

Coding with Cornell: Data Types

Grade Level: First

Common Core National Standards Alignment

- **RL.1.1:** Ask and answer questions about key details in a text.
 - **RI.1.7:** Use the illustrations and details in a text to describe its key ideas.
 - **RF.1.3:** Know and apply grade-level phonics and word analysis skills in decoding words.
 - **W.1.2:** Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.
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Lesson Objectives & Relevance

Understanding **data types** helps students develop **categorization and classification skills** in both language and coding. Recognizing **key details, patterns, and structure** in text supports reading development, while discussing illustrations deepens comprehension.

By the end of the lesson, students will:

- Listen to and engage with *Coding with Cornell: Data Types* through discussion and guided activities.
 - Identify key details and main ideas in the text.
 - Recognize and sort different **types of data** (numbers, words, and true/false statements).
 - Use illustrations to describe and explain key concepts in the story.
 - Write or dictate an explanatory sentence about data types.
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Resources and Materials

- *Coding with Cornell: Data Types* book
- *Coding with Cornell: Activity Workbook*
- Chart paper and markers
- Cut-out vocabulary cards, and matching cut-out definition cards
- Drawing paper, crayons, and colored pencils

Vocabulary Words from the Text

- **Coding** – Writing instructions for a computer.
 - **Data** – Information that we use and store.
 - **Integer** – A whole number.
 - **String** – A group of letters or words.
 - **Float** – A number with a decimal.
 - **Boolean** – A value that is true or false.
 - **Variable** – A way to store and use data.
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Lesson Introduction

- Have your students gather in a circle or at their desks.
- Ask your students to brainstorm what they know about computers (or tablets) and how they use them.
 - **Guidance:** Often, students have used tablets to play games, watch videos on YouTube Kids, or complete school assignments. Each of the applications (“apps”) used for these activities were built by coders using a coding language like Python.
- Once students understand that apps are built by coders, ask them questions about the types of information we use every day, such as words and numbers, including:
 - “What do we use numbers for?” (Guide students to responses like: “Counting our age!” “How many apples we have!”)
 - “What about words? Where do we see words every day?” (Guide students to respond with examples like: “Our names!” “Sentences in books!”)
- Write the word **data** on the board, then ask: “What do you think data means?” (Guide students to understand that data is **information we use every day**.)
- Explain that in coding, numbers and words are both types of data.
- Ask students additional questions, including:
 - “How do you think computers use numbers?” (Guide them to think about counting points in games or showing the time.)
 - “Where do you think computers use words?” (Guide them to think about seeing their names in a game or reading a message on the screen.)
 - **Guidance:** In Python, numbers are called **integers**, and words are called **strings**.
- Introduce today’s book, *Coding with Cornell: Data Types*, and explain that through reading this book, students will learn about **coding** and how **data** is used to help write code.

Lesson Activities/Tasks

Activity 1: Read-Aloud and Discussion

- Read *Coding with Cornell: Data Types* aloud, showing illustrations and emphasize the key data types (integers, strings, floats, Booleans), and variables.
- After reading, ask students to recall details from the story.
 - What do coders build? (*Lead students to understand that coders build apps, games, and many other things*)
 - What do we call numbers in Python? (*Integers*)
 - What do we call words and letter that are in quotes in Python? (*Strings*)
 - Give one example of a string that you see every day. (*Their name, or the name of the school, etc.*)
 - How are floats different from integers? (*They are numbers with a 'spot' or decimal numbers*)
 - Cornell said “it’s true that you’re unique, and false that there’s anyone like you.” What does that mean?
 - Can we code without data types? (*No!*)
 - Focus on the illustration of Cornell at the board next to the word:

Variables

toy = “train”
color = “blue”
bird = “owl”

Can you tell me what the toy is? What is the color? What kind of bird is it?

- Learning the basics of coding is like _____ ? (*Finding a pot of gold*)

Activity 2: Drawing My Favorite Game or App

- Using the illustration of Cornell and Cori’s mother on her phone and their father playing video games ask, “What do you see in this picture? How does it help us understand what coders get to build?”
- After students have grasped an understanding of what can be built with coding, ask students to draw an image representing a game or app they have played with that was likely built by a coder.

English/Language Arts Lesson Plan: 1st Grade

Coding with Cornell: Data Types

- Underneath the illustration, students should write a sentence, “ _____ was built by coders.”)
 - **Guidance:** This activity will help students understand that **all** games and apps that they interact with were built using coding with languages such as Python.
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Activity 3: Find My Vocabulary Partner

- **Educator Preparation:** Create pairs of Vocabulary Cards (e.g., Data, Integer, String, Float, Boolean, Variable) and matching Definition Cards with simple explanations (e.g., “Words or letters in quotes” for String). Laminate for durability if possible.
 - Distribute Vocabulary Cards and Definition Cards to students.
 - Students walk around to find their matching partner. Once matched, they read the word and definition aloud.
 - Review each pair as a group, asking students for examples from the book or daily life.
 - **Guidance:** This activity helps students understand coding vocabulary by connecting words with simple definitions or images.
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Activity 4: Workbook Integration

- Have students complete several worksheets in the Coding with Cornell Activity Workbook as classroom and homework activities, including:
 - The Data Types Book Cover coloring sheet
 - Python Coloring Sheet
 - Learn About Data
 - Data Types – Integers tracing sheet
 - Data Types – Strings tracing sheet
 - Data Types – Booleans tracing sheet
 - Data Types – Floats tracing sheet
 - **Data Types – Strings**
 - **Data Types – Integers and Floats**
 - **Data Types – Floats**
 - **Variables (pages 12 – 15)**

* Workbook integration includes all pages that are recommended for grades lower than 1. Bold worksheet pages are recommended for grade 1.

Lesson Conclusion & Assessment

Wrap-Up Discussion:

- “Who can tell me one **data type** or **example of a data type** we learned today?” (*Call on multiple students.*)
- “Why do we need **different types of data**?” *(Guide students to understand that **data helps organize information.**)
- “How did this story help us understand what coding is?”