



# Lesson 1.2: Gathering Data

https://codehs.com/course/12135/lesson/1.2

<b>Description</b>	<p>In this lesson, students will learn about the data cycle and apply the first two steps of asking questions and considering data. Students will start a mini-project that spans through the rest of the module by asking a statistical question about a field of interest and gathering and structuring the data. They will also learn about and consider both quantitative and qualitative data.</p>
<b>Objective</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"><li>• Explain and apply the data cycle</li><li>• Consider data as either quantitative or qualitative</li><li>• Structure data into tables of rows and columns</li></ul>
<b>Activities</b>	<p><a href="#">1.2.1 Video: Gathering Data</a> <a href="#">1.2.2 Check for Understanding: Gathering Data</a> <a href="#">1.2.3 Free Response: Quantitative/Qualitative</a> <a href="#">1.2.4 Video: Live Code - Gathering Data</a> <a href="#">1.2.5 Exercise: Data Sort</a> <a href="#">1.2.6 Free Response: Pros and Cons</a> <a href="#">1.2.7 Free Response: Mini-Project: The Data Science Life Cycle</a> <a href="#">1.2.8 Example: Mini-Project: BTS</a> <a href="#">1.2.9 Free Response: Mini-Project: Collect the Data</a> <a href="#">1.2.10 Challenge: Mini-Project: Structure the Data</a> <a href="#">1.2.11 Free Response: Mini-Project: Plan for Analysis</a></p>
<b>Prior Knowledge</b>	<p>No prior knowledge needed.</p>
<b>Planning Notes</b>	<ul style="list-style-type: none"><li>• Students should be familiar with the CodeHS editor and platform as they will be switching to different files in the left-hand column throughout this lesson.</li><li>• Students will begin a mini-project in this lesson that will span across the rest of the module. Ensure that they take their time and come up with a quality statistical question that is within reach for a short data project.</li><li>• There is an example of a mini-project within the lesson. Use this to model a typical field of interest and an example of a statistical question at the correct difficulty level.</li><li>• Students may pose a statistical question that requires a lot of analysis. Have them save these questions for future projects and help them scale down for the mini-project.</li><li>• This is a longer lesson and may span between two class periods.</li></ul>
<b>Standards Addressed</b>	

### Lesson Opener:

- Have students brainstorm and write down answers to the discussion questions listed below. Students can work individually or in groups/pairs. Have them share their responses. [5 mins]

### Activities:

- Watch the lesson video and complete the corresponding quiz to check for understanding. [5-7 mins]
- Complete the *Quantitative/Qualitative* free-response activity. [10 mins]
- Complete the *Data Sort* exercise. [10 mins]
  - Ensure that students understand how to get to the data.csv file and how to Run Code to see their data table.
  - This exercise is meant to expose students to the editor and how data can live in a separate file. They do not need to know what the code in the Python file means at this point.
- Complete the *Pros and Cons* free-response activity. [15 mins]
  - Students can be paired up or put into small groups to discuss the questions in this activity.
- Complete the *Gathering Data* handout. [15 min]
  - This handout can be completed in pairs or as a take-home assignment.
- Complete the *Mini-Project: The Data Cycle* free-response activity. [5-10 mins]
  - Circulate the room to ensure that students remain focused on a statistical question that is not too complex.
- Explore the *Mini-Project: BTS* example. [5 mins]
  - Have students Run Code and also explore the data in the data.csv file.
  - Have them consider which data collected is qualitative and which is quantitative.
- Complete the *Mini-Project: Collect the Data* free-response activity. [15 mins]
  - Students may need assistance in finding a reputable source of information/data. If students are overwhelmed by the amount of data available to sift through, encourage the use of a survey instead.
- Complete the *Mini-Project: Structure the Data* exercise. [10 mins]
  - Help students debug their programs by making sure that the columns are included in the csv file first, commas are used correctly between each entry, and column names are used according to naming guidelines.
- Complete the *Mini-Project: Plan for Analysis* free-response activity. [5-10 mins]
  - Students should not complete their analysis at this time but rather just consider their data and what calculations and/or visualizations would help best in answering their statistical question.

### Lesson Closer:

- Have students reflect and discuss their responses to the end of class discussion questions. [5 mins]

- Explain what makes a question a statistical question.
  - *A statistical question is one that addresses variability and can be answered with data.*
- Which of the following is a statistical question? Explain why one is statistical and why the other is not.
  1. What was my score on the multiple-choice test?
  2. What was the typical score on the multiple-choice?
    - *The first question is not a statistical question because it only requires one piece of data to answer. There is no variability. The second question is a statistical question because the typical score depends on the scores of all students. There will be variability within the scores of all students.*
- What steps would you take to answer the question: “How old are the students in our class?”
  - *Sample Response: I would ask each student how old they were, take all of their ages, and find the average age for the class.*

**End of Class:**

- How can you change the following sentence to switch the data collected from quantitative to qualitative: I have five siblings.
  - *Sample Responses: I have tall siblings. I have funny siblings. I have siblings.*
- How can you change the following sentence to switch the data collected from qualitative to quantitative: My fingernail is long.
  - *Sample Responses: My fingernail is 2 cm long.*
- The president comes to visit, and you want to take the opportunity to ask him two statistical questions. What would you ask?
  - *Sample Responses: How much money does the Federal Government spend in a typical year? How much money does a typical American family spend on healthcare each year?*

**Resources/Handouts**

[Gathering Data \(Teacher Version\)](#)  
[Gathering Data \(Student Version\)](#)

**Vocabulary**

Term	Definition
<a href="#">data cycle</a>	A sequence of steps for processing and using data.
<a href="#">quantitative data</a>	Numerical data that can be counted or measured.
<a href="#">qualitative data</a>	Data that can be divided into different categories.

<b>Modification: Advanced</b>	<b>Modification: Special Education</b>	<b>Modification: English Language Learners</b>
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- Have students explore and add style to their tables using CSS shown [here](#).

- Provide students with a statistical question to investigate, or prompt them with a few different choices to choose between.
- Have students sort data into quantitative/qualitative piles using strips of paper before having them enter the answers into the csv file for the *Quantitative/Qualitative* exercise.

- Provide students with a printout of the slide deck. Allow them to add in additional examples of quantitative and qualitative data in their first language as well as in English.
- Encourage students to base their mini-project on an interesting or fun aspect revolving around their culture.