

MATH:1260 Pokémath

The Mathematics of Pokémon Go[®]

Week 1 Wednesday, Spring 24

Out[*]=

Popular curve:

Plusle-like curve



Plan for Today

- Introductions
- Check ICON for Syllabus
- Set up your account and start catching
- Intro to Sets

Class Reminders

- Make sure you can find the textbook on ICON
- Get your TopHat account working to answer in-class questions. Join code: 955322
- GW1 in discussion Thursday, bring a device and a pencil! (Try to have caught at least 5 Pokémon® before class)
- HW1 is due Wednesday January 24 (just to test a few definitions we'll cover in class today)

Online Resources you Need:

- The Syllabus: ICON
- Tophat: invited by email
- Textbook: ICON Direct eTexts on ICON
- Homework and submissions: ICON

Pokémon® Stats and Attributes: How do you keep track of this stuff?

Plusle: What are some stats or attributes?

Sets

Definition: Set

A **set** is a collection of objects.

Definition: Elements

The objects in the set are called **elements**.

Notation

To define the elements of a set we use **{ }**

Name of a set is usually a capital letter such as **A**

List Notation:

{list, the, elements, of, the, set, separated, by, commas}

Set Builder Notation (this can be done in multiple ways! The goal is to be clear about your set)

{kind of object | properties}

You can also combine List and Set Builder to create more interesting sets!

{Plusle, Minun, Pikachu} = E

{E | Name starts with a P} = F

How might you write set “F” using List notation instead of Set Builder notation?

More Examples of List Notation and Set Builder Notation:

Relationships Between Sets

Definition: Equality and Not Equality

Two sets, A and B , are **equal** if they have the same elements. Two sets are **not equal** if they fail to have the same elements.

Equality Notation

$$A = B$$

Not-Equality Notation

Definition: Subset and Not-Subset

A is a **subset** of B , if all of the elements of A are elements of B . A is **NOT a subset** of B , if there is a single element in A that doesn't appear in B .

Subset Notation

$$A \subseteq B$$

Not-Subset Notation

Definition: Proper Subsets and Not-Proper Subset

A is a **proper subset** of B , if all of the elements of A are elements of B and there are elements of B that are not elements of A . A is **NOT a proper subset** of B , if there is a single element in A that doesn't appear in B or A and B are equal.

Proper Subset Notation

$$A \subset B$$

Not-Proper Subset Notation

Some Special Sets

Definition: Empty Set

The **empty set** is the set with no elements

Notation

\emptyset

Definition: Universal Set

The **universal set** is the set of all objects of the type being discussed (This can be ambiguous, so be careful).

Notation

\mathcal{U}

Complements

Definition

The **complement** of a set, A is the set of all elements of \mathcal{U} which are not elements of A .

Notation

A' or A^c

How a word problem might say it...

Intersections

Definition

The **intersection** of two sets, A and B , is the set of elements belonging to both.

Notation

$$A \cap B$$

How a word problem might say it...

Unions

Definition

The **union** of two sets, A and B , is the set of elements belonging to set A or set B or both.

Notation

$A \cup B$

How a word problem might say it...

