**Binary Reference Sheet:** Complete the binary numbers column below. (Print double-sided to use converter tool below).

| **Base 10 (Decimal)**  | **Base 2 (Binary)**  |
| --- | --- |
| 0 | 0000 |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |
| 11 |  |
| 12 |  |
| 13 |  |
| 14 |  |
| 15 |  |

**Binary Converter Tool:** Print these two pages double sided and cut along the dotted lines so that you can flip the 1 tabs over backwards to cover the 0’s and figure out the base 10 number.

([video instructions](https://www.youtube.com/watch?v=geK3_3o1lx4&t=9s))

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |

**Binary/Dec Conversion:** Complete the following table converting between base 10, 2, and 16.

| **Base 10 (Decimal)**  | **Base 2** **(Binary)**  |
| --- | --- |
| 0 | 0 |
| 2 |  |
|  | 0100 |
|  | 0111 |
| 8 |  |
| 9 |  |
| 15 |  |
|  |  |
|  | 0001 0001 |
|  | 0001 1111 |
| 32 |  |
| 33 |  |
|  |  |
| 64 |  |
| 127 | 0111 1111 |
| 128 |  |

**Binary Converter Tool:** Print these two pages double sided and cut along the dotted lines so that you can flip the 1 tabs over backwards to cover the 0’s and figure out the base 10 number.

| 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |