

## Notation guide:

| This Quarter | Variable           | Previous Quarters |
|--------------|--------------------|-------------------|
| K            | Block size         | B                 |
| C            | Cache size         | —                 |
| N            | Associativity      | E                 |
| A            | Address width      | m                 |
| T            | Tag field width    | t                 |
| I            | Index field width  | k,s               |
| O            | Offset field width | n,b               |
| S            | Number of sets     | S                 |

## Address translation:

Looking at the original address:

Most-significant bits → 

|          |                |                   |
|----------|----------------|-------------------|
| Tag bits | Set index bits | Block offset bits |
|----------|----------------|-------------------|

 ←Least-significant bits

### Things to think about:

**Bits dedicated to block offset:** If we have block size X, how many bits do we need to describe X things?

**Bits dedicated to set index:** If we have X sets, how many bits do we need to describe X things?

## Formulas to remember:

Average Memory Access Time (AMAT) = Hit time + Miss rate × Miss penalty

## General cache organization:

