An **inference from a data sample** is a generalization about a **characteristic** of all the members based on the **results** of a smaller **random sample**.

A **school cafeteria surveyed 100 random students** out of 1000 students regarding their **lunch preferences**. The **results** are provided.

Chicken	Burritos	Pizza	Hamburgers
9	21	47	23

Inferences for 1000 students
▶ About half the students (470) like pizza.
▶ About the same number of students like burritos and hamburgers.
▶ About two times more students like pizza than hamburgers.
▶ Chicken is the least liked food.

Not an inference about all 1000 students
Nine students like chicken

💬 CFU

Zoo keepers gave a questionnaire to 125 random visitors about which zoo exhibit they like the most.

Is the inference drawn from the data sample correct? Explain.

Exhibit	Number of visitors who prefer this exhibit
Reptiles	25
Mammals	26
Birds	18
Elephants	45
Amphibians	11

About the same number of visitors like the reptile and the mammal exhibits.

Yes   No

Is the inference drawn from the data sample correct? Explain.

Birds and reptiles are the least favorite exhibits.

Yes   No

Which inference cannot be drawn from the data sample? Explain.

A The Reptile exhibit is close to the Bird exhibit.

B The Elephant exhibit is the most popular one.

In your own words, what is an inference about a data sample?

1 Refer to the data sample results.
2 Draw inferences. (box)

The School Activities Committee gave a questionnaire to 100 random 8th graders in a middle school about which style of music they like the most.

Note: 100 students were surveyed out of 1000 total students.

Favorite Style of Music	Number of Votes
Rock	34
Electronic Dance Music (EDM)	10
Pop	18
Hip Hop	25
Rap	13

1A About one-third of all the students like rock.	**Yes**	**No**
1B Only 38 students out of the entire school like EDM and Pop.	**Yes**	**No**
1C About 2.5 times more students like Hip Hop than EDM.	**Yes**	**No**
1D Pop is almost as popular as rap.	**Yes**	**No**

1 Refer to the data sample results.
2 Draw inferences. (box)

The Physical Education Department for Delta MS gave a survey to 100 random 7th graders about which is their favorite sport.

*Note: 100 students were surveyed out of 1000 total students.*

Favorite Sport	Number of Votes
Tennis	17
Basketball	22
Soccer	35
Swimming	15
Baseball	11

2A About 170 7th graders like tennis. **Yes   No**

2B Tennis and swimming were the least favorite sports for all students. **Yes   No**

2C 26 students in the entire 7th grade like swimming or baseball. **Yes   No**

2D About 260 7th graders like swimming or baseball **Yes   No**

Skill Closure

1 Refer to the data sample results.
2 Draw inferences. (box)

A pet store asked 30 randomly selected customers how many pets they have at home.
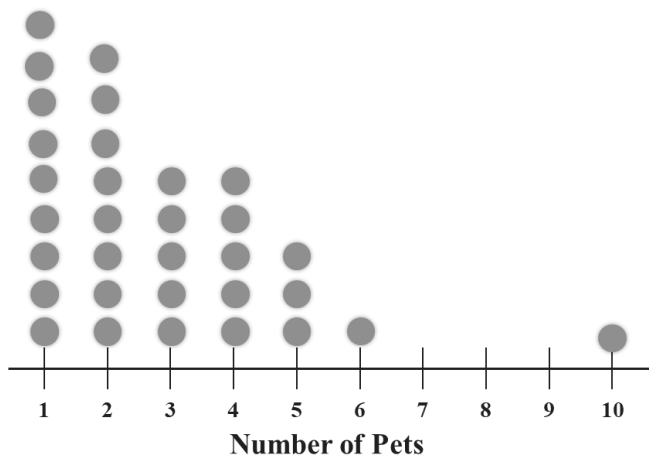
Number of Pets

1A	In the neighborhood of the store, three times as many pet owners have one pet rather than 5 pets.	**Yes No**
1B	In the entire neighborhood of the store, the number of pet owners having 3 pets is probably the same as those having 4 pets.	**Yes No**

Concept Closure

A pet store asked 30 randomly selected customers how many pets they have at home.

Write an inference about all the nearby pet owners that can be made from the data sample.

