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# Lesson #Unit 2, Day 10-12: Binary Numbers

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| Overview *Students are introduced to the Binary Number System primarily using the Binary Numbers worksheets contained in the CSUnplugged Workbook. Moreover, students will be introduced to the concepts connecting binary numbers to computer science concepts via the CSUnplugged and other resources (videos, webpages, xls spreadsheets), They will be given counting the dots worksheet both electronically (via Google Classroom) and on paper.* Lesson Summary  * *Students start lesson by first viewing video (concept\_internet\_wires\_cables\_wifi.mp4) then reading the introductory paragraphs on raw data and respond to questions in their journal notebooks:* * *What is data?* * *Where does the word ‘computer’ come from and what does it mean?* * *List some of the tasks carried out by computers.* * *How do computers store all of their data?* * *Explain the difference between data and information.* * *Students work in groups of 4, given cards to follow the first activity as guided by their teacher. Later, students continued to work in small groups to complete the activity sheets in their handout. All work (answers to questions) is written out on loose-leaf to be handed in at the end of the class session.* * *Extension activity 1: students explore the concept of other bases, other than base 2 or 10, to represent numbers using code.org tool (*<https://studio.code.org/s/ECSPD3-Unit2/stage/4/puzzle/6>) * *Extension activity 2: involving the analysis of a binary numbers game (resources uploaded) Students are directed to write a short essay explaining how the game works*  CS Content *The CSUnplugged content on Binary Numbers is covered. Students should:*   * *get an idea of the relationship between the binary number system and how computers store information.* * *An understanding how to convert binary to decimal and vice versa.*   *The extended activities should:*   * Extend understanding of Base number systems other than just 2 and 10. * Extend students understanding of the special properties of binary numbers. |  |  | Objectives **Students will be able to:**   * Convert decimal numbers to binary and vice-versa. * Show understanding of how computers store and process data with respect to the Binary Number System  Materials and Prep  * CSUnplugged * Notebooks/Journals * Counting the Dots cards  Resources **Student Documents**   * CSUnplugged * <https://studio.code.org/s/ECSPD3-Unit2/stage/4/puzzle/6> * binaryCardsAnalysis.xls * binaryActivity160205.xlsm   **Code Studio**  **Video**   * concept\_internet\_wires\_cables\_wifi.mp4   **Assessments**   * Extension activity essay * Kahoot.it * Formal assessment (Standardized Multiple Choice)  Notes  |  | | --- | |  | |  | |  | |