Handout-Info

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*My handouts are labeled with my own system that keeps track of difficulty, subject, and handout-type. The purpose of this document is to outline my labeling conventions so you can navigate my handouts with more intention. Many of the handouts on this page are selected from an ongoing project called **Abstractica**, which is an open-world mathematical exploration system for curious and motivated students. If you are curious about the on-going narrative within some of the documents, know that the story pertains to the realm of **Abstractica**.*

♢1 Subjects

My handouts contain different subjects. These subjects will be in the tag on the cover page of each handout.

- **Algebra**: Contains documents anywhere from **SAT/ACT** preperation to **Oly-Algebra** which showcase some of the main lines to use in competition/olympiad settings. I also have **Linear-Algebra** documents and **Abstract-Algebra** documents that are more advanced.
- **Number-Theory**: Contains documents about **Oly-Number-Theory**, which pertains to competitions and olympiads. I also intend to explore **Cryptography** in the future.
- **Geometry**: Contains **SAT/ACT** documents as well as some **Oly-Geometry** for competitions/olympaids. In the future, I tend to write about **Differential-Geometry** which will be part of an advanced series of documents.
- **Combinatorics**: Contains documents about **Counting** as well as documents on **Graphs** and **Functions** which truly deserve their own label in my opinon for how pwoerful they are. Within combinatorics I also have some documents on **Theoretical-Computer-Science**.
- **Analysis**: The analysis documents are some of my more advanced handouts. Within I have documents on **Topology** and **Continuity** which I label in its own category.
- **Puzzles**: Contains my paper puzzle documents.

♢2 Difficulty

Alongside topic labels I also have tags for difficulty to help readers know if they are at the level required to read the document. There are **7** different difficulty ratings. Here are the difficulty ratings listed from least to greatest:

- Tyrσ (1/7): Requires no previous understanding and is intended for anyone's reading
- *f*ledgling (2/7): Assumes basic mathematical abilities of the reader e.g. manipulating equations and understanding how to apply basic results without the need of novel ideas or creative problem-solving

- Σpecialist (3/7): Rather than saying "I don't understand," the Σpecialist should be able to ask directed questions to clarify a topic. Σpecialist's should have the sorts of problem-solving skills required to solve almost any MATHCOUNTS question.
- Artisan (4/7): Transcends the requirement of already being "familiar with a topic." Instead, the Artisan should be able to quickly fill in gaps on their own if material is unfamiliar. Artisan's should have the problem-solving skills that of a top-10% scorer on the AMC-10/AMC-12.
- ▽irtuso (5/7): The ▽irtuso must satisfy the same requirements of the Artisan with the added familiarity of logical arguments and mathematical proofs.
- ωizard (6/7): Able to motivate mathematical proofs. ωizard's solve problems from divine ideas.
- Ω-Luminary (7/7): Undergraduate/Graduate-level. Ω-Luminary's are extremely motivated; masterful with their inner dialogue, masterful with proofs, extremely quick with new definitions, doesnt need hand holding in any regard, and is able to tackle any mathematical challenge with time and patience.

♢3 Level

On top of difficulty and subject, there are four levels that I use for categorization. These levels help students understand the type of document before them.

- 🌲 **The-Forest** 🌲 - These documents explore one central idea in interesting ways. Forest documents are mainly inquiry-based, subjecting the reader to a series of exercises that reveal a new novel idea about a central topic.
- ★ **Stellar-Space** ★ - These documents are meant to introduce a brilliant mathematical technique and showcase its most unexpected applications. Space is filled with so many beautiful celestial objects, I think the ideas presented in these documents are like the celestial objects of the mathematical world.
- 🔖 **Classical-Canon** 🔖 - These documents are akin to textbook chapters, introducing classical ideas supplemented with plentiful amounts of exercises and problems.
- 🖌 **The-Alelier** 🖌 - These documents are intended for directe drilling and practice. The alelier is a painting studio where the painter masters their craft. These documents are the mathematicians painter studio.