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Write an inference for the neighborhood that cannot be made from the data sample.

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Summary Closure

What did you learn today about drawing inferences using data samples?

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Word Bank

generalization
population
characteristic
random data sample
inference
draw

1 Refer to the data sample results.
2 Answer the questions.

A theater surveyed 100 randomly selected teens movie goers to rate a new movie from 1 to 5.

Rating	Number of Votes
1 poor	28
2 not very good	31
3 good	22
4 better than good	12
5 excellent	7

1A Of all the teenagers who watched the movie, 4 times as many probably would give a poor rating rather that an excellent rating.   **Yes   No**

1B Nearby theaters would probably have 4 times as many poor ratings that excellent ratings for teenagers.   **Yes   No**

1C Nearby theaters would probably have more excellent ratings than poor ratings.   **Yes   No**

2. Write an inference that can be drawn from the data sample.

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🔊 Listening

Listen carefully to the inferences from the data sample.
Answer Yes or No.

A Sports Club asks 100 randomly selected members how many miles they run a day. The club has 1000 members all together.

Number of Miles	Number of Votes
2	18
3	12
4	51
5	9
6	10

1A	**Yes**	**No**
1B	**Yes**	**No**
1C	**Yes**	**No**
1D	**Yes**	**No**

2. Write an inference that can be made from the data sample.

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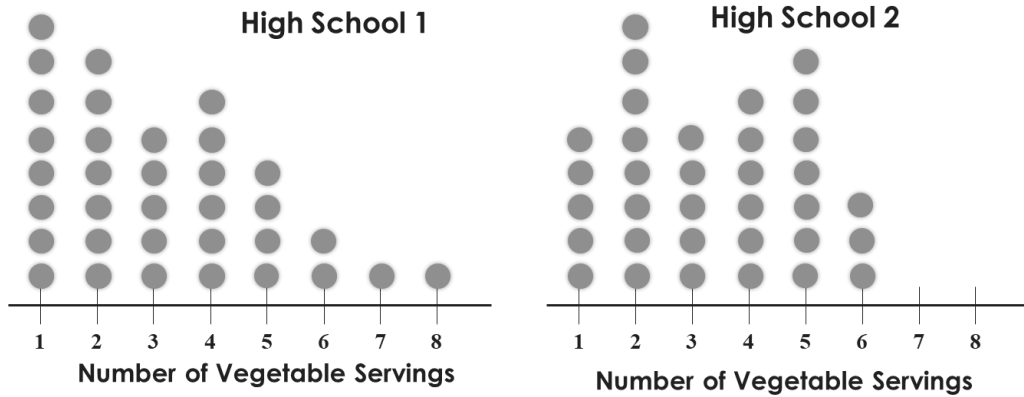**3. Write an inference that <u>cannot</u> be drawn from the data sample.**

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Compare the data samples.

Thirty-four randomly selected students at two different high schools were asked how many servings of vegetables they eat every day.

High School 1

High School 2

Number of Vegetable Servings

Number of Vegetable Servings

1A	The number of students eating 3 serving per day is the same at both high schools.	**Yes** **No**
1B	Five students at each high school eat 3 servings per day.	**Yes** **No**
1C	The number of students who eat 1 or two vegetable servings a day is the same for both high schools.	**Yes** **No**
1D	More students eat 5 vegetable servings in High School 2 than High School 1.	**Yes** **No**

2. Write an inference that can be made from both data samples.

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3. Write an inference that cannot be made from both data samples.

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Compare the data samples.

One hundred random students from two different middle schools were selected to answer the question how many siblings they have.

Middle School #1		Middle School #2	
Number of Siblings	**Number of students**	**Number of Siblings**	**Number of students**
0	5	**0**	11
1	38	**1**	28
2	12	**2**	22
3	25	**3**	17
4	20	**4**	22

1A Fewer students have 0 siblings for Middle School #2 than Middle School #1. 　　Yes　　No

1B More students have 3 and 4 siblings in Middle School #1 than Middle School 2. 　　Yes　　No

1C The students in Middle School #1 have better grades because they have more siblings to study with. 　　Yes　　No

2. Write an inference that can be made from both data samples.

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3. Write an inference that <u>cannot</u> be made from both data samples.

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