size
- ☐ C) (total population / group size) x sample size
- ☐ D) group size x total population

(Total for Question 1 is 1 mark)

- 2** For each statement about stratified sampling, write down whether it is True or False.

(i) In stratified sampling, the population is first split into separate, non-overlapping groups. (1)

(ii) A well-conducted stratified sample gives every member of the population, whichever group they are in, the same chance of being chosen overall. (1)

(iii) Stratified sampling can only be used when the population is split into exactly two groups. (1)

(Total for Question 2 is 3 marks)

3 A researcher wants to survey students at a college. The college has three departments of very different sizes: Engineering, Business and Art.

(a) Explain why the researcher should use stratified sampling rather than a simple random sample chosen from the whole college. (2)

(b) Explain how stratified sampling makes sure the overall sample is representative of the whole college. (2)

(Total for Question 3 is 4 marks)

- 4 A theatre group has 120 members, split by age group and role, as shown in the table.

Group	Under-18, Cast	Under-18, Crew	Adult, Cast	Adult, Crew
Members	24	16	60	20

The group's director wants to select a stratified sample of 30 members, split across the four groups in proportion to their size.

- (a) Work out the sampling fraction that gives a sample of 30 from a population of 120. (1)

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(b) Work out the number of Under-18 Cast members to include in the sample. (1)

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(c) Work out the number of Under-18 Crew members to include in the sample. (1)

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(d) Work out the number of Adult Cast members to include in the sample. (2)

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(e) Show that the four sample sizes total 30, given that 5 Adult Crew members should be included. (1)

(Total for Question 4 is 6 marks)

5 An orchestra has 87 members: 52 string players, 20 wind players and 15 percussion players. A stratified sample of 25 members is required. Because 87 does not divide exactly, each sample size should be rounded to the nearest whole number.

(a) Work out the number of string players to include in the sample, giving your answer to the nearest whole number. **(2)**

.....
(b) Work out the number of wind players to include in the sample, giving your answer to the nearest whole number. **(1)**

.....
(c) Work out the number of percussion players to include in the sample, giving your answer to the nearest whole number. **(1)**

.....
(d) Show that your three rounded sample sizes give a total sample of 25. **(1)**

(Total for Question 5 is 5 marks)

Mark scheme • F11-test Stratified Sampling (Foundation): Test Pack

Question 1

- **B1** B cao
- **Answer: B) (group size / total population) x sample size**

Question 2

- (i) **B1** True cao
- **(i) Answer: True**
- (ii) **B1** True cao
- **(ii) Answer: True**
- (iii) **B1** False cao
- **(iii) Answer: False**

Question 3

- (a) **B1** a simple random sample could by chance include very few (or no) students from a small department such as Art, oe
- (a) **B1** stratified sampling guarantees each department is represented in proportion to its size, oe
- **(a) Answer: A simple random sample could under-represent a small department by chance; stratified sampling guarantees fair, proportional representation.**
- (b) **B1** the same sampling fraction is applied to every department, oe
- (b) **B1** so the proportion of the sample from each department matches the proportion of the college population in that department, oe
- **(b) Answer: Using the same sampling fraction in every department keeps the sample's proportions matching the college's proportions.**

Question 4

- (a) **B1** 30/120 oe (1/4, 0.25) cao
- **(a) Answer: 30/120 (= 1/4)**
- (b) **B1** 6 cao (24 x 1/4)
- **(b) Answer: 6**
- (c) **B1** 4 cao (16 x 1/4)
- **(c) Answer: 4**
- (d) **M1** 60 x 1/4, oe
- (d) **A1** 15 cao
- **(d) Answer: 15**
- (e) **B1** 6+4+15+5 = 30
- **(e) Answer: 6+4+15+5 = 30**

Question 5

- (a) **M1** 52/87 x 25 (=14.94...), oe
- (a) **A1** 15 (awrt), rounded to the nearest whole number
- **(a) Answer: 15**
- (b) **B1** 6 (awrt), from 20/87 x 25 = 5.74...
- **(b) Answer: 6**
- (c) **B1** 4 (awrt), from 15/87 x 25 = 4.31...
- **(c) Answer: 4**
- (d) **B1** 15+6+4 = 25
- **(d) Answer: 15+6+4 = 25**