

Alternative Pokemon Starter Types (Excluding Water, Grass, and Fire)

Abstract

Since Pokemon Red's and Pokemon Green's release in 1996 (or Pokemon Red and Pokemon Blue international releases in 1998), starter trios in the Pokemon franchise have consistently been Water, Grass, and Fire types; occasionally, these starters include, or gain upon evolution, a secondary typing. These three primary types have provided a solid foundation for starters due to several key criteria: their offensive relationships with each other, their relationship to themselves, and their relationship to immunities. These relationships are examined and alternatives to them are considered in order to find types for a new starter trio. One of the most qualified trios found is Fighting/Ice, Poison/Rock, & Electric, though several other options are presented.

Key Terms: Pokemon, Python

Table of Contents

| | |
|--------------------------|-----------|
| Introduction | 2 |
| Trio Relationship | 3 |
| Self Relationship | 5 |
| Immunities | 6 |
| Analysis | 7 |
| Data | 9 |
| Source Code | 20 |

Introduction

Coming up with a new trio of typings for starter pokemon has been a classic mental exercise for pokefans over the last 20 years. Although Water, Grass, and Fire are iconic in their elemental representation of the Pokemon series, many can't help but wonder "What if...?" Fans aren't the only ones considering such an idea: even the creators of Pokemon have produced official alternative starters. With the release of Ultra Sun and Ultra Moon in Gen VII, Poipole, the poison pin pokemon was introduced. Poipole has a pokedex entry revealing that it is actually a starter pokemon in the dimension from which it originates: *"This Ultra Beast is well enough liked to be chosen as a first partner in its own world."* (Pokemon Ultra Sun).

It was after a conversation with a friend and fellow pokemon nerd that I decided to look deeper into the possibilities of alternate typings for starter pokemon. We aim to consider the most viable trio of pokemon based on several important criteria: each pokemon's relationship with the other two pokemon in the trio, each pokemon's relationship with itself, and how many immunities the pokemon has along with how many types are immune to that pokemon's types (or how many immunities that pokemon "gives"). Beyond these criteria, there are two restrictions we are self-imposing:

1. *Traditional Type Exclusion:* Water, Fire, and Grass are excluded from the types we consider for our new starters in order to allow other types the opportunity to shine. This leaves us with the 15 other types: Bug, Dark, Dragon, Electric, Fairy, Fighting, Flying, Ghost, Ground, Ice, Normal, Psychic, Poison, Rock, & Steel.
2. *Sharing Is Not Caring:* No two pokemon within a trio may have a type in common, including any secondary typing. Starters within a generation have never shared a type and we will be maintaining that tradition here.
3. *List Limits:* This restriction is a bit meta in nature and more of a preference. I chose to limit the number of lists as much as I could when constructing the code that performed the calculations. Creating a set of lists (immunities given/had) within a set of lists (self-relations) within another set of lists (trio relationships) would have been easier to write, albeit obnoxiously cumbersome, but ultimately much less satisfying to create.

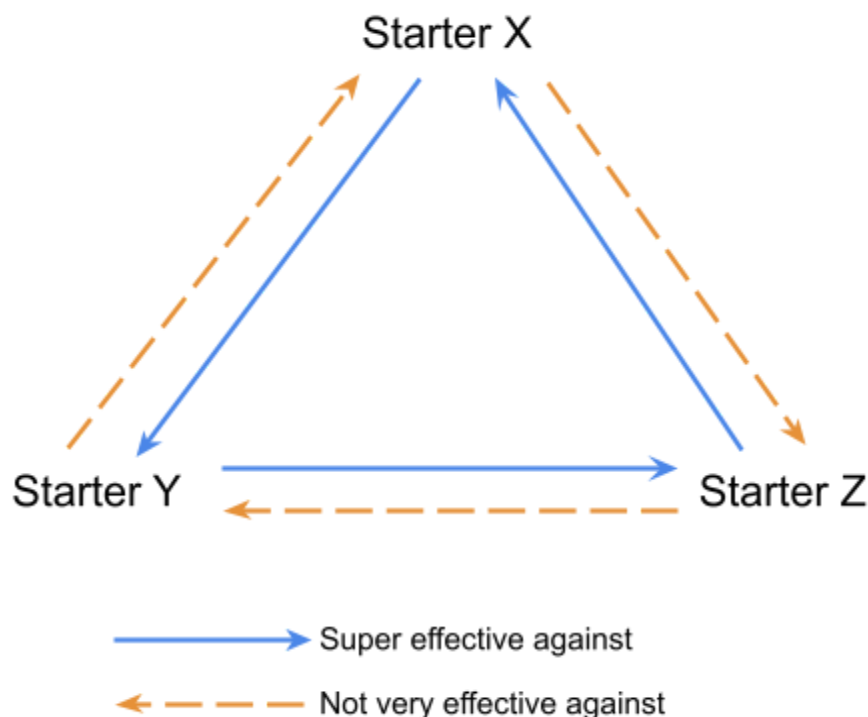
Trio Relationship

Firstly and most importantly is the relationship each pokemon within the trio has with the other two. Because an offensive relationship from one pokemon (Type X is super effective against Type Y) can be seen as a defensive relationship from another pokemon (Type Y is weak to Type X), we will be focusing solely on the offensive relationships between the pokemon.

The traditional starter types of Water, Grass, and Fire maintain two complete yet distinct unilateral relationships.

1. Each is super effective against one opposing starter type. Fire is super effective against Grass which is super effective against Water which is super effective against Fire.
2. Each is not very effective against the other opposing starter type (this other type being different from the one it is super effective against in part 1*). Fire is not very effective against Water which is not very effective against Grass which is not very effective against Fire. *This distinction is important to make as it's possible for a pokemon with two types to be both super effective and not very effective against a single type- e.g. a grass/ground starter against a fire starter. We want to clarify that each starter is super effective against one starter, and not very effective against the other.

Figure 1 displays one potential set of relationships between the 3 different starter types. This image displays a SE relationship one way, and a NVE relationship the other way, the same relationships the Water, Grass, and Fire starter types hold. This is one of the 6 possible relationship sets considered.



Therefore, any viable trio of starter types should simultaneously obey two similar unilateral relationships. The different possible sets are:

1. **Super Effective & Not Very Effective (SE-NVE):** Each pokemon can deal super effective damage to one starter, but deals resisted or no damage to the other pokemon. Most alternative starter trios posted online fall under this category since it follows the same pattern as the traditional starter trio. Two examples are *Fighting, Flying, Rock*, and *Dark, Fighting, Psychic* which are the most commonly-suggested alternative trios. 74 trios obey this relationship.
2. **Super Effective & Neutral (SE-NEU):** Each pokemon can deal super effective damage to one pokemon but only neutral damage to the other. One example is *Bug/Ground, Ice, Rock*. 126 trios obey this relationship.
3. **Super Effective & Super Effective (SE-SE):** Each pokemon can deal super effective damage against both other pokemon. For example, *Dark/Ice, Ground/Rock, Psychic/Steel*. 42 trios obey this relationship.
4. **Neutral & Neutral (NEU-NEU):** Each pokemon can only deal neutral damage to the other pokemon. This is the only case where no pokemon may deal super effective or not very effective damage at all to the other starters. One example is *Electric, Ice, Poison*. 725 trios obey this relationship.
5. **Neutral & Not Very Effective (NEU-NVE):** Each pokemon deals only neutral damage to one pokemon, and only deals resisted or no damage to the other pokemon. One example is *Bug/Dragon, Electric, Steel*. 5 trios obey this relationship. Interestingly, all 5 involve *Dragon, Electric, Steel*.
6. **Not Very Effective & Not Very Effective (NVE-NVE):** Each pokemon deals only not very effective or no damage to both other pokemon. No such trio of pokemon could be found.

It is important to note that no distinction is made between a 2x effective attack and a 4x effective attack: both are considered super effective. Similarly, a $\frac{1}{2}$ effective attack and a $\frac{1}{4}$ effective attack are both considered not very effective. Notably, 0x effectiveness is also considered not very effective for the purpose of categorization above in order to exclude as few options as possible (instances where this is the case are marked as such and are less ideal).

Self Relationship

Beyond their relationship with each other, pokemon and trios are classified according to their relationship to themselves. In the traditional trio of Water, Grass, and Fire, each type resists itself. However, because pokemon have multiple types, it's possible to have multiple self-relationships. Such pokemon are considered in both categories. For example, Rowlet, a grass/flying starter, doubly resists grass, but flying deals super effective damage, putting it in both “self super effective” and “self not very effective.” The 4 categories are:

- **Self Super Effective:** can deal super effective damage against itself. For example: *Ground/Rock, Dragon, Ghost*. 44 typings fall into this category.
- **Self Not Very Effective:** resists at least one of its own types: For example: *Bug/Dark, Electric, Ice*. 80 typings fall into this category.
- **Self Neutral:** deals only neutral damage against itself. For example: *Fairy/Rock, Ground/Ice, Fighting*. 18 typings fall into this category.
- **Self Immune:** immune to one of its own types. For example: *Fairy/Dragon, Ghost/Normal, Poison/Steel*. 7 typings fall into this category. These 7 typings are the 6 types with immunities paired with types they are immune to; Ghost gets two, one for Normal and one for Fighting.
- **No Self-Relation.** Though less ideal, trios with no shared self-relation are also considered in our data. For example, *Dark, Fighting, Psychic* [self-resist, self-neutral, self-resist respectively]. All trios that don't fall into one of the previous categories fall into this one.

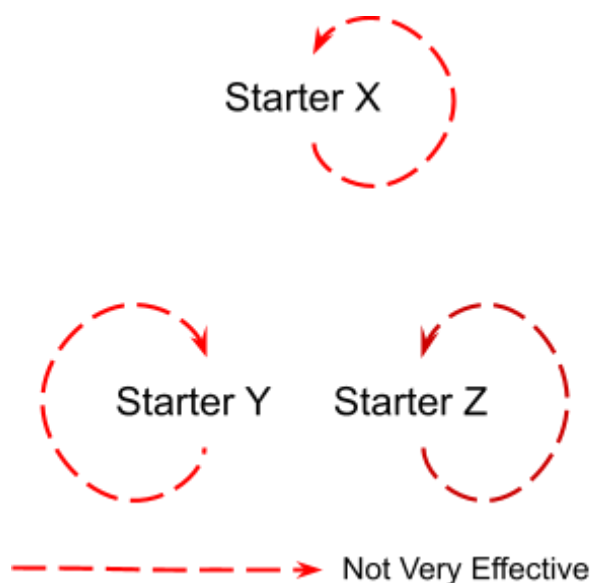


Figure 2 to the right displays a self not very effective relationship, the same kind displayed by the traditional starter types. In this figure, each starter only possesses one type though, so it's important to keep in mind that multiple self-relationships can exist within a single pokemon.

Immunities

Beyond the simple-to-understand nature of the original starter types' relationships, one thing that made them ideal starter candidates was their lack of immunities both offensively and defensively. Water, Grass, and Fire are 3 of only 6 types that neither possess any immunities nor have any type immune to them (the other 3 types being Bug, Ice, and Rock). We can also see that they each have just as many immunities as they give (that is, how many types are immune to them) so we include trios with pokemon who each have an identical number of immunities given and taken. One example would be a trio of *Ground, Normal, Ice*; all three give just as many immunities as they have (1,1,0). Taken one step further, we can also include trios where the algebraic difference between immunities possessed and immunities given -- that is, one subtracted from the other -- is the same for each pokemon, such as if each pokemon gives one more immunity than it has. Therefore, all three pokemon within a trio should share the same value, *The Immunity Difference*, for the following calculation:

$$\text{Immunity Difference Value} = \# \text{ of immunities had} - \# \text{ of immunities given}$$

Immunity classes are:

- **Immunities Possessed:**
 - **No Immunities.** E.g. *Psychic, Poison/Rock, Ice*. 36 typings are in this class.
 - **One Immunity each.** E.g. *Fairy, Flying, Normal*. 54 pokemon are in this class.
 - **Multiple (2+) Immunities.** E.g. *Ghost/Ground, Flying/Steel, Fairy/Dark*. 30 pokemon are in this class
 - **Mixed Immunity:** Trios with different numbers of immunities E.g. *Ground/Rock, Dragon, Ghost* (1,0,2 immunities, respectively).
- **Immunities Given:** pokemon in trios aren't classified based on how many immunities they give up- that is, how many type pairings are immune to one of their types- but rather if they share the same immunity difference value. E.g. *Fairy, Steel/Normal, Ghost* all have an immunity difference value of 1: they each have 1 more immunity than they give.

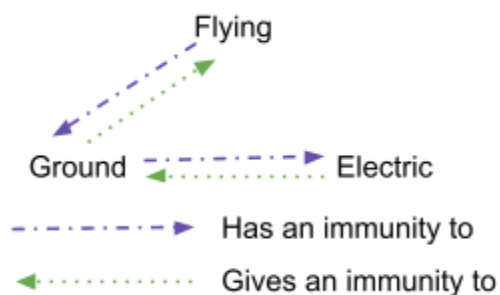


Figure 3 displays the concept of immunities had or given. Flying has one immunity to Ground but gives no immunities to any other type. Ground has one immunity to Electric, and gives one immunity to Flying. Electric gives one immunity to Ground but possesses no immunities itself.

Analysis

From the nearly 1000 trios available, only one trio exists which completely obeys the trio relationship requirements, has the exact same number of immunities possessed and given for each pokemon, and obeys a self relation: *Electric, Fighting/Ice, Poison/Rock*. Each pokemon in the trio can only deal neutral damage to the others, each has 0 immunities but gives one immunity (giving them all an *immunity difference value* of -1), and they are each capable of resisting one of their own types (*Fighting/Ice* can also deal super effective damage against itself and *Poison/Rock* can deal neutral damage against itself, but this doesn't exclude them from the self-resist category). Other viable trios and important aspects about them are presented in the table below.

Multitype Trio Table

| Trio | Trio Relation | Self Relation | Immunities Possessed | Immunities Given | Notes |
|--|---------------|--------------------------------------|----------------------|------------------|---|
| Electric, Fighting/Ice, Poison/Rock | Neu-Neu | Not Very Effective | 0 | 1 | The only trio to obey all requirements and all have the same number of immunities. |
| Dragon/Fairy, Ghost/Psychic, Ground/Rock | Neu-Neu | Super Effective & Not Very Effective | Mixed (1,2,1) | Matched (1,2,1) | Each pokemon has two self-relationships: they can all deal super effective and resist/are immune to one of their own types. |
| Ice(/Rock), Electric/Fairy, Ghost/Psychic | Neu-Neu | Not Very Effective | Mixed (0,1,2) | Matched (0,1,2) | Ice and Ice/Rock work equally well. Rock could be gained upon evolution. |
| Ice, Bug/Ground, Normal/Rock | SE-Neu | Not Very Effective | Mixed (0,1,1) | Matched (0,1,1) | Similar to the next trio, but perhaps more balanced. |
| Ice, Bug/Ground, Dragon/Steel | SE-Neu | Not Very Effective | Mixed (0,1,1) | Matched (0,1,1) | Similar to previous trio. Dragon/Steel may be too good of a defensive typing |

| | | | | | |
|--|---------|-----------------------|------------------|---------------------|--|
| Electric, Fighting/Ice, Normal/Poison | Neu-Neu | Not Very Effective | Mixed (0,0,1) | One More (1,1,2) | Each pokemon gives one more immunity than it has, offering a different type of balance. |
| <p style="text-align: center;">Honorable Mentions</p> <p style="text-align: center;">These trios do not obey the “Immunities Possessed - Immunities Given” rule</p> | | | | | |
| Dark/Ground, Electric/Ghost, Fighting/Flying | SE-NVE | Not very effective | Mixed (2,2,1) | Mixed (1,2,1) | One of only two trios available with an Immunity Triangle. Each pokemon is immune to one and gives an immunity to another. |
| Dragon/Fairy, Flying/Ground, Ghost/Normal | Neu-Neu | Immune | Mixed (1,2,3) | Mixed (1,1,2) | The only available trio where each pokemon is immune to one of its own types. G/N is also the only possible typing that is fully immune to itself. |

Monotype Trio Table

| Trio | Trio Relation | Self Relation | Immunities Possessed | Immunities Given | Notes |
|------------------------------|------------------|-----------------------|-------------------------|---------------------|---|
| Electric, Ice, Psychic | Neu-Neu | Not Very Effective | 0 | Mixed (1,0,1) | <p>These 4 trios were the only monotype trios that obeyed a trio relationship, shared a self-relation, and shared the same number of immunities.</p> <p>Unfortunately, none also shared the same number of given immunities and no monotype trio shared immunity difference values.</p> |
| Electric, Ice, Poison | Neu-Neu | Not Very Effective | 0 | Mixed (1,0,1) | |
| Fairy, Flying, Normal | Neu-Neu | Neutral | 1 | Mixed (0,0,1) | |
| Fairy, Ground, Normal | Neu-Neu | Neutral | 1 | Mixed (0,1,1) | |

Data

The data was provided through original [code](#). Using Python3, I wrote a program that categorized trios of pokemon based on which trio requirement they satisfied, and classified individual pokemon based on their number of immunities and their self relationship. Each trio was then checked against the requirements and displayed accordingly.

Note: our ideal trio will be in green and bold; the next ideal will be yellow and bold. Highlighted trios are rare but present an unique scenario where each pokemon is immune to another one within the trio.

