Values or Statistics?

Sort distributions by what each number represents.

S.Q.2.4 "Recognize a sampling distribution is the distribution of a sample statistic (e.g., sample mean, sample proportion) obtained from repeated samples."

NAME _____ DATE _____

ONE SAMPLE'S VALUES

Each number is a measurement from one member of a single sample. The distribution shows how those individual measurements vary.

A distribution shows the waiting times of 20 commuters in one random sample.

REPEATED-SAMPLE STATISTICS

Each number is a statistic calculated from a different sample. Together, these numbers form a sampling distribution.

A distribution shows the mean waiting time from each of 100 different random samples of 20 commuters.

1 SORT

8 items

Circle VALUES or STATISTIC for each item, then choose two items, one from each category, and explain how you knew.

1.	A distribution of the 30 lifetimes of batteries in one random sample.	VALUES	STATISTIC
2.	A distribution of the heights of 18 lockers in one random sample.	VALUES	STATISTIC
3.	A distribution of 200 sample proportions who support a proposal, one from each of 200 random samples of voters.	VALUES	STATISTIC
4.	A distribution of the weights of 25 dogs in one random sample.	VALUES	STATISTIC
5.	A distribution of 100 sample medians of daily screen time, one from each of 100 random samples of students.	VALUES	STATISTIC
6.	A distribution of 50 sample means of lightbulb brightness, one from each of 50 random samples of lightbulbs.	VALUES	STATISTIC
7.	A distribution of the masses of 60 packages in one random sample.	VALUES	STATISTIC
8.	A distribution of the trunk diameters of 16 trees in one random sample.	VALUES	STATISTIC

2 PROVE IT

Explain your thinking

Choose two items, one from each category, and explain how you knew.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Write one new example of a distribution of individual values from one sample and one new example of a distribution of statistics from repeated samples; use a different setting for each.

VALUES _____

STATISTIC _____

CHALLENGE

A scientist takes 50 random samples of 12 apples and records every apple's weight and each sample's average weight. Which set of numbers makes a sampling distribution? Explain why.

ANSWER KEY

Values or Statistics?

HIGH SCHOOL · S.Q.2.4

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	A distribution of the 30 lifetimes of batteries in one random sample.	**VALUES**	The numbers are lifetimes of individual batteries in one sample.
2	A distribution of the heights of 18 lockers in one random sample.	**VALUES**	The numbers are heights of individual lockers in one sample.
3	A distribution of 200 sample proportions who support a proposal, one from each of 200 random samples of voters.	**STATISTIC**	Each proportion is calculated from a different sample.
4	A distribution of the weights of 25 dogs in one random sample.	**VALUES**	The numbers are weights of individual dogs in one sample.
5	A distribution of 100 sample medians of daily screen time, one from each of 100 random samples of students.	**STATISTIC**	Each median is calculated from a different sample.
6	A distribution of 50 sample means of lightbulb brightness, one from each of 50 random samples of lightbulbs.	**STATISTIC**	Each mean is calculated from a different sample.
7	A distribution of the masses of 60 packages in one random sample.	**VALUES**	The numbers are masses of individual packages in one sample.
8	A distribution of the trunk diameters of 16 trees in one random sample.	**VALUES**	The numbers are diameters of individual trees in one sample.

PART 2 · PROVE IT

Task: Choose two items, one from each category, and explain how you knew.
Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **VALUES**: A distribution shows the 24 quiz scores from one random sample of students.
- **STATISTIC**: A distribution shows 80 sample proportions of left-handed players, each calculated from a different random sample of 20 players.

Challenge: The 50 sample average weights make a sampling distribution because each average comes from a different sample. The 600 individual apple weights are measurements, not sample statistics.

For Part 2, a valid explanation could contrast item 1, which shows individual battery lifetimes from one sample, with item 3, which shows one proportion from each of 200 samples.