

Grade 7 - Random Sampling and Inference - Worksheet

Common Core 7.SP.A.1, 7.SP.A.2 · maths-pdf.fr/en/

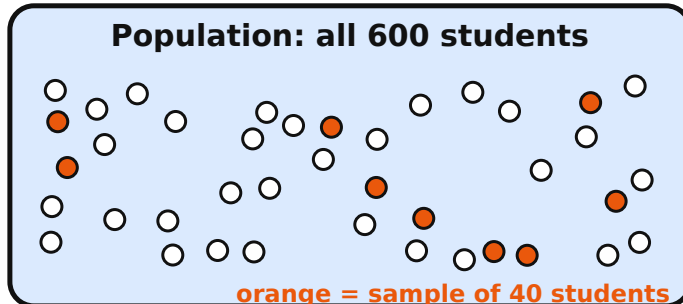
Name: _____ Class: _____ Date: ____/____/____

These 20 problems practice populations and samples, representative and biased samples, random sampling, and using samples to estimate a population (Common Core 7.SP.A.1-2). They start with the basic skill, move to different kinds of numbers and multistep work, and end with six word problems set in everyday situations such as shopping, sports, and travel.

Show every step of your work, and use the answer key only after you have tried each problem.

Grade 7 · Common Core State Standards: **7.SP.A.1, 7.SP.A.2**

Exercise 1 - Population and sample



Population and sample.

A school has 600 students. The principal surveys 40 of them. Name the population and the sample.

Exercise 2 - Biased or not?

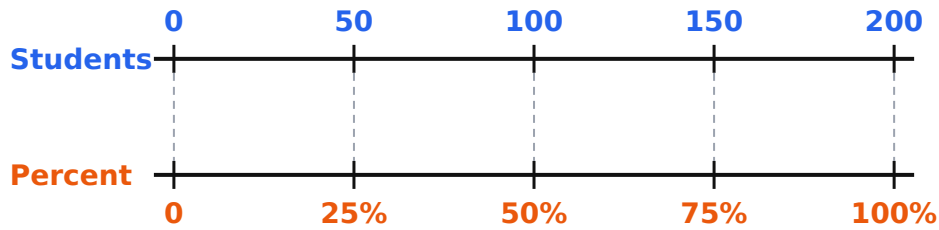
Mei wants to know the favorite sport of all students. She asks only the members of the basketball team. Is this sample representative? Explain.

Exercise 3 - Random method

Which method gives a random sample of 30 students: (a) the first 30 students who arrive at school, or (b) writing every student's name on a card, mixing the cards, and drawing 30?

Explain.

Exercise 4 - Pizza estimate



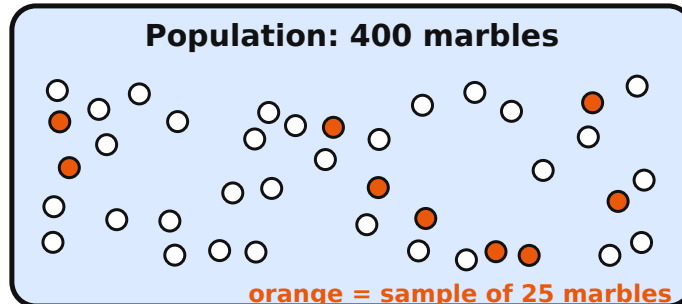
Sample proportion.

In a random sample of 200 students, 50 prefer pizza. Estimate how many of the 1,200 students in the school prefer pizza.

Exercise 5 - Library visits

In a random sample of 60 students, 18 visit the library weekly. Estimate the number of the 800 students who visit weekly.

Exercise 6 - Marbles in a jar



A random sample from a jar.

A random sample of 25 marbles from a jar of 400 has 7 red marbles. Estimate the number of red marbles in the jar.

Exercise 7 - Sample size

Maya takes a sample of 10 students and Jamal takes a sample of 100 students from the same school. Whose estimate is likely to be closer to the true value? Explain.

Exercise 8 - Election poll

Sampled	Support
150	96

Poll results.

In a random poll of 150 voters, 96 support a new park. About how many of the 12,500 voters in the town support it?

Exercise 9 - Quality control

A factory tests a random sample of 200 phone chargers and finds 8 defective. Estimate the number of defective chargers in a shipment of 5,000.

Exercise 10 - Tag and count

50 tagged
sample of 40: 5 tagged

Tag and count.

Biologists tag 50 fish in a lake and release them. Later they catch a random sample of 40 fish, and 5 are tagged. Estimate the number of fish in the lake.

Exercise 11 - Question wording

A survey asks, "Don't you agree that homework is too long?" Explain why the question could produce biased results.

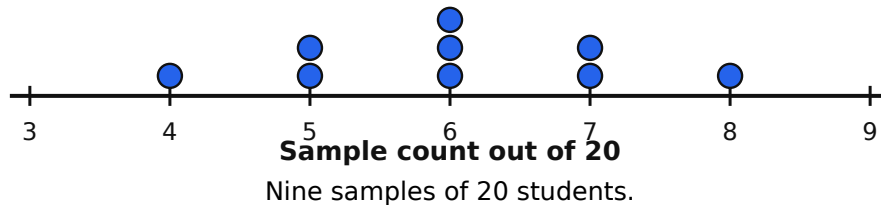
Exercise 12 - Random numbers

Students are numbered 1 to 30. Sofia uses a random number generator and gets 7, 22, 7, 15, 30, 3. List a random sample of 5 different students.

Exercise 13 - Mean of samples

Four random samples of students show mean reading times of 22, 25, 19, and 24 minutes per night. Find the mean of these sample means and use it to estimate the population mean.

Exercise 14 - Compare two samples



Nine random samples of 20 students asked about pets give the counts of dog owners shown. Find the median count and estimate the percent of students who own dogs.

Exercise 15 - Cafeteria

The cafeteria surveys 120 randomly chosen students out of 900. A total of 36 say they want more salad choices. Estimate the number of students who want more salad.

Exercise 16 - Bike riders

A city counts 50 random households and finds that 12 own a bike trailer. Estimate the number of households with a bike trailer among 2,500 households, and tell why the answer is an estimate.

Exercise 17 - Two samples

Two students each sample 10 students from the same school. One finds 6 who prefer soccer and the other finds 4. Explain why both can be correct and suggest how to get a better estimate.

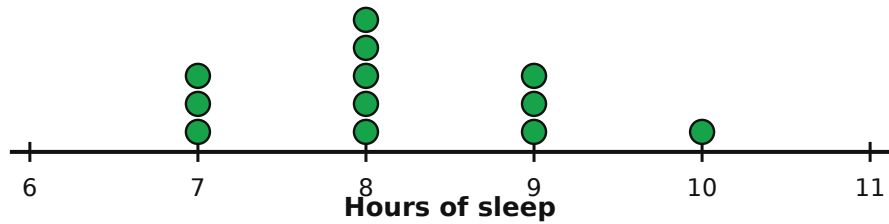
Exercise 18 - Movie night

A teacher surveys 150 random students out of 3,000. A total of 45 want a comedy for movie night. Estimate how many of the 3,000 want a comedy, and the number who would not.

Exercise 19 - Park survey

At a town park, 30 random visitors were asked if they came by bike. Nine said yes. If 10,000 people visit in a summer, estimate how many come by bike. Why might 30 visitors be too small a sample?

Exercise 20 - Hours of sleep



A random sample of 12 students.

The dot plot shows hours of sleep for a random sample of 12 students. Find the mean and use it to estimate the typical hours of sleep for all students in the school. Round to the nearest tenth.