Key:

Dark Blue: Identify type of Trio relationship (SE = Super Effective, NVE = Not Very Effective, NEU = Neutral)

Magenta: Identify number of immunities possessed

Red/Underlined: Identify type of self relationship

Green Trios: Trios that obey the trio relationship, immunities possessed, and self relationship requirements

Teal Trios: Trios that have mixed immunity and/or no uniform self relation

Yellow/Bold Trios: Trios that have mixed immunity with uniform self relation and uniform immunity difference values

Bold Trios: Immunity difference value is equal for each pokemon

Light Trios: Trio has a type immunity imbalance: one type is immune to another type within the trio

Highlight: Each pokemon in the trio has and gives an immunity to another pokemon within the trio

Data Printout:

Super Effective - Super Effective

One Immunity

Self Not Very Effective:

1: Dark/Ice, Ground/Rock, Psychic/Steel

No Self Relation

1: Dark/Ice, Fighting/Ground, Psychic/Steel

2: Electric/Steel, Fighting/Flying, Ground/Ice

Mixed Immunities

Self Not Very Effective:

1: Bug/Fairy, Dark/Flying, Psychic/Rock

2: Bug/Flying, Dark/Ice, Psychic/Rock

3: Bug/Ghost, Dark/Ice, Psychic/Rock

4: Bug/Ice, Dark/Flying, Psychic/Rock

5: Bug/Psychic, Dark/Electric, Fighting/Flying

6: Bug/Psychic, Dark/Ground, Fighting/Rock

7: Bug/Psychic, Dark/Ice, Fighting/Flying

8: Bug/Poison, Dark/Rock, Ground/Psychic

9: Dark/Fairy, Ghost/Poison, Psychic/Steel

10: Dark/Flying, Ghost/Ice, Psychic/Rock

11: Dark/Ground, Fighting/Rock, Ice/Psychic

12: Dark/Ground, Fighting/Rock, Ice/Steel

13: Dark/Ice, Ghost/Steel, Ground/Rock

14: Dark/Rock, Ghost/Steel, Ground/Psychic

15: Dark/Steel, Fighting/Ice, Ground/Psychic

16: Ghost/Ice, Ground/Rock, Psychic/Steel

No Self Relation

1: Steel, Fairy/Ground, Fighting/Ice

2: Steel, Fighting/Rock, Ground/Ice

3: Bug/Dark, Flying/Ghost, Psychic/Rock

4: Bug/Dragon, Dark/Ice, Psychic/Rock

5: Bug/Ice, Dark/Rock, Fairy/Flying

6: Bug/Ice, Dragon/Rock, Fairy/Flying

7: Bug/Ice, Flying/Ghost, Psychic/Rock

8: Bug/Poison, Dark/Rock, Fairy/Flying

9: Dark/Ice, Dragon/Rock, Fairy/Flying

10: Dark/Ice, Fairy/Ground, Ghost/Steel

11: Dark/Ice, Fairy/Ground, Psychic/Steel

12: Dark/Ice, Fighting/Ground, Psychic/Rock

13: Dark/Ice, Ghost/Rock, Psychic/Steel

14: Dark/Steel, Fairy/Ground, Fighting/Ice

15: Dark/Steel, Fighting/Rock, Ground/Ice

16: Dragon/Steel, Fairy/Ground, Fighting/Ice

17: Dragon/Steel, Fighting/Rock, Ground/Ice

18: Electric/Steel, Fairy/Ground, Fighting/Ice

19: Electric/Steel, Fighting/Rock, Ground/Ice

20: Fairy/Ground, Fighting/Ice, Normal/Steel

- 21: Fairy/Ground, Fighting/Ice, Rock/Steel
- 22: Fighting/Rock, Ground/Ice, Normal/Steel
- 23: Fighting/Rock, Ground/Normal, Ice/Steel

Neutral - Neutral

No Immunities

Self Not Very Effective:

- 1: Electric, Ice, Psychic
- 2: Electric, Ice, Poison
- 3: Electric, Ice, Bug/Psychic
- 4: Electric, Ice, Bug/Poison
- 5: Electric, Ice, Psychic/Poison
- 6: Electric, Psychic, Ice/Rock
- 7: Electric, Bug/Ice, Fighting/Psychic
- 8: Electric, Bug/Ice, Psychic/Poison
- 9: Electric, Fighting/Ice, Poison/Rock**
- 10: Ice, Bug/Electric, Psychic/Poison

No Self Relation

- 1: Bug, Dragon, Psychic/Poison
- 2: Bug, Electric, Ice
- 3: Bug, Electric, Psychic/Poison
- 4: Bug, Ice, Psychic/Poison
- 5: Bug, Dragon/Electric, Psychic/Poison
- 6: Bug, Dragon/Ice, Psychic/Poison
- 7: Bug, Electric/Ice, Psychic/Poison
- 8: Dragon, Psychic, Rock
- 9: Electric, Fighting, Ice/Poison**
- 10: Electric, Psychic, Rock
- 11: Psychic, Rock, Dragon/Electric

One Immunity

Self Not Very Effective:

- 1: Dark, Electric/Flying, Normal/Poison

Self Neutral:

- 1: Fairy, Flying, Normal
- 2: Fairy, Ground, Normal
- 3: Fairy, Normal, Flying/Ice
- 4: Fairy, Normal, Ground/Ice

No Self Relation

- 1: Dark, Flying, Normal
- 2: Dark, Flying, Dragon/Normal
- 3: Dark, Flying, Normal/Poison
- 4: Dark, Ground, Normal
- 5: Dark, Ground, Dragon/Normal
- 6: Dark, Normal, Dragon/Flying
- 7: Dark, Normal, Dragon/Ground
- 8: Dark, Normal, Electric/Flying
- 9: Dark, Normal, Electric/Ground
- 10: Dark, Normal, Flying/Ice
- 11: Dark, Normal, Flying/Poison
- 12: Dark, Normal, Ground/Ice

- 13: Dark, Normal, Ground/Poison
- 14: Dark, Dragon/Flying, Normal/Poison
- 15: Dark, Dragon/Normal, Flying/Poison
- 16: Dark, Dragon/Normal, Ground/Poison
- 17: Dark, Flying/Ice, Normal/Poison
- 18: Fairy, Flying, Normal/Psychic
- 19: Fairy, Ground, Normal/Psychic
- 20: Fairy, Normal, Electric/Flying
- 21: Fairy, Normal, Electric/Ground
- 22: Fairy, Normal, Flying/Psychic
- 23: Fairy, Normal, Ground/Psychic
- 24: Fairy, Electric/Flying, Normal/Psychic
- 25: Fairy, Electric/Ground, Normal/Psychic
- 26: Fairy, Flying/Ice, Normal/Psychic
- 27: Fairy, Ground/Ice, Normal/Psychic
- 28: Flying, Normal, Dark/Dragon
- 29: Flying, Normal, Dark/Psychic
- 30: Flying, Normal, Dark/Poison
- 31: Flying, Normal, Dragon/Fairy
- 32: Flying, Normal, Fairy/Psychic
- 33: Flying, Normal, Fairy/Poison
- 34: Flying, Dark/Dragon, Normal/Poison
- 35: Flying, Dark/Psychic, Dragon/Normal
- 36: Flying, Dark/Poison, Dragon/Normal
- 37: Flying, Dragon/Fairy, Normal/Psychic
- 38: Ground, Normal, Dark/Dragon**
- 39: Ground, Normal, Dark/Psychic**
- 40: Ground, Normal, Dragon/Fairy**
- 41: Ground, Normal, Fairy/Psychic**
- 42: Ground, Bug/Steel, Dark/Fighting
- 43: Ground, Dark/Psychic, Dragon/Normal
- 44: Ground, Dragon/Fairy, Normal/Psychic
- 45: Normal, Bug/Flying, Dark/Poison
- 46: Normal, Bug/Flying, Fairy/Psychic
- 47: Normal, Bug/Ground, Fairy/Psychic**
- 48: Normal, Dark/Dragon, Flying/Poison**
- 49: Normal, Dark/Dragon, Ground/Poison
- 50: Normal, Dark/Psychic, Dragon/Flying**
- 51: Normal, Dark/Psychic, Dragon/Ground
- 52: Normal, Dark/Psychic, Electric/Flying**
- 53: Normal, Dark/Psychic, Electric/Ground
- 54: Normal, Dark/Psychic, Flying/Ice
- 55: Normal, Dark/Psychic, Ground/Ice**
- 56: Normal, Dark/Poison, Dragon/Flying**
- 57: Normal, Dark/Poison, Electric/Flying**
- 58: Normal, Dark/Poison, Flying/Ice
- 59: Normal, Dragon/Fairy, Flying/Psychic**
- 60: Normal, Dragon/Fairy, Ground/Psychic
- 61: Normal, Electric/Flying, Fairy/Psychic**

62: Normal, Electric/Flying, Fairy/Poison

63: Normal, Electric/Ground, Fairy/Psychic

64: Normal, Fairy/Psychic, Flying/Ice

65: Normal, Fairy/Psychic, Ground/Ice

66: Normal, Fairy/Poison, Flying/Ice

67: Bug/Flying, Dark/Poison, Dragon/Normal

Mixed Immunities

Self Super Effective:

1: Dragon, Ghost, Flying/Rock

2: Dragon, Ghost, Ground/Rock

3: Dragon, Bug/Flying, Ghost/Psychic

4: Dragon, Bug/Rock, Ghost/Psychic

5: Dragon, Flying/Rock, Ghost/Psychic

6: Dragon, Ghost/Psychic, Ground/Rock

7: Ghost, Dragon/Fairy, Flying/Rock

8: Ghost, Dragon/Fairy, Ground/Rock

9: Bug/Rock, Dragon/Electric, Ghost/Psychic

10: Dragon/Fairy, Flying/Rock, Ghost/Psychic

11: Dragon/Fairy, Ghost/Psychic, Ground/Rock

Self Not Very Effective:

