

HW 4.1 Part B 17, 19, 23, & 25

17) IPHONES Suppose 1,000 iPhones are produced at a factory today. Management would like to ensure that the phones' display screens meet their quality standards before shipping them to retail stores. Since it takes about 10 minutes to inspect an individual phone's display screen, managers decide to inspect a sample of 20 phones from the day's production.

a) An eager employee suggests that it would be easy to inspect the last 20 iPhones that were produced today. Why isn't this a good idea?

b) Another employee recommends inspecting every 50th iPhone that is produced. What type of sampling procedure is this? Explain carefully why this sampling method is not an SRS (simple random sample).

19) A club has 30 student members and 10 faculty members. The club can send 4 students and 2 faculty members to a convention. It decides to choose those who will go by random selection. Use the numbers below to choose a stratified random sample of 4 students and 2 faculty members.

**STUDENTS**

|            |              |            |              |             |
|------------|--------------|------------|--------------|-------------|
| 1 Abel     | 7 Fisher     | 13 Huber   | 19 Miranda   | 25 Reinmann |
| 2 Carson   | 8 Ghosh      | 14 Jimenez | 20 Moskowitz | 26 Santos   |
| 3 Chen     | 9 Griswold   | 15 Jones   | 21 Neyman    | 27 Shaw     |
| 4 David    | 10 Hein      | 16 Kim     | 22 O'Brian   | 28 Thompson |
| 5 Deming   | 11 Hernandez | 17 Klotz   | 23 Pearl     | 29 Utts     |
| 6 Elashoff | 12 Holland   | 18 Liu     | 24 Potter    | 30 Varga    |

**FACULTY**

|               |             |            |            |         |
|---------------|-------------|------------|------------|---------|
| 1 Andrews     | 3 Fernandez | 5 Kim      | 7 Moore    | 9 West  |
| 2 Besicovitch | 4 Gupta     | 6 Lightman | 8 Phillips | 10 Yang |

The club can send 4 students and 2 faculty members to a convention. It decides to choose those who will go by random selection. How will you label the two strata? Use Table D, beginning at line 123, to choose a stratified random sample of 4 students and 2 faculty members.

23) Is it an SRS? A corporation employs 2000 male and 500 female engineers. A stratified random sample of 200 male and 50 female engineers gives each engineer 1 chance in 10 to be chosen. This sample design gives every individual in the population the same chance to be chosen for the sample. Is it an SRS? Explain your answer.

25) Laying fiber-optic cable is expensive. Cable companies want to make sure that, if they extend their lines out to less dense suburban or rural areas, there will be sufficient demand and the work will be cost-effective. They decide to conduct a survey to determine the proportion of households in a rural subdivision that would buy the service. They select a sample of 5 blocks in the subdivision and survey each family that lives on those blocks.

a) What is the name for this kind of sampling method?

b) Suppose there are 65 blocks in the subdivision. Use technology or Table D to select 5 blocks to be sampled. Explain your method clearly.