# Dear Family,

This week your student is learning about using random samples to make inferences and estimates about a population.

You can use data from a random sample to make an estimate or inference about the entire population. Using data from more than one random sample can lead to more accurate estimates.

Your student will be solving problems like the one below.

> There are 440 students at Veda's school. Veda asks a random sample of 20 students their favorite genre of book. In the random sample, 7 students prefer fantasy books. Based on this sample, how many students at the entire school should Veda expect to prefer fantasy books?

➤ **ONE WAY** to make an inference is to use a double number line.

Students Who Prefer Fantasy Books	7	35	70	105	140	154

Total Students	20	100	200	300	400	440
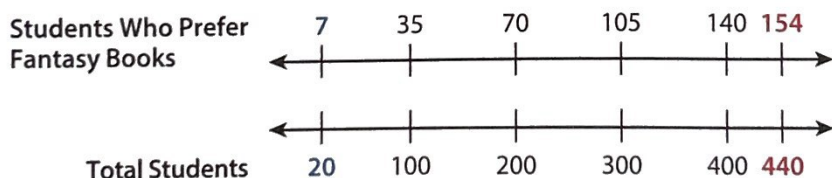
➤ **ANOTHER WAY** is to use the percent of the sample that prefer fantasy books.

$\frac{7}{20} = 0.35$, or **35%**

35% of the students in the random sample prefer fantasy books.

So, about 35% of the **population** should prefer fantasy books.

0.35(440) = 154

Using either method, Veda should expect about 154 students in the school to prefer fantasy books.

parent signature

▶ Use the next page to start a conversation about random samples.

Explore Random Samples

Previously, you learned about random samples. In this lesson, you will learn about using random samples to make estimates.

➤ **Use what you know to try to solve the problem below.**

Vivian surveys a random sample of Grade 7 students in the school band. She asks the students how many text messages they send each day. The median of her sample data is 50.

Edward surveys a random sample of all Grade 7 students at the school. He asks the students how many text messages they send each day. The median of his sample data is 60. Whose result is more likely to be representative of all the Grade 7 students at the school? Why?

SuperSurvey

How many text messages do you send per day?

None	O	60	O
10	O	70	O
20	O	80	O
30	O	90	O
40	O	100	O
50	O	>100	O

TRY IT   **Math Toolkit** bags, bowls, buttons, cups, index cards, number cubes

Edwards is more likely to be representative of all Grade 7 Students because his random sample came from all the students

DISCUSS IT

Ask: How did you reach that conclusion?

Share: First, I thought . . .

Learning Targets   SMP 1, SMP 2, SMP 3, SMP 4, SMP 5, SMP 6, SMP 7, SMP 8
- Use data from a single random sample to make inferences about a population.
- Use data from multiple random samples to make inferences about a population.

CONNECT IT

1 Look Back Is Vivian's or Edward's result more likely to be representative of the whole grade? Why?

2 Look Ahead While Vivian and Edward surveyed different populations, they both surveyed random samples. You can use data from a random sample to make an estimate or an inference about a population.

a. Sofia surveys a random sample of students in her school. She finds that 20 people in her random sample have no siblings. Is it reasonable for Sofia to estimate that 20 people in the population of students at her school have no siblings? Explain.

NO. A sample is just part of the population. If there are 20 people with no siblings in the sample, there should be more people with no siblings in the whole population.

b. Sofia also finds that 10% of the students in her random sample live with at least one grandparent. Why is it a more reasonable inference that about 10% of the students in her school live with at least one grandparent than exactly 10% of the students in her school live with at least one grandparent?

A random sample should look similar to the population it is drawn from, but it may not be exactly the same. So, you are more likely to be right if you infer that about 10% live with at least one grandparent.

3 Reflect How is making an inference about a population different from knowing something for certain about a population?

When you make an inference about a population, you use information from a sample to make an estimate about the population as a whole. You do not know for sure that your inference is correct.