1: Dark, Electric, Ice

2: Dark, Electric, Poison

3: Dark, Electric, Ice/Normal

4: Dark, Electric, Ice/Poison

5: Dark, Electric, Ice/Rock

6: Dark, Electric, Normal/Poison

7: Dark, Electric, Normal/Rock

8: Dark, Electric, Poison/Rock

9: Dark, Ice, Poison

10: Dark, Ice, Electric/Normal

11: Dark, Ice, Electric/Poison

12: Dark, Ice, Normal/Poison

13: Dark, Poison, Dragon/Electric

14: Dark, Poison, Electric/Flying

15: Dark, Poison, Electric/Ice

16: Dark, Poison, Electric/Normal

17: Dark, Poison, Ice/Normal

18: Dark, Dragon/Electric, Normal/Poison

19: Dark, Dragon/Electric, Normal/Rock

20: Dark, Dragon/Electric, Poison/Rock

21: Dark, Electric/Ice, Normal/Poison

22: Dark, Electric/Normal, Ice/Poison

23: Dark, Electric/Poison, Ice/Normal

24: Dark, Electric/Rock, Ice/Steel

25: Electric, Ice, Bug/Dark

26: Electric, Ice, Bug/Fairy

27: Electric, Ice, Bug/Ghost

28: Electric, Ice, Dark/Fairy

29: Electric, Ice, Dark/Normal

30: Electric, Ice, Dark/Poison

31: Electric, Ice, Fairy/Psychic

32: Electric, Ice, Fairy/Poison

33: Electric, Ice, Ghost/Psychic

34: Electric, Ice, Ghost/Poison

35: Electric, Ice, Normal/Psychic

36: Electric, Ice, Normal/Poison

37: Electric, Psychic, Fairy/Ice

38: Electric, Psychic, Ice/Normal

39: Electric, Psychic, Normal/Rock

40: Electric, Poison, Dark/Ice

41: Electric, Poison, Dark/Normal

42: Electric, Poison, Ice/Normal

43: Electric, Bug/Dark, Ice/Normal

44: Electric, Bug/Fairy, Ghost/Psychic

45: Electric, Bug/Fairy, Ice/Normal

46: Electric, Bug/Ice, Dark/Fairy

47: Electric, Bug/Ice, Dark/Fighting

48: Electric, Bug/Ice, Dark/Poison

49: Electric, Bug/Ice, Fairy/Psychic

50: Electric, Bug/Ice, Ghost/Psychic

51: Electric, Bug/Psychic, Ice/Normal

52: Electric, Bug/Poison, Ice/Normal

53: Electric, Dark/Fairy, Ice/Normal

54: Electric, Dark/Fairy, Ice/Rock

55: Electric, Dark/Fairy, Normal/Rock

56: Electric, Dark/Fighting, Ice/Poison

57: Electric, Dark/Fighting, Normal/Poison

58: Electric, Dark/Ice, Normal/Poison

59: Electric, Dark/Normal, Ice/Poison

60: Electric, Dark/Poison, Ice/Normal

61: Electric, Fairy/Ice, Ghost/Psychic

62: Electric, Fairy/Ice, Normal/Psychic

63: Electric, Fairy/Psychic, Ice/Normal

64: Electric, Fairy/Psychic, Ice/Rock

65: Electric, Fairy/Psychic, Normal/Rock

66: Electric, Fairy/Poison, Ice/Normal

67: Electric, Fighting/Ice, Normal/Poison

68: Electric, Ghost/Psychic, Ice/Rock

69: Electric, Ice/Normal, Psychic/Poison

70: Ice, Psychic, Electric/Fairy

71: Ice, Psychic, Electric/Normal

72: Ice, Poison, Dark/Electric

73: Ice, Poison, Dark/Normal

74: Ice, Poison, Electric/Normal

75: Ice, Bug/Dark, Electric/Normal

76: Ice, Bug/Electric, Dark/Fairy

77: Ice, Bug/Electric, Dark/Poison

78: Ice, Bug/Electric, Fairy/Psychic

79: Ice, Bug/Electric, Ghost/Psychic
 80: Ice, Bug/Fairy, Electric/Normal
 81: Ice, Bug/Fairy, Ghost/Psychic
 82: Ice, Bug/Psychic, Electric/Normal
 83: Ice, Bug/Poison, Electric/Normal
 84: Ice, Dark/Electric, Normal/Poison
 85: Ice, Dark/Fairy, Electric/Normal
 86: Ice, Dark/Normal, Electric/Poison
 87: Ice, Dark/Poison, Electric/Normal
88: Ice, Electric/Fairy, Ghost/Psychic
 89: Ice, Electric/Fairy, Normal/Psychic
 90: Ice, Electric/Normal, Fairy/Psychic
 91: Ice, Electric/Normal, Fairy/Poison
 92: Ice, Electric/Normal, Psychic/Poison
 93: Psychic, Dragon/Electric, Normal/Rock
 94: Psychic, Electric/Fairy, Ice/Normal
 95: Psychic, Electric/Fairy, Ice/Rock
 96: Psychic, Electric/Fairy, Normal/Rock
 97: Psychic, Electric/Normal, Fairy/Ice
 98: Poison, Dark/Electric, Ice/Normal
 99: Poison, Dark/Ice, Electric/Normal
 100: Poison, Dark/Normal, Dragon/Electric
 101: Poison, Dark/Normal, Electric/Flying
 102: Poison, Dark/Normal, Electric/Ice
 103: Bug/Electric, Dark/Fairy, Ice/Normal
 104: Bug/Electric, Dark/Poison, Ice/Normal
 105: Bug/Electric, Fairy/Psychic, Ice/Normal
 106: Bug/Electric, Ice/Normal, Psychic/Poison
 107: Bug/Fairy, Electric/Ice, Ghost/Psychic
 108: Bug/Ice, Dark/Fairy, Electric/Normal
 109: Bug/Ice, Dark/Poison, Electric/Normal
 110: Bug/Ice, Electric/Normal, Fairy/Psychic
 111: Bug/Ice, Electric/Normal, Psychic/Poison
 112: Dark/Fighting, Dragon/Electric, Normal/Poison
113: Electric/Fairy, Ghost/Psychic, Ice/Rock

Self Immune:

1: Dragon/Fairy, Flying/Ground, Ghost/Normal

No Self Relation

1: Bug, Dragon, Normal
 2: Bug, Dragon, Dark/Ghost
 3: Bug, Dragon, Dark/Poison
 4: Bug, Dragon, Ghost/Psychic
 5: Bug, Electric, Normal
 6: Bug, Electric, Dark/Fairy
 7: Bug, Electric, Dark/Ghost
 8: Bug, Electric, Dark/Poison
 9: Bug, Electric, Fairy/Psychic
 10: Bug, Electric, Ghost/Psychic
 11: Bug, Electric, Ice/Normal

