Name KEY

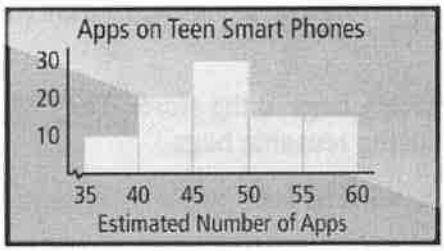
11.1 Statistical Questions and Variables – Guided Notes

Statistical Question: A statistical question can be answered by collecting many pieces of information or data & summarizing data

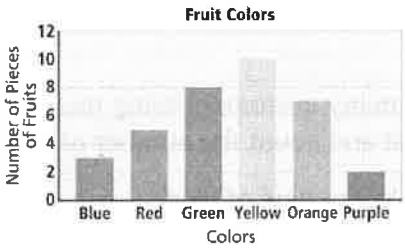
Statistical Variable: a quantity or quality that can be measured or counted

- *Quantitative Variable:* numerical data that can be operated on
- *Categorical Variable:* data that falls unto categories

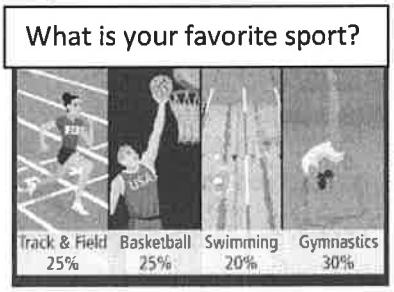
Ex. 1 – Determine whether the data displayed below represents a *categorical* or *quantitative* variable.



quantitative

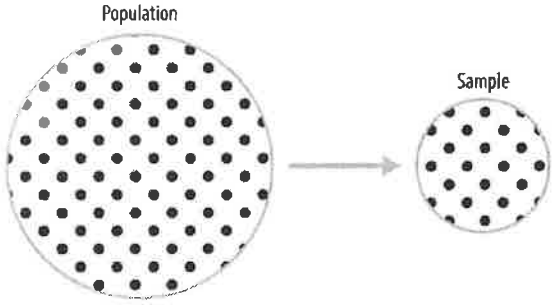


categorical



categorical

Population versus Sample:

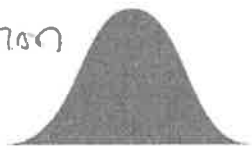


Population – set of all members of a group Ex: every resident in Iss

Sample – subset of population. Ex: students at IHS

Parameter – measure to describe population

Statistic – measure to describe a sample of population



Parameter

Statistic

Ex 2. A high school has three lunch periods. In a randomly selected lunch period, 24% of students brought lunch from home.

a. Describe the population and sample in this scenario.

Pop All students @ school

Sample students from one lunch

b. The figure 24% describe a parameter or a statistic in this scenario?

Stat b/c describes a sample

c. From part b, what would make the statistic **a** parameter**?**

If all lunches had been used to calculate %

11.2 Statistical Studies and Sampling Methods – Guided Notes

Three Types of Studies

Experimental Study – applying a treatment to a group or groups & measuring effects

Control Group – does not receive the treatment

Experimental Group – receives the treatment

- A doctor conducts a clinical trial of a new blood pressure medicine by prescribing it to half the patients in the study and measuring the effects it has on their blood pressure.

Sample Survey – asks every member of a sample the same ?

- A newspaper polls randomly selected residents in a town about which mayoral candidate they prefer.

Observational Study – observes members in the same way

- A grocery store wonders how many customers bring reusable grocery bags to the store. They have an employee stand at the checkout and count the number of people using reusable bags.

Ex 3. Match the following examples to the type of study.

B 1. A gym asks its customers if they would prefer the gym to open earlier in the morning.

A 2. A gym tries out a new weightlifting method to see if it will build muscle for their customers faster than the current method.

C 3. A gym counts the customers who arrive before 8 a.m.

a. Experimental

b. Sample Survey

c. Observational

causal / association

parameter

statistic w/ example

Sources of Bias

Bias – a systematic error in study caused by sampling method

Experimental Study	Sample Survey	Observational Study
- Selection of participants - The way treatments are assigned	- Selection of participants - Only looking for certain data, ignoring other factors - Only looking at one type of subject	- Selection of participants - Phrasing of questions - Truthfulness of subjects

Sampling Methods

Simple Random Sample – each member is equally likely to be chosen