Topic: 0.1 Introducing Exploration Labs

Hello and welcome, this is heavily inspired from a math summer program I did called 'Program in Mathematics for Young Scientists' (PROMYS), the goal is to emphasize mathematical exploration, inquiry, observation, and conjecture, rather than regularly practiced routine and procedure. Please note that these count as part of your daily classwork grade, but if you really allow yourself to play with the math, it'll feel more like exploring rather than doing actual work. You will always see the topic name at the top. Please keep these in your binder as part of your notes. You should be doing the exploration labs by labelling these 5 sections:

1. Explore

Play with your math, I quite literally mean that, as if you're playing a new game, listening to a new song, or watching a new movie for the first time. Enjoy the math for what it is. If there is a word you do not know the definition of, or you require ruler, graph paper, or you're not sure how to get started, please let me know!

2. Discuss

Discuss with a buddy or group what you noticed, what patterns did you observe? Write down the key points of your discussion.

3. Conjecture

A conjecture is a mathematical claim about some pattern. For instance, my conjecture is that students will legitimately have fun exploring mathematics if they believe they can do it and give it an honest try. Make a claim about a pattern you're seeing. When is this pattern true? When is it false? Does this pattern hold in all scenarios? Write down all possible conjectures, and things you want to know if are true.

4. Apply

Does this pattern hold in other cases? Test it yourself and record your findings. You may find some unintended patterns!

5. Extend

Extend: Generalize this pattern for other cases. What if you were given the answer and were asked what was the question?