12: Bug, Ice, Normal

13: Bug, Ice, Dark/Fairy

14: Bug, Ice, Dark/Ghost

15: Bug, Ice, Dark/Poison

16: Bug, Ice, Electric/Normal

17: Bug, Ice, Fairy/Psychic

18: Bug, Ice, Ghost/Psychic

19: Bug, Normal, Dark/Fairy

20: Bug, Normal, Dark/Poison

21: Bug, Normal, Dragon/Electric

22: Bug, Normal, Dragon/Ice

23: Bug, Normal, Electric/Ice

24: Bug, Normal, Fairy/Psychic

25: Bug, Normal, Psychic/Poison

26: Bug, Dark/Fairy, Electric/Ice

27: Bug, Dark/Fairy, Electric/Normal

28: Bug, Dark/Fairy, Ice/Normal

29: Bug, Dark/Ghost, Dragon/Electric

30: Bug, Dark/Ghost, Dragon/Ice

31: Bug, Dark/Ghost, Electric/Ice

32: Bug, Dark/Poison, Dragon/Electric

33: Bug, Dark/Poison, Dragon/Ice

34: Bug, Dark/Poison, Dragon/Normal

35: Bug, Dark/Poison, Electric/Ice

36: Bug, Dark/Poison, Electric/Normal

37: Bug, Dark/Poison, Ice/Normal

38: Bug, Dragon/Electric, Ghost/Psychic

39: Bug, Dragon/Ice, Ghost/Psychic

40: Bug, Dragon/Normal, Psychic/Poison

41: Bug, Electric/Ice, Fairy/Psychic

42: Bug, Electric/Ice, Ghost/Psychic

43: Bug, Electric/Normal, Fairy/Psychic

44: Bug, Electric/Normal, Psychic/Poison

45: Bug, Fairy/Psychic, Ice/Normal

46: Bug, Ice/Normal, Psychic/Poison

47: Dark, Dragon, Flying

48: Dark, Dragon, Ground

49: Dark, Dragon, Normal

50: Dark, Dragon, Poison

51: Dark, Dragon, Rock

52: Dark, Dragon, Flying/Ground

53: Dark, Dragon, Flying/Normal

54: Dark, Dragon, Flying/Poison

55: Dark, Dragon, Flying/Rock

56: Dark, Dragon, Ground/Normal

57: Dark, Dragon, Ground/Poison

58: Dark, Dragon, Ground/Rock

59: Dark, Dragon, Normal/Poison

60: Dark, Dragon, Normal/Rock

- 61: Dark, Dragon, Poison/Rock
- 62: Dark, Electric, Normal
- 63: Dark, Electric, Rock
- 64: Dark, Flying, Poison
- 65: Dark, Flying, Dragon/Poison
- 66: Dark, Ice, Normal
- 67: Dark, Normal, Poison
- 68: Dark, Normal, Dragon/Electric
- 69: Dark, Normal, Dragon/Ice
- 70: Dark, Normal, Dragon/Poison
- 71: Dark, Normal, Electric/Ice
- 72: Dark, Normal, Electric/Poison
- 73: Dark, Normal, Flying/Ground
- 74: Dark, Normal, Ice/Poison
- 75: Dark, Poison, Dragon/Flying
- 76: Dark, Poison, Dragon/Ice
- 77: Dark, Poison, Dragon/Normal
- 78: Dark, Poison, Flying/Ice
- 79: Dark, Poison, Flying/Normal
- 80: Dark, Rock, Dragon/Electric
- 81: Dark, Dragon/Ice, Normal/Poison
- 82: Dark, Dragon/Normal, Flying/Ground
- 83: Dark, Dragon/Poison, Flying/Normal
- 84: Dragon, Fighting, Ground
- 85: Dragon, Fighting, Normal/Poison**
- 86: Dragon, Flying, Ghost
- 87: Dragon, Flying, Normal
- 88: Dragon, Flying, Psychic
- 89: Dragon, Flying, Poison
- 90: Dragon, Flying, Dark/Ghost
- 91: Dragon, Flying, Dark/Normal
- 92: Dragon, Flying, Dark/Psychic
- 93: Dragon, Flying, Dark/Poison
- 94: Dragon, Flying, Ghost/Normal
- 95: Dragon, Flying, Ghost/Psychic
- 96: Dragon, Flying, Ghost/Poison
- 97: Dragon, Flying, Normal/Psychic
- 98: Dragon, Flying, Normal/Poison
- 99: Dragon, Flying, Psychic/Poison
- 100: Dragon, Ghost, Ground
- 101: Dragon, Ghost, Rock
- 102: Dragon, Ghost, Flying/Ground
- 103: Dragon, Ground, Normal
- 104: Dragon, Ground, Psychic
- 105: Dragon, Ground, Dark/Fighting
- 106: Dragon, Ground, Dark/Ghost
- 107: Dragon, Ground, Dark/Normal
- 108: Dragon, Ground, Dark/Psychic
- 109: Dragon, Ground, Fighting/Ghost
- 110: Dragon, Ground, Fighting/Normal
- 111: Dragon, Ground, Fighting/Psychic
- 112: Dragon, Ground, Ghost/Normal
- 113: Dragon, Ground, Ghost/Psychic
- 114: Dragon, Ground, Normal/Psychic
- 115: Dragon, Normal, Psychic
- 116: Dragon, Normal, Poison
- 117: Dragon, Normal, Bug/Dark
- 118: Dragon, Normal, Bug/Flying
- 119: Dragon, Normal, Bug/Ground
- 120: Dragon, Normal, Bug/Psychic
- 121: Dragon, Normal, Bug/Poison
- 122: Dragon, Normal, Dark/Flying
- 123: Dragon, Normal, Dark/Ground
- 124: Dragon, Normal, Dark/Psychic
- 125: Dragon, Normal, Dark/Poison
- 126: Dragon, Normal, Flying/Ground
- 127: Dragon, Normal, Flying/Psychic
- 128: Dragon, Normal, Flying/Poison
- 129: Dragon, Normal, Ground/Psychic
- 130: Dragon, Normal, Ground/Poison
- 131: Dragon, Normal, Psychic/Poison
- 132: Dragon, Psychic, Flying/Ground
- 133: Dragon, Psychic, Flying/Normal
- 134: Dragon, Psychic, Flying/Rock
- 135: Dragon, Psychic, Ground/Normal
- 136: Dragon, Psychic, Ground/Rock
- 137: Dragon, Psychic, Normal/Rock
- 138: Dragon, Poison, Dark/Flying
- 139: Dragon, Poison, Dark/Normal
- 140: Dragon, Poison, Flying/Normal
- 141: Dragon, Rock, Dark/Ghost
- 142: Dragon, Rock, Dark/Psychic
- 143: Dragon, Rock, Ghost/Psychic
- 144: Dragon, Bug/Flying, Dark/Ghost
- 145: Dragon, Bug/Flying, Dark/Poison
- 146: Dragon, Bug/Flying, Psychic/Poison
- 147: Dragon, Bug/Ground, Dark/Ghost
- 148: Dragon, Bug/Ground, Ghost/Psychic
- 149: Dragon, Bug/Normal, Dark/Fighting
- 150: Dragon, Bug/Normal, Dark/Poison
- 151: Dragon, Bug/Normal, Fighting/Psychic
- 152: Dragon, Bug/Normal, Psychic/Poison
- 153: Dragon, Bug/Rock, Dark/Ghost
- 154: Dragon, Dark/Fighting, Normal/Poison
- 155: Dragon, Dark/Flying, Normal/Poison
- 156: Dragon, Dark/Ghost, Flying/Ground
- 157: Dragon, Dark/Ghost, Flying/Rock
- 158: Dragon, Dark/Ghost, Ground/Rock

- 159: Dragon, Dark/Normal, Flying/Ground
 160: Dragon, Dark/Normal, Flying/Poison
 161: Dragon, Dark/Normal, Ground/Poison
 162: Dragon, Dark/Psychic, Flying/Ground
 163: Dragon, Dark/Psychic, Flying/Normal
 164: Dragon, Dark/Psychic, Flying/Rock
 165: Dragon, Dark/Psychic, Ground/Normal
 166: Dragon, Dark/Psychic, Ground/Rock
 167: Dragon, Dark/Psychic, Normal/Rock
 168: Dragon, Dark/Poison, Flying/Normal
 169: Dragon, Fighting/Flying, Normal/Poison
 170: Dragon, Flying/Ground, Ghost/Normal
 171: Dragon, Flying/Ground, Ghost/Psychic
 172: Dragon, Flying/Ground, Normal/Psychic
 173: Dragon, Flying/Normal, Psychic/Poison
 174: Electric, Fairy, Ghost
 175: Electric, Fairy, Ice
 176: Electric, Fairy, Normal
 177: Electric, Fairy, Psychic
 178: Electric, Fairy, Rock
 179: Electric, Fairy, Ghost/Ice
 180: Electric, Fairy, Ghost/Normal
 181: Electric, Fairy, Ghost/Psychic
 182: Electric, Fairy, Ghost/Rock
 183: Electric, Fairy, Ice/Normal
 184: Electric, Fairy, Ice/Psychic
 185: Electric, Fairy, Ice/Rock
 186: Electric, Fairy, Normal/Psychic
 187: Electric, Fairy, Normal/Rock
 188: Electric, Fairy, Psychic/Rock
189: Electric, Fighting, Normal/Poison
 190: Electric, Ghost, Ice
 191: Electric, Ghost, Rock
 192: Electric, Ghost, Fairy/Ice
 193: Electric, Ghost, Fairy/Rock
 194: Electric, Ghost, Ice/Rock
 195: Electric, Ice, Normal
 196: Electric, Ice, Bug/Normal
 197: Electric, Ice, Dark/Ghost
 198: Electric, Ice, Dark/Psychic
 199: Electric, Ice, Fairy/Ghost
 200: Electric, Ice, Fairy/Normal
 201: Electric, Ice, Ghost/Normal
 202: Electric, Normal, Psychic
 203: Electric, Normal, Poison
 204: Electric, Normal, Bug/Dark
 205: Electric, Normal, Bug/Fairy
 206: Electric, Normal, Bug/Ice
 207: Electric, Normal, Bug/Psychic
 208: Electric, Normal, Bug/Poison
 209: Electric, Normal, Dark/Fairy
 210: Electric, Normal, Dark/Ice
 211: Electric, Normal, Dark/Psychic
 212: Electric, Normal, Dark/Poison
 213: Electric, Normal, Fairy/Ice
 214: Electric, Normal, Fairy/Psychic
 215: Electric, Normal, Fairy/Poison
 216: Electric, Normal, Ice/Psychic
 217: Electric, Normal, Ice/Poison
 218: Electric, Normal, Psychic/Poison
 219: Electric, Psychic, Fairy/Normal
 220: Electric, Psychic, Fairy/Rock
 221: Electric, Rock, Dark/Fairy
 222: Electric, Rock, Dark/Ghost
 223: Electric, Rock, Dark/Psychic
 224: Electric, Rock, Fairy/Ghost
 225: Electric, Rock, Fairy/Psychic
 226: Electric, Rock, Ghost/Psychic
 227: Electric, Bug/Ice, Dark/Ghost
 228: Electric, Bug/Normal, Dark/Fairy
 229: Electric, Bug/Normal, Dark/Fighting
 230: Electric, Bug/Normal, Dark/Poison
 231: Electric, Bug/Normal, Fairy/Psychic
 232: Electric, Bug/Normal, Fighting/Psychic
 233: Electric, Bug/Normal, Psychic/Poison
 234: Electric, Bug/Rock, Dark/Fairy
 235: Electric, Bug/Rock, Dark/Ghost
 236: Electric, Bug/Rock, Fairy/Psychic
 237: Electric, Bug/Rock, Ghost/Psychic
 238: Electric, Dark/Ghost, Ice/Rock
 239: Electric, Dark/Psychic, Ice/Normal
 240: Electric, Dark/Psychic, Ice/Rock
 241: Electric, Dark/Psychic, Normal/Rock
 242: Electric, Fairy/Ghost, Ice/Rock
 243: Electric, Fairy/Ice, Ghost/Normal
 244: Electric, Fairy/Normal, Ice/Psychic
 245: Electric, Fairy/Rock, Ghost/Psychic
246: Electric, Fighting/Normal, Ice/Poison
247: Fairy, Flying, Ghost
 248: Fairy, Flying, Psychic
249: Fairy, Flying, Ghost/Normal
 250: Fairy, Flying, Ghost/Psychic
 251: Fairy, Ghost, Ground
 252: Fairy, Ghost, Ice
 253: Fairy, Ghost, Rock
 254: Fairy, Ghost, Electric/Flying
 255: Fairy, Ghost, Electric/Ground
 256: Fairy, Ghost, Electric/Ice

