# **Quick Binary Mapping**

## How to convert from binary to regular numbers without a chart

- Naming things in computer science is an important skill since the computer only understands on/off also known as 0/1 (**binary** digits or **bits**).

- Recall the "Naming Game" where we used bits to uniquely name items—after more than a handful of items, it becomes difficult to keep track of the names!

| Item | Computer Name (using three bits) |
|---|---|
|  | 0 0 0 |
|  | 0 0 1 |
|  | 0 1 0 |
|  | 0 1 1 |
|  | 1 0 0 |
|  | 1 0 1 |
|  | 1 1 0 |
|  | 1 1 1 |

# **Problem:**
Help Squirrel Girl figure out her locker combination

## Mapping – Regular Numbers to Computer Name

| Regular Number | Computer Name (5 bits) | Regular Number | Computer Name (5 bits) |
|---|---|---|---|
| 0 | 00000 | 16 | 10000 |
| 1 | 00001 | 17 | 10001 |
| 2 | 00010 | 18 | 10010 |
| 3 | 00011 | 19 | 10011 |
| 4 | 00100 | 20 | 10100 |
| 5 | 00101 | 21 | 10101 |
| 6 | 00110 | 22 | 10110 |
| 7 | 00111 | 23 | 10111 |
| 8 | 01000 | 24 | 11000 |
| 9 | 01001 | 25 | 11001 |
| 10 | 01010 | 26 | 11010 |
| 11 | 01011 | 27 | 11011 |
| 12 | 01100 | 28 | 11100 |
| 13 | 01101 | 29 | 11101 |
| 14 | 01110 | 30 | 11110 |
| 15 | 01111 | 31 | 11111 |

## combo

10001

11011

11101