Goal

Much of mathematics involves recognizing a pattern or algorithm, and finding problems that are solved by the pattern. This game exercises creativity in pattern matching, and practices math facts.

The new slant to this game is that students cannot just blurt out the answer. Instead, they must prove they understand the pattern by adding new numbers that match the pattern. This prolongs the game and gives more students a chance to discover it themselves.

Introducing the Game

The "Friendly Number Game" runs by the teacher saying what you like and don't like. The "like" statements define the numbers that match the pattern. The "don't like" statements define numbers excluded from the pattern.

I like…
- multiples of 2 (even numbers)
- multiples of 3 (emphasize liking numbers with 3^2 and 3^3 as factors)
- multiples of 5 (emphasize liking numbers with 5^2 as a factor)
- multiples of 11
- any number with a double digit (11, 144, 12355, 2330, …)
- powers of 2 (2, 4, 8, 16, 32, …) *Ask: Do I like ½ ? 1? (yes)*
- squares (4, 9, 16, 25, 36, …) *Ask: Do I like "1"? (yes)*
- cubes (8, 27, 64, 125, 216, 343, 512, 729, 1000, …)
- palindrome numbers - they read the same forward and backwards (1221, 535, 82428)
- numbers with only even digits
- numbers with alternating even and odd digits
- triangular numbers - think of balls in a triangle (1, 3, 6, 10, 15, 21, 28, 36, ...)
- number of days a month can have (28, 29, 30, 31) *"I like 28 but don't see it very often, and I rarely get a chance to like 29!"*
- numbers ending in 3
- prime numbers
- 3xN - 1
- 7xN – 1
- factorials (1, 2, 6, 12, 60, 720, …)
- more?

Example

Suppose the secret pattern is multiples of 3.

The teacher may say: "*I like 3 and 6 and 9, but I don't like 10 and 20."*

A student may answer: "*So you really truly like 27 but you don't like 28."*

When enough people understand the rule, we talk about it and move on to the next pattern.