- 257: Fairy, Ghost, Electric/Rock
258: Fairy, Ghost, Flying/Ground
259: Fairy, Ghost, Flying/Ice
260: Fairy, Ghost, Flying/Rock
261: Fairy, Ghost, Ground/Ice
262: Fairy, Ghost, Ground/Rock
263: Fairy, Ghost, Ice/Rock
264: Fairy, Ground, Psychic
265: Fairy, Ground, Ghost/Normal
266: Fairy, Ground, Ghost/Psychic
267: Fairy, Ice, Normal
268: Fairy, Ice, Psychic
269: Fairy, Ice, Electric/Ghost
270: Fairy, Ice, Electric/Normal
271: Fairy, Ice, Electric/Psychic
272: Fairy, Ice, Ghost/Normal
273: Fairy, Ice, Ghost/Psychic
274: Fairy, Ice, Normal/Psychic
275: Fairy, Normal, Psychic
276: Fairy, Normal, Electric/Ice
277: Fairy, Normal, Electric/Psychic
278: Fairy, Normal, Flying/Ground
279: Fairy, Normal, Ice/Psychic
280: Fairy, Psychic, Rock
281: Fairy, Psychic, Electric/Flying
282: Fairy, Psychic, Electric/Ground
283: Fairy, Psychic, Electric/Ice
284: Fairy, Psychic, Electric/Normal
285: Fairy, Psychic, Electric/Rock
286: Fairy, Psychic, Flying/Ground
287: Fairy, Psychic, Flying/Ice
288: Fairy, Psychic, Flying/Normal
289: Fairy, Psychic, Flying/Rock
290: Fairy, Psychic, Ground/Ice
291: Fairy, Psychic, Ground/Normal
292: Fairy, Psychic, Ground/Rock
293: Fairy, Psychic, Ice/Normal
294: Fairy, Psychic, Ice/Rock
295: Fairy, Psychic, Normal/Rock
296: Fairy, Rock, Electric/Ghost
297: Fairy, Rock, Electric/Psychic
298: Fairy, Rock, Ghost/Psychic
299: Fairy, Electric/Flying, Ghost/Normal
300: Fairy, Electric/Flying, Ghost/Psychic
301: Fairy, Electric/Ghost, Ice/Rock
302: Fairy, Electric/Ground, Ghost/Normal
303: Fairy, Electric/Ground, Ghost/Psychic
304: Fairy, Electric/Ice, Ghost/Normal
305: Fairy, Electric/Ice, Ghost/Psychic
306: Fairy, Electric/Ice, Normal/Psychic
307: Fairy, Electric/Normal, Ice/Psychic
308: Fairy, Electric/Psychic, Ice/Normal
309: Fairy, Electric/Psychic, Ice/Rock
310: Fairy, Electric/Psychic, Normal/Rock
311: Fairy, Electric/Rock, Ghost/Psychic
312: Fairy, Flying/Ground, Ghost/Normal
313: Fairy, Flying/Ground, Ghost/Psychic
314: Fairy, Flying/Ground, Normal/Psychic
315: Fairy, Flying/Ice, Ghost/Normal
316: Fairy, Flying/Ice, Ghost/Psychic
317: Fairy, Flying/Rock, Ghost/Psychic
318: Fairy, Ghost/Normal, Ground/Ice
319: Fairy, Ghost/Psychic, Ground/Ice
320: Fairy, Ghost/Psychic, Ground/Rock
321: Fairy, Ghost/Psychic, Ice/Rock
322: Fighting, Dragon/Electric, Normal/Poison
323: Flying, Ghost, Dragon/Fairy
324: Flying, Normal, Psychic
325: Flying, Normal, Poison
326: Flying, Normal, Dark/Fairy
327: Flying, Normal, Dragon/Psychic
328: Flying, Normal, Dragon/Poison
329: Flying, Normal, Psychic/Poison
330: Flying, Psychic, Dragon/Fairy
331: Flying, Psychic, Dragon/Normal
332: Flying, Psychic, Fairy/Normal
333: Flying, Poison, Dark/Dragon
334: Flying, Poison, Dark/Normal
335: Flying, Poison, Dragon/Normal
336: Flying, Dark/Normal, Dragon/Poison
337: Flying, Dragon/Fairy, Ghost/Normal
338: Flying, Dragon/Fairy, Ghost/Psychic
339: Flying, Dragon/Normal, Psychic/Poison
340: Ghost, Ground, Dragon/Fairy
341: Ghost, Ice, Electric/Fairy
342: Ghost, Rock, Dragon/Electric
343: Ghost, Rock, Dragon/Fairy
344: Ghost, Rock, Electric/Fairy
345: Ghost, Dragon/Fairy, Flying/Ground
346: Ghost, Electric/Fairy, Ice/Rock
347: Ghost, Electric/Rock, Ice/Steel
348: Ground, Normal, Psychic
349: Ground, Normal, Dark/Fairy
350: Ground, Normal, Dragon/Psychic
351: Ground, Psychic, Dragon/Fairy
352: Ground, Psychic, Dragon/Normal
353: Ground, Psychic, Fairy/Normal
354: Ground, Bug/Steel, Dark/Ghost

355: Ground, Dragon/Fairy, Ghost/Normal
356: Ground, Dragon/Fairy, Ghost/Psychic
 357: Ice, Normal, Psychic
 358: Ice, Normal, Poison
 359: Ice, Normal, Bug/Dark
 360: Ice, Normal, Bug/Electric
 361: Ice, Normal, Bug/Fairy
 362: Ice, Normal, Bug/Psychic
 363: Ice, Normal, Bug/Poison
364: Ice, Normal, Dark/Electric
 365: Ice, Normal, Dark/Fairy
366: Ice, Normal, Dark/Psychic
367: Ice, Normal, Dark/Poison
368: Ice, Normal, Electric/Fairy
 369: Ice, Normal, Electric/Psychic
 370: Ice, Normal, Electric/Poison
371: Ice, Normal, Fairy/Psychic
372: Ice, Normal, Fairy/Poison
 373: Ice, Normal, Psychic/Poison
 374: Ice, Psychic, Fairy/Normal
 375: Ice, Bug/Electric, Dark/Ghost
 376: Ice, Bug/Normal, Dark/Fairy
377: Ice, Bug/Normal, Dark/Poison
378: Ice, Bug/Normal, Fairy/Psychic
 379: Ice, Bug/Normal, Psychic/Poison
 380: Ice, Dark/Psychic, Electric/Normal
 381: Ice, Electric/Fairy, Ghost/Normal
 382: Ice, Electric/Psychic, Fairy/Normal
 383: Normal, Psychic, Dragon/Electric
 384: Normal, Psychic, Dragon/Fairy
 385: Normal, Psychic, Dragon/Flying
 386: Normal, Psychic, Dragon/Ground
 387: Normal, Psychic, Dragon/Ice
 388: Normal, Psychic, Electric/Fairy
 389: Normal, Psychic, Electric/Flying
 390: Normal, Psychic, Electric/Ground
 391: Normal, Psychic, Electric/Ice
 392: Normal, Psychic, Fairy/Flying
 393: Normal, Psychic, Fairy/Ground
 394: Normal, Psychic, Fairy/Ice
 395: Normal, Psychic, Flying/Ground
 396: Normal, Psychic, Flying/Ice
 397: Normal, Psychic, Ground/Ice
 398: Normal, Poison, Dark/Dragon
 399: Normal, Poison, Dark/Electric
 400: Normal, Poison, Dark/Flying
 401: Normal, Poison, Dark/Ice
 402: Normal, Poison, Dragon/Electric
 403: Normal, Poison, Dragon/Flying

