

**HW 9.13**

**In problems 1-8, identify the type of sampling used.**

1. In order to estimate the percentage of defects in a recent manufacturing batch, a quality control manager at Intel selects every 8<sup>th</sup> chip that comes off of the assembly line, starting with the 3<sup>rd</sup>.
2. In order to determine the average IQ of ninth-grade students, a school psychologist obtains a list of all schools in the local public school system. She randomly selects five of these schools and administers an IQ test to all ninth graders at the selected schools.
3. In an effort to determine customer satisfaction, United Airlines randomly selects 50 flights during a certain week and surveys all passengers on the flights.
4. A member of Congress wishes to determine her constituency's opinion regarding estate taxes. She divides her constituency into three income classes: low, middle, and high. She then takes a random sample of 100 households from each group.
5. In an effort to identify whether an advertising company has been effective, a marketing firm conducts a nationwide poll by randomly selecting individuals from a list of known users of the product.
6. A radio station asks its listeners to call in their opinion regarding the use of American forces in peacekeeping missions.
7. A farmer divides his orchard into 50 subsections, randomly selects 4 and samples all of the trees within the 4 subsections in order to approximate the yield of his orchard.
8. A university official divides the student population into five classes: freshman, sophomore, junior, senior, and graduate student. The official takes a random sample from each class and asks the members' opinions regarding student services.

**Sampling Issues**

9. *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) What is the population of interest? What is the sample?
  - b) An eager employee suggests it would be easiest to inspect the last 20 phones that were produced today. What kind of sample is he suggesting? Why isn't it a good idea?

c) Another employee recommends inspecting every 50<sup>th</sup> iPhone that is produced. What type of sampling procedure is she suggesting?

In each situation, a sample is being described. Determine sampling method used, the population the sample is describing, and whether the study is an experiment, survey, or observational study.

	Scenario	Population of Interest	Sampling Method	Type of Study
10.	You interview some students in your 2 <sup>nd</sup> period class about post-high school plans			
11.	You select every 20 <sup>th</sup> package of AA Energizer batteries produced that day to determine mean battery life			
12.	You choose one 5 <sup>th</sup> period class at random from each building on campus. You observe all of the students in those classes to determine how many times they check their phones during a given period			
13.	You post an online poll of the WRHS website to get opinions about the Late Start Wednesday schedule			
14.	You select 30 people at random from each Santa Clarita neighborhood. You give half of them a Fitbit to carry around and half of them no Fitbit,. You monitor their physical activity for the next month.			

**Answers**

- 1) systematic
- 2) cluster
- 3) cluster
- 4) stratified
- 5) SRS
- 6) convenience
- 7) cluster
- 8) stratified
- 9) a) all iPhones produced that day of all phones produced that day.      b) It is a convenience sample. It is mostly likely not representative  
c) systematic
- 10) a) all students in your 2<sup>nd</sup> period      b) convenience sample      c) survey
- 11) a) all Energize AA batteries produced that day      b) systematic      c) observational study
- 12) a) all students on campus      b) cluster      c) observational study
- 13) a) people who view and answer the WRHS poll      b) survey      c) convenience
- 14) a) All Santa Clarita residents      b) stratified      c) experiment