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| **AP CSP Python with CodeX**  **Binary Numbers Activity Guide** | | **Name:** | |
| **Warm Up** How many ways can you represent “7”? | | | |
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| **Activity #1** Watch the video: [Secret Coders video](https://www.youtube.com/watch?v=bva4N7hNrNs) | | | |
| **Activity #2A** Get the Activity 2 Form and pennies. Use them to convert a number to binary. | | **Activity #2B** Get the Activity 2 Form and pennies. Use them to convert binary to a decimal number. | |
| **Decimal Number** | **Binary** | **Binary** | **Decimal Number** |
| 1 |  | 0010 |  |
| 4 |  | 0110 |  |
| 8 |  | 1001 |  |
| 13 |  | 1110 |  |
| **Activity #3** Get a flippy-do. Use it to convert a binary to decimal, and a decimal to binary. | | | |
| **Binary** | **Decimal** | **Decimal** | **Binary** |
| 0000 1010 |  | 5 |  |
| 0001 1100 |  | 12 |  |
| 0010 0000 |  | 30 |  |
| 1010 0001 |  | 100 |  |
| 0011 0110 |  | 153 |  |
| **Wrap Up:** Match the binary number with the correct decimal number.  Decimal numbers to match: 14, 85, 12, 170, 0, 255, 24, 19 | | | |
| 00001100 |  | 00011000 |  |
| 00000000 |  | 00010011 |  |
| 00001110 |  | 10101010 |  |
| 01010101 |  | 11111111 |  |

**For extra practice, try this game:** <https://studio.code.org/projects/applab/iukLbcDnzqgoxuu810unLw>