404: Normal, Poison, Dragon/Ice
 405: Normal, Poison, Electric/Flying
 406: Normal, Poison, Electric/Ice
 407: Normal, Poison, Flying/Ice
 408: Normal, Bug/Dark, Dragon/Electric
 409: Normal, Bug/Dark, Dragon/Ice
 410: Normal, Bug/Dark, Electric/Ice
 411: Normal, Bug/Dragon, Dark/Poison
 412: Normal, Bug/Dragon, Psychic/Poison
 413: Normal, Bug/Electric, Dark/Fairy
 414: Normal, Bug/Electric, Dark/Poison
 415: Normal, Bug/Electric, Fairy/Psychic
 416: Normal, Bug/Electric, Psychic/Poison
 417: Normal, Bug/Fairy, Electric/Ice
 418: Normal, Bug/Flying, Dark/Fairy
 419: Normal, Bug/Flying, Psychic/Poison
 420: Normal, Bug/Ground, Dark/Fairy
 421: Normal, Bug/Ice, Dark/Fairy
422: Normal, Bug/Ice, Dark/Poison
423: Normal, Bug/Ice, Fairy/Psychic
 424: Normal, Bug/Ice, Psychic/Poison
 425: Normal, Bug/Psychic, Dragon/Electric
 426: Normal, Bug/Psychic, Dragon/Ice
 427: Normal, Bug/Psychic, Electric/Ice
 428: Normal, Bug/Poison, Dragon/Electric
 429: Normal, Bug/Poison, Dragon/Ice
 430: Normal, Bug/Poison, Electric/Ice
 431: Normal, Dark/Dragon, Flying/Ground
 432: Normal, Dark/Electric, Ice/Poison
 433: Normal, Dark/Fairy, Electric/Flying
 434: Normal, Dark/Fairy, Electric/Ground
 435: Normal, Dark/Fairy, Electric/Ice
 436: Normal, Dark/Fairy, Flying/Ground
 437: Normal, Dark/Fairy, Flying/Ice
 438: Normal, Dark/Fairy, Ground/Ice
 439: Normal, Dark/Flying, Dragon/Poison
 440: Normal, Dark/Ice, Electric/Poison
 441: Normal, Dark/Psychic, Dragon/Electric
 442: Normal, Dark/Psychic, Dragon/Ice
 443: Normal, Dark/Psychic, Electric/Ice
 444: Normal, Dark/Psychic, Flying/Ground
 445: Normal, Dark/Poison, Dragon/Electric
 446: Normal, Dark/Poison, Dragon/Ice
 447: Normal, Dark/Poison, Electric/Ice
 448: Normal, Dragon/Electric, Psychic/Poison
 449: Normal, Dragon/Fairy, Flying/Ground
 450: Normal, Dragon/Flying, Psychic/Poison
 451: Normal, Dragon/Ice, Psychic/Poison
 452: Normal, Dragon/Psychic, Flying/Ground

453: Normal, Electric/Fairy, Ice/Psychic
 454: Normal, Electric/Flying, Psychic/Poison
 455: Normal, Electric/Ice, Fairy/Psychic
 456: Normal, Electric/Ice, Fairy/Poison
 457: Normal, Electric/Ice, Psychic/Poison
 458: Normal, Electric/Psychic, Fairy/Ice
 459: Normal, Fairy/Psychic, Flying/Ground
 460: Normal, Flying/Ice, Psychic/Poison
 461: Psychic, Rock, Dragon/Fairy
 462: Psychic, Rock, Electric/Fairy
 463: Psychic, Dragon/Fairy, Flying/Ground
 464: Psychic, Dragon/Fairy, Flying/Normal
 465: Psychic, Dragon/Fairy, Flying/Rock
 466: Psychic, Dragon/Fairy, Ground/Normal
 467: Psychic, Dragon/Fairy, Ground/Rock
 468: Psychic, Dragon/Fairy, Normal/Rock
 469: Psychic, Dragon/Normal, Flying/Ground
 470: Psychic, Electric/Flying, Fairy/Normal
 471: Psychic, Electric/Ground, Fairy/Normal
 472: Psychic, Electric/Ice, Fairy/Normal
 473: Psychic, Fairy/Normal, Flying/Ground
 474: Psychic, Fairy/Normal, Flying/Ice
 475: Psychic, Fairy/Normal, Ground/Ice
 476: Poison, Dark/Dragon, Flying/Normal
 477: Poison, Dark/Flying, Dragon/Normal
 478: Poison, Dark/Normal, Dragon/Flying
 479: Poison, Dark/Normal, Dragon/Ice
 480: Poison, Dark/Normal, Flying/Ice
 481: Rock, Dark/Ghost, Dragon/Electric
 482: Rock, Dark/Psychic, Dragon/Electric
 483: Rock, Dragon/Electric, Ghost/Psychic
484: Rock, Dragon/Fairy, Ghost/Psychic
485: Rock, Electric/Fairy, Ghost/Psychic
 486: Bug/Flying, Dragon/Normal, Psychic/Poison
 487: Bug/Normal, Dark/Fairy, Electric/Ice
 488: Bug/Normal, Dark/Fighting, Dragon/Electric
 489: Bug/Normal, Dark/Poison, Dragon/Electric
 490: Bug/Normal, Dark/Poison, Dragon/Ice
 491: Bug/Normal, Dark/Poison, Electric/Ice
 492: Bug/Normal, Dragon/Electric, Fighting/Psychic
 493: Bug/Normal, Dragon/Electric, Psychic/Poison
 494: Bug/Normal, Dragon/Ice, Psychic/Poison
 495: Bug/Normal, Electric/Ice, Fairy/Psychic
 496: Bug/Normal, Electric/Ice, Psychic/Poison
 497: Bug/Rock, Dark/Fairy, Ground/Ice
 498: Bug/Rock, Dark/Ghost, Dragon/Electric
 499: Bug/Rock, Dark/Ghost, Ground/Ice
500: Bug/Rock, Fairy/Psychic, Ground/Ice
501: Bug/Rock, Ghost/Psychic, Ground/Ice

502: Bug/Steel, Dark/Ghost, Electric/Rock
 503: Dark/Ghost, Electric/Rock, Ice/Steel
 504: Dark/Psychic, Dragon/Electric, Normal/Rock
 505: Dark/Psychic, Dragon/Normal, Flying/Ground
 506: Dragon/Fairy, Flying/Ground, Ghost/Psychic
 507: Dragon/Fairy, Flying/Ground, Normal/Psychic
Super Effective - Not Very Effective

One Immunity

Self Not Very Effective:

1: **Dark/Rock, Fairy/Fighting, Flying/Poison**

No Self Relation

1: Flying, Dark/Electric, Fighting/Ground

2: Flying, Dark/Rock, Fighting/Ground

3: **Dark/Electric, Dragon/Fairy, Psychic/Steel**

4: **Dark/Electric, Fighting/Ground, Flying/Psychic**

5: Dark/Rock, Fighting/Ground, Flying/Psychic

6: Dark/Rock, Fighting/Ground, Flying/Poison

Mixed Immunities

Self Super Effective:

1: Bug/Dark, Fighting/Rock, Ghost/Ground

Self Not Very Effective:

1: Dark, Fighting/Poison, Ghost/Psychic

2: Electric, Bug/Ground, Flying/Steel

3: Poison, Bug/Fairy, Dark/Ground

4: Bug/Dark, Fighting/Rock, Ground/Psychic

5: Bug/Fairy, Dark/Ground, Electric/Poison

6: Bug/Fairy, Dark/Ground, Ghost/Poison

7: Bug/Fairy, Dark/Ground, Poison/Rock

8: Bug/Ground, Electric/Poison, Fighting/Flying

9: Bug/Ground, Electric/Poison, Flying/Steel

10: **Dark/Ground, Electric/Ghost, Fighting/Flying**

11: Dark/Ground, Electric/Psychic, Fighting/Flying

12: Dark/Ground, Electric/Poison, Fighting/Flying

13: Dark/Rock, Fairy/Fighting, Ghost/Poison

14: Dark/Rock, Fairy/Fighting, Psychic/Poison

15: Dark/Rock, Fighting/Poison, Ghost/Psychic

16: Dark/Steel, Dragon/Psychic, Electric/Fighting

Self Neutral:

