Notation guide:

Parameter	Variable Name	Units
Block size	K (B in book)	bytes
Cache size	C	bytes (C) or blocks (C/K)
Associativity	E	none ("ways")
Address width	m	bits
Tag field width	t	bits
Index field width	s	bits
Offset field width	k (b in book)	bits
Number of sets	S	none

Address translation:

Looking at the original address:

Most-significant bit → | Tag bits | Set index bits | Block offset bits | ←Least-significant bit

Things to think about:

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

set index bits: 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: