COMP 222 Quiz #2   **NAME:**_____
Fill in the blank on this sheet (no scantron).

In the following problems, answers about # of bits should be in integer form, answers about # of blocks/lines can be left as a power of 2. Problems 1 and 2 are general sizing parameters. For Problems 3, 4, and 5, use the sizing parameters from Problems 1 and 2.

Problem 1: General Size Parameters
Express these values as powers of 2.
- RAM: 4 GB = _____
- Block/Line: 64 B = _____
- Cache: 2 MB = _____

Problem 2. Refer to sizes in Problem 1.
- # of bits in a full RAM address: _____
- # of RAM blocks: _____
- # of Cache lines: _____
- RAM address breakdown: _____ bits block index | _____ bits byte index

Problem 3. Use sizes from Problems 1 and 2 and assume Direct Mapped Cache
- # of RAM blocks that map to each cache line: _____
- Address breakdown: _____ bits tag | _____ bits line index | _____ bits byte index
- Associative search: when looking up an address tag, how many stored tags must it be compared to? _____

Problem 4. Use sizes from Problems 1 and 2 and assume Fully Associative Cache
- # of RAM blocks that map to each cache line: _____
- Address breakdown: _____ bits tag | _____ bits line index | _____ bits byte index
- Associative search: when looking up an address tag, how many stored tags must it be compared to? _____

Problem 5. Use sizes from Problems 1 and 2 and assume 16-Way Set Associative Cache
- # of Cache sets: _____
- # of lines per Cache set: _____
- # of RAM blocks that map to each cache set: _____
- Address breakdown: _____ bits tag | _____ bits set index | _____ bits byte index
- Associative search: when looking up an address tag, how many stored tags must it be compared to? _____