1: Fighting, Flying, Rock

2: Flying, Rock, Fighting/Ground

No Self Relation

1: Dark, Fighting, Psychic

2: Dark, Fighting, Ghost/Psychic

3: Dark, Fighting/Normal, Ghost/Psychic

4: Electric, Flying, Bug/Ground

5: Electric, Flying, Fighting/Ground

6: Electric, Fairy/Ground, Flying/Steel

7: Fighting, Flying, Dark/Rock

8: Fighting, Psychic, Dark/Rock

9: Fighting, Rock, Flying/Poison
 10: Fighting, Dark/Rock, Flying/Ghost
 11: Fighting, Dark/Rock, Flying/Psychic
 12: Fighting, Dark/Rock, Flying/Poison
 13: Fighting, Dark/Rock, Ghost/Psychic
 14: Fighting, Dark/Rock, Psychic/Poison
 15: Flying, Bug/Ground, Electric/Poison
 16: Flying, Electric/Poison, Fighting/Ground
 17: Flying, Electric/Rock, Fighting/Ground
 18: Flying, Fighting/Ground, Poison/Rock
 19: Poison, Bug/Fairy, Dragon/Ground
 20: Poison, Bug/Fairy, Fighting/Ground
21: Rock, Fairy/Fighting, Flying/Poison
 22: Rock, Fighting/Ground, Flying/Poison
 23: Steel, Dragon/Fairy, Electric/Fighting
 24: Bug/Fairy, Dragon/Ground, Electric/Poison
 25: Bug/Fairy, Dragon/Ground, Poison/Rock
 26: Bug/Fairy, Electric/Poison, Fighting/Ground
 27: Bug/Fairy, Fighting/Ground, Poison/Rock
 28: Bug/Flying, Electric/Poison, Fighting/Ground
 29: Bug/Flying, Fighting/Ground, Poison/Rock
 30: Bug/Ground, Electric/Poison, Fairy/Flying
 31: Dark/Electric, Dragon/Fairy, Flying/Steel
 32: Dark/Electric, Dragon/Fairy, Ghost/Steel
 33: Dark/Electric, Fairy/Ground, Flying/Steel
 34: Dark/Electric, Fighting/Ground, Flying/Ghost
 35: Dark/Ground, Electric/Poison, Fairy/Flying
 36: Dark/Ground, Fairy/Flying, Poison/Rock
 37: Dark/Rock, Fighting/Ground, Flying/Ghost
 38: Dark/Rock, Fighting/Normal, Flying/Ghost
 39: Dark/Rock, Fighting/Normal, Ghost/Psychic
 40: Dark/Rock, Fighting/Poison, Flying/Ghost
 41: Dragon/Electric, Fairy/Ground, Flying/Steel
 42: Dragon/Fairy, Electric/Fighting, Rock/Steel
 43: Dragon/Ground, Electric/Poison, Fairy/Flying
 44: Dragon/Ground, Fairy/Flying, Poison/Rock
 45: Dragon/Rock, Fairy/Fighting, Flying/Poison
 46: Electric/Poison, Fairy/Flying, Fighting/Ground
 47: Electric/Rock, Fighting/Ground, Flying/Poison
 48: Fairy/Flying, Fighting/Ground, Poison/Rock

Super Effective - Neutral

No Immunities

Self Not Very Effective:

1: Ice, Dragon/Psychic, Poison/Rock
 2: Dragon/Psychic, Electric/Ice, Poison/Rock

One Immunity

Self Not Very Effective:

1: Dark/Ice, Dragon/Steel, Ground/Poison
 2: Dragon/Steel, Fairy/Ice, Fighting/Flying

3: Dragon/Steel, Fairy/Ice, Ground/Psychic
 4: Fairy/Ice, Fighting/Flying, Normal/Rock

No Self Relation

1: Ground, Dark/Ice, Dragon/Steel
 2: Ground, Dragon/Steel, Fairy/Ice
 3: Dark/Fighting, Flying/Rock, Ground/Ice
 4: Dragon/Steel, Fairy/Ice, Fighting/Ground
 5: Dragon/Steel, Fairy/Ice, Fighting/Normal
 6: Fairy/Fighting, Flying/Rock, Ground/Ice

Mixed Immunities

Self Super Effective:

1: Dark/Fairy, Dragon/Poison, Fighting/Ice

Self Not Very Effective:

1: Ice, Bug/Fighting, Dark/Flying
 2: Ice, Bug/Ground, Dark/Rock
3: Ice, Bug/Ground, Dragon/Steel
4: Ice, Bug/Ground, Normal/Rock
 5: Ice, Bug/Ground, Psychic/Rock
 6: Ice, Dark/Flying, Fighting/Poison
 7: Ice, Dark/Ground, Dragon/Steel
 8: Ice, Dragon/Steel, Ground/Psychic
 9: Ice, Dragon/Steel, Ground/Poison
 10: Psychic, Ghost/Ice, Poison/Rock
 11: Bug/Fighting, Dark/Fairy, Dragon/Steel
 12: Bug/Fighting, Dark/Flying, Ice/Normal
 13: Dark/Fairy, Dragon/Poison, Fighting/Ice
 14: Dark/Fairy, Dragon/Steel, Fighting/Flying
 15: Dark/Flying, Fighting/Poison, Ice/Normal
 16: Dragon/Psychic, Ghost/Ice, Poison/Rock
 17: Dragon/Steel, Fairy/Ice, Fighting/Psychic
 18: Dragon/Steel, Ghost/Ice, Ground/Psychic
 19: Electric/Psychic, Ghost/Ice, Poison/Rock
 20: Fighting/Flying, Ice/Psychic, Normal/Rock

Self Neutral:

1: Fighting, Fairy/Rock, Ground/Ice
 2: Fighting, Flying/Normal, Ground/Ice

No Self Relation

1: Fighting, Ice, Dark/Flying
 2: Fighting, Ice, Flying/Normal
 3: Fighting, Dark/Fairy, Dragon/Steel
 4: Fighting, Dark/Flying, Dragon/Ice
 5: Fighting, Dark/Flying, Ground/Ice
 6: Fighting, Dark/Flying, Ice/Normal
 7: Fighting, Dragon/Ice, Flying/Normal
 8: Fighting, Dragon/Steel, Fairy/Ice
 9: Fighting, Fairy/Steel, Ground/Normal
 10: Fighting, Flying/Rock, Ground/Ice
 11: Fighting, Ground/Ice, Psychic/Rock
 12: Fighting, Ground/Normal, Psychic/Steel

13: Ground, Ice, Dragon/Steel

14: Ground, Dragon/Steel, Ghost/Ice

15: Ice, Rock, Bug/Ground

16: Ice, Rock, Flying/Ground

17: Ice, Bug/Ground, Fairy/Rock

18: Ice, Bug/Ground, Ghost/Rock

19: Ice, Dark/Fighting, Flying/Normal

20: Ice, Dark/Flying, Fighting/Normal

21: Ice, Dark/Rock, Flying/Ground

22: Ice, Dragon/Ghost, Psychic/Rock

23: Ice, Dragon/Steel, Flying/Ground

24: Ice, Dragon/Steel, Ghost/Ground

25: Ice, Dragon/Steel, Ground/Normal

26: Ice, Fairy/Fighting, Flying/Normal

27: Ice, Fairy/Rock, Flying/Ground

28: Ice, Fighting/Psychic, Flying/Normal

29: Ice, Fighting/Poison, Flying/Normal

30: Ice, Flying/Ground, Ghost/Rock

31: Ice, Flying/Ground, Normal/Rock

32: Ice, Flying/Ground, Psychic/Rock

33: Psychic, Dragon/Ghost, Ice/Poison

34: Psychic, Flying/Ghost, Ice/Poison

35: Rock, Bug/Ground, Dragon/Ice

36: Rock, Dark/Ice, Flying/Ground

37: Rock, Dragon/Ice, Flying/Ground

38: Rock, Fairy/Ice, Fighting/Flying

39: Rock, Fairy/Ice, Flying/Ground

40: Rock, Fighting/Flying, Ice/Psychic

41: Rock, Flying/Ground, Ghost/Ice

42: Rock, Flying/Ground, Ice/Psychic

43: Bug/Fighting, Dark/Flying, Dragon/Ice

44: Bug/Ground, Dark/Rock, Dragon/Ice

45: Bug/Ground, Dragon/Ice, Ghost/Rock

46: Bug/Ground, Dragon/Ice, Normal/Rock

47: Bug/Ground, Dragon/Ice, Psychic/Rock

48: Dark/Fairy, Dragon/Steel, Fighting/Ground

49: Dark/Fairy, Dragon/Steel, Fighting/Normal

50: Dark/Fighting, Dragon/Ice, Flying/Normal

51: Dark/Fighting, Flying/Normal, Ground/Ice

52: Dark/Flying, Dragon/Ice, Fighting/Normal

53: Dark/Flying, Dragon/Ice, Fighting/Poison

54: Dark/Flying, Fighting/Normal, Ground/Ice

55: Dark/Ground, Dragon/Steel, Fairy/Ghost

56: Dark/Ice, Dragon/Steel, Flying/Ground

57: Dark/Ice, Dragon/Steel, Ground/Normal

58: Dark/Ice, Fighting/Psychic, Flying/Normal

59: Dark/Ice, Flying/Ground, Normal/Rock

60: Dark/Rock, Dragon/Ice, Flying/Ground

61: Dragon/Ghost, Electric/Ice, Psychic/Rock

62: Dragon/Ghost, Fighting/Ice, Psychic/Rock

63: Dragon/Ice, Fighting/Psychic, Flying/Normal

64: Dragon/Ice, Fighting/Poison, Flying/Normal

65: Dragon/Ice, Flying/Ground, Ghost/Rock

66: Dragon/Ice, Flying/Ground, Normal/Rock

67: Dragon/Ice, Flying/Ground, Psychic/Rock

68: Dragon/Poison, Fairy/Normal, Fighting/Ice

69: Dragon/Poison, Fairy/Normal, Fighting/Psychic

70: Dragon/Steel, Fairy/Ghost, Ground/Psychic

71: Dragon/Steel, Fairy/Ice, Fighting/Ghost

72: Dragon/Steel, Fairy/Ice, Flying/Ground

73: Dragon/Steel, Fairy/Ice, Ghost/Ground

74: Dragon/Steel, Fairy/Ice, Ground/Normal

75: Dragon/Steel, Flying/Ground, Ghