

**1. POPULATION:** A population is the entire group of objects being studied or it could be considered a collection of all outcomes, responses, measurements or counts that are of interest.

**Parameter** [Greek variables] : A measure or count of the entire population.

**2. SAMPLE:** A subset of the population.

**Statistic** [English variables] : A measure or count of the a sample.

3. List reasons why you might use a **SAMPLE** study instead of a **POPULATION** study?

- USING A SAMPLE IS QUICKER
- USING A SAMPLE IS MORE COST EFFECTIVE
- SOMETIMES IT CAN BE MORE ACCURATE

4. A recent survey by the alumni of a major university indicated that the average salary of 8,500 of its 250,000 graduates was \$123,000. Does this value describe a parameter or a statistic? WHY?

↑  
SAMPLE STATISTIC B/C THE \$123000 WAS A  
MEASURE OF THE SAMPLE (8500)

5. A survey of 976 American households found that 32% of the households own two cars. Identify the population and the sample.

SAMPLE: THE ACTUAL 976 AMERICAN HOUSEHOLDS THAT WERE INCLUDED IN THE STUDY.

POULATION: ALL AMERICAN HOUSEHOLDS

**For # 6– 8 Identify each of the following data sets as either: (P) Population or (S) Sample**

S 6. ....the age of a few randomly selected participants in a study about a race of runners

P 7. ....the annual salary of each full-time teacher in a study about Phoenix High School

S 8. ....a survey of 750 Georgia homeowners in a study about all of Georgia's homeowners.

**For # 9 – 11 Identify each of the following numerical values as either: (P) Parameter or (S) Statistic**

S 9. .... of a company's employees the opinion of just those that were there on time one morning about what they thought of a new training program.

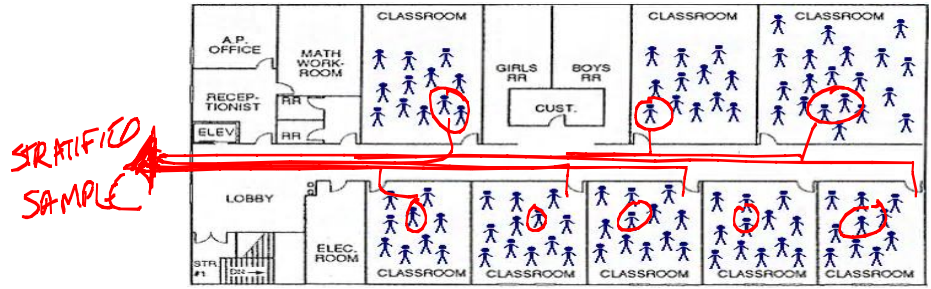
P 10. .... in a study about a small company of 25 employees, the range of their employee's salaries

S 11. .... in a study about the value of American homes in 2012, the average decrease of all the homes sold in Gwinnett.

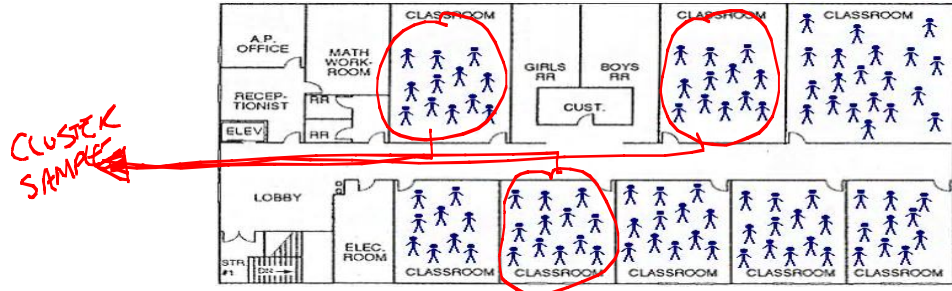
## TYPES OF SAMPLES

**12. Simple Random sample:** A sampling method in which each member of the population has an equal chance of being selected to be a part of the sample. Usually a sampling frame is used in which each member of the population is listed and assigned a number. Then, numbers are randomly generated to select for the sample from the frame.

**13. Stratified sample:** A population is divided into at least two groups, then some members (but not all) are randomly selected from each group.



**14. Cluster sample:** A population is divided into groups, the all of the members in one or more (but not all) of the groups are selected



**15. Systematic sample:** The population is ordered in some way and every  $n^{\text{th}}$  member is chosen



**16. Convenience sample:** Sampling members from the population who are readily available or 'convenient'.

Choose which sampling technique is used.

(R) Random (STR) Stratified (CLS) Cluster (CON) Convenience (SYS) Systematic

STR 17. There are 250 seventh graders and 300 eighth graders at Generic Middle School. We ask 45 seventh graders and 50 eighth graders how many siblings they have to compare the two groups.

CLS 18. I ask all freshmen, no sophomores, no juniors, and all seniors if they prefer Vanilla or Cherry Coke (these four groups are my only four groups) to create a study of what should be in the vending machines.

CON 19. I ask everyone in my 5<sup>th</sup> period class who has more than one computer at home in a study about all of my students for the year.

SYS 20. I collect data from every 15<sup>th</sup> student on my list of the entire school population.

RAND 21. After using a random number table to generate two-digit numbers, I decide on 10 people to choose from the population.

Rank the sampling types in order from what would usually be the WORST to BEST representation of a POPULATION. Provide brief explanations (especially if the ranking depends on the study).

(R) Random (STR) Stratified (CLS) Cluster (CON) Convenience (SYS) Systematic

CONVENIENCE → STRATIFIED → CLUSTER → SYSTEMATIC → RANDOM