List of Standards

Bold headings are **standards**, with **topics** underneath. Labels such as [MT-N] will appear on all assessments. Keep this sheet as reference and to keep a record of your progress.

[MT] Mathematical tools *(Each topic can be basic or advanced, depending on the assessment)*
- [MT-N] Numbers *(Sets and numbers, functions, counting, divisibility)*
- [MT-P] Probability *(Basics, random variables)*
- [MT-A] Algebraic structures *(Congruences, groups, rings)*
- [MT-F] Fields *(Definitions, construction, field extensions, etc.)*
- [MT-O] Polynomials *(Polynomial algebra, factoring, irreducibility)*
- [MT-L] Linear Algebra *(Vectors, matrices, subspaces, span, independence, cosets, etc.)*

[NL] Noiseless Coding *(Each topic can be basic or advanced, depending on the assessment)*
- [NL-F] Fundamentals *(Definitions, code basics, uniquely decipherable, prefix-free)*
- [NL-I] Information *(Entropy, Kraft-McMillan inequalities, Noiseless Coding Theorem)*
- [NL-C] Compression *(Average length, constructing Huffman codes, other compression techniques)*

[NY] Noisy Coding *(Each topic can be basic or advanced, depending on the assessment)*
- [NY-F] Fundamentals *(Hamming weight, BSC, capacity, Noisy Coding Theorem)*
- [NY-E] Basic examples *(Parity checks, repetition, CRCs, etc.)*
- [NY-L] Linear codes *(Definitions, duals, generator and parity-check matrices, minimum distance)*
- [NY-B] Bounds *(Hamming bound, Hamming spheres, MDS codes, etc.)*
- [NY-D] Decoding *(Nearest neighbor, syndrome)*
- [NY-C] Constructions *(Via generators and PC matrices, Hamming codes, Cyclic codes, Vandermonde matrices, Reed-Solomon codes)*

[CM] Communicating Math *(Advanced mastery via "+" topics only. No exam proficiency required.)*
- [CM-J] Justify *(Justify all answers appropriately)*
- [CM-O] Organize *(Organize solutions in a helpful way, arrange work neatly)*
- [CM-C] Completeness *(Fully address each issue)*
- [CM-M+] Mathematical style *(Use proper mathematical language and writing style)*
- [CM-S+] Succinctness *(Write concisely, avoid unnecessarily extraneous verbiage)*
- [CM-E+] Elegance *(Write an especially clear and concise proof, choosing the best among several options or techniques)*

[SS] Student Success *(Advanced mastery via "+" topics only. No exam proficiency required. Each week will count as one assessment of each topic.)*
- [SS-P] Prepare for class *(Thoughtfully and fully complete pre-class readings and warm-ups)*
- [SS-A] Attend class regularly *(What it says!)*
- [SS-H] Hand in all work on time *(Or arrange for early drop-off)*
- [SS-I+] Interact with others during class *(in a meaningful mathematical way)*
- [SS-Q+] Ask and answer thoughtful and relevant questions *(In class, in responses, during office hours, etc.)*
- [SS-W+] Who? Make yourself known to the instructor! *(Visit office hours, talk with me during class, email with questions, etc.)*