Sample or Whole?

Sort the values, then pick two and explain how you knew.

A2S.DSP.E.27 "Distinguish between a statistic and a parameter and use statistical processes to make inferences about population parameters based on statistics from random samples from that population."

NAME _____ DATE _____

STATISTIC

A statistic is a number that describes a sample, a smaller group chosen from a population. A statistic from a random sample can help estimate a value for the whole population.

In a random sample of 30 oak trees in a forest, 18 are taller than 10 meters.

PARAMETER

A parameter is a number that describes the entire population, the full group of interest.

Of all the oak trees in a forest, 60% are taller than 10 meters.

1 SORT

8 items

For each numbered statement, circle STATISTIC if the number describes a sample or PARAMETER if it describes the entire population.

1.	A random sample of 40 students at Ridge High has a mean commute of 18 minutes.	STATISTIC PARAMETER
2.	In a random sample of 60 city buses, 12 arrived late.	STATISTIC PARAMETER
3.	Of all 280 lockers at Pine High, 35 need repairs.	STATISTIC PARAMETER
4.	A random sample of 50 bottles from today's factory output has a mean fill of 498 mL.	STATISTIC PARAMETER
5.	The mean age of every member of the chess club is 16 years.	STATISTIC PARAMETER
6.	Of all 2,400 tickets sold for Friday's concert, 180 were student tickets.	STATISTIC PARAMETER
7.	Across every house on Elm Street, the mean number of pets is 1.4.	STATISTIC PARAMETER
8.	Among 75 randomly selected registered voters in Bay County, 42 support the new park.	STATISTIC PARAMETER

2 PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Write one new statistic from a random sample and one new parameter for an entire population. State the group each number describes.

STATISTIC _____

PARAMETER _____

CHALLENGE

A random sample of 100 students at a school finds that 32 ride the bus. Estimate the percent of all students at the school who ride the bus, and say whether the sample's 32% is a statistic or a parameter.

ANSWER KEY

Sample or Whole?

HIGH SCHOOL · A2S.DSP.E.27

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	A random sample of 40 students at Ridge High has a mean commute of 18 minutes.	**STATISTIC**	The mean describes a random sample of Ridge High students.
2	In a random sample of 60 city buses, 12 arrived late.	**STATISTIC**	The count describes a random sample of city buses.
3	Of all 280 lockers at Pine High, 35 need repairs.	**PARAMETER**	The count describes every locker at Pine High.
4	A random sample of 50 bottles from today's factory output has a mean fill of 498 mL.	**STATISTIC**	The mean describes a random sample from today's output.
5	The mean age of every member of the chess club is 16 years.	**PARAMETER**	The mean describes every chess club member.
6	Of all 2,400 tickets sold for Friday's concert, 180 were student tickets.	**PARAMETER**	The count describes all tickets sold for the concert.
7	Across every house on Elm Street, the mean number of pets is 1.4.	**PARAMETER**	The mean describes every house on Elm Street.
8	Among 75 randomly selected registered voters in Bay County, 42 support the new park.	**STATISTIC**	The count describes a random sample of Bay County registered voters.

PART 2 · PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **STATISTIC**: In a random sample of 40 eighth graders at North School, 15 play an instrument.
- **PARAMETER**: Of all 120 eighth graders at North School, 48 play an instrument.

Challenge: About 32% of all students at the school ride the bus. The sample's 32% is a statistic because it describes the 100 students sampled.

For Part 2, accept any two item numbers with explanations that identify a sample or the entire population. In the challenge, 32% estimates a population parameter but is itself a statistic calculated from the sample.