

## Samples and Populations

**Population:** an entire group of people or objects

**Sample:** a part of the population

**Unbiased Sample:** representative of a population. It is selected at random and is large enough to provide accurate data

**Biased Sample:** not representative of a population. One or more parts of the population are favored over others.

Example 1: You want to estimate the number of students in a high school who ride the school bus. Which sample is unbiased?

- A) 4 students in the hallway
- B) all students in the marching band
- C) 50 seniors at random
- D) 100 students at random during lunch

Answer

Example 2: You want to know the number of students in your classroom who do their homework right after school. You survey the first 10 students who arrive in the classroom.

A) What is the population of your survey?

*Answer: All of students in the classroom*

B) What is the sample of your survey?

*Answer: First 10 students who arrive in the classroom*

C) Is the sample unbiased? Explain.

*Answer: No. This sample is biased; it does not represent the entire population (all of the students in the classroom). A random sample of the students in the classroom is needed.*

## Determining whether conclusions are valid.

Example 3: You want to know how the residents of your town feel about adding a new stop sign. Determine whether each conclusion is valid.

a) You survey the 20 residents who live closest to the new top sign. Fifteen support the sign, and five do not. So, you conclude that 75% of the residents of your town support the new sign.

Answer

b) You survey 100 residents at random. Forty support the new sign, and sixty do not. So, you conclude that 40% of the residents of your town support the new sign.

## Making Predictions

Example 4: You ask 75 randomly chosen students how many movies they watch each week. There are 1200 students in the school. Predict the number of students in the school who watch one movie each week.

