

POPULATIONS AND SAMPLES
N-GEN MATH[®] 7



Whenever we ask a **statistical question**, there is a group of **subjects** that the question applies to. This group is known as the **population** of the question or of the study.

Exercise #1: Connor sends 28 texts in a week and his parents believe that's a lot compared to other students in his 7th grade class. Connor decides he wants to answer the following question:

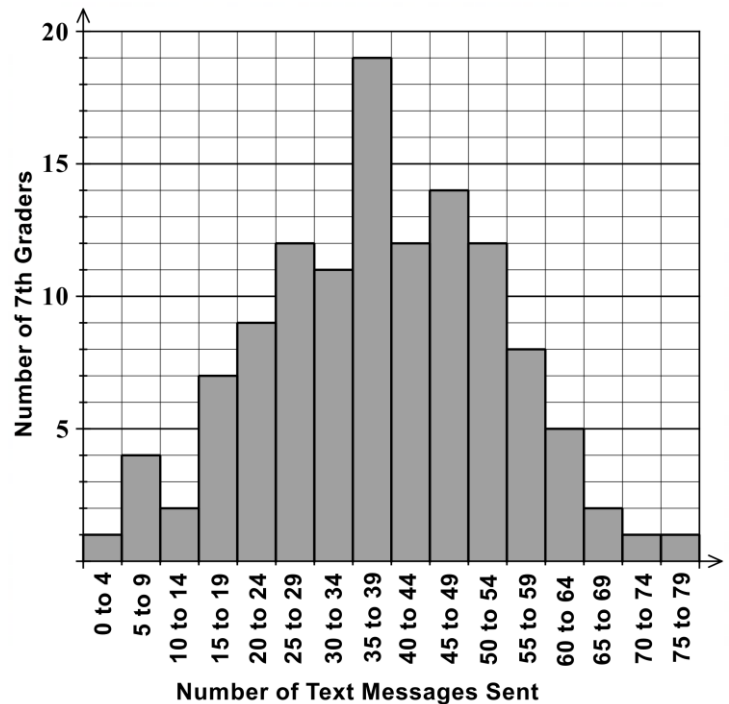
“How many texts do 7th graders in my school send each week?”

(a) What is the population for this statistical question?

Connor asked all 120 of the seventh-grade students how many texts they sent per week. He then plotted the results on the **histogram** below. Answer the following questions based on this graph.

(b) What **category** in this distribution did Connor's 28 texts fall in? How many students fell in this category?

(c) Which category had the greatest number of students in it? How many students? This is known as the **frequency** of the category.



(d) Did Connor send a lot of texts compared with other 7th graders at his school? Justify your answer.



Connor was able to **get a value** from **every subject in the population** of his statistical question. Most of the time, this is not possible.

Exercise #2: Connor's parents claims he sends a lot of texts compared to a typical 7th grader. They want to answer the question:

“How many texts does a typical 7th grader send per week?”

Why isn't it realistic to get a measurement (a response) from every **subject** in this question's **population**?

When we can't get a value from every subject in the **population** then we need to take a **sample of the population**. Samples can either **represent** a population well or not.

REPRESENTATIVE SAMPLES VERSUS BIASED SAMPLES

A sample is called **representative** of a population if you can draw accurate conclusions about the population from the sample. A sample is called **biased** if it leads you to incorrect conclusions about the population based on the sample.

Exercise #3: In each case below, describe whether the sample taken of the population would be **representative** or **biased**. Explain.

- (a) Isabella is trying to answer the question “How many social media sites do kids in my school use?” She takes a sample by asking 15 of her closest friends.

- (b) Jaxon is trying to answer the question “How often do students in 6th grade buy lunch at school instead of bring it from home?” He takes a sample of students by asking every fifth student who walks into the cafeteria how often they buy lunch per week.

- (c) Mila is trying to answer the question “How many pullups can a typical 8th grader do?” She asks ten 8th grade girls who are on her gymnastics team as a sample.



Name: _____

Date: _____

POPULATIONS AND SAMPLES N-GEN MATH[®] 7 HOMEWORK

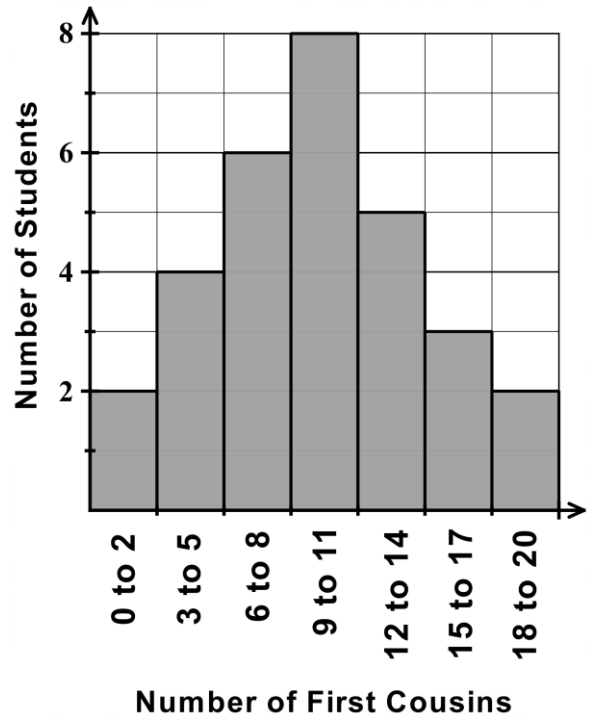
USING YOUR MATH

1. Ariana is in 6th grade and wants to answer the question “How many first cousins do kids in my class have?” She asks the students in her class to tell her how many first cousins they have. The results are displayed in the **histogram** below.

(a) How many students have from 12 to 14 first cousins?

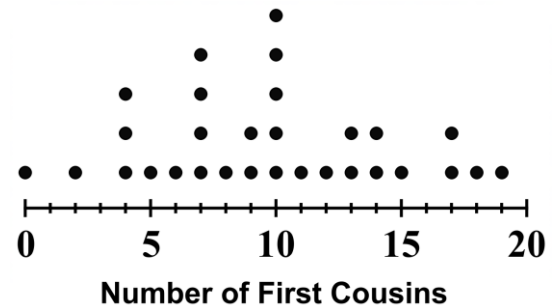
(b) How many students have 8 or fewer first cousins?

(c) Can we tell if there was someone who had zero first cousins? Explain your answer.



(d) How many total students did Ariana ask? How did you find your answer?

(e) Ariana also decided to create a dot plot of the data which is shown. What is the mode number of first cousins?



2. Ariana decides to ask the question “How many first cousins do kids my age have?”
- (a) Why can’t Ariana record answers for all members of the population that this question applies to?
- (b) **Only children** are kids who do not have any siblings, i.e. no brothers nor sisters. In order to answer her question, Ariana takes a sample of 20 kids who are all only children and asks how many first cousins they have. Why might Ariana’s sample be **biased**?
3. Read each of the following and decide if the sample would likely be **representative** of the population or likely would be **biased**. Explain your choices.
- (a) Wyatt would like the answer to the question “How often do people eat fast food per week?” To do this, Wyatt asks a sample of 50 people who are leaving a fast food restaurant how often they eat fast food per week.
- (b) Jasmine would like to answer the question “What percent of eggs in a grocery store have cracks in them?” She goes to 5 different grocery stores and picks one dozen eggs from each to sample for cracked eggs.
- (c) Gabriella is trying to answer the question “How many ears of corn grow on a stalk?” She does this by looking at a sample of 30 corn stalks in a field. She chooses the tallest stalk in each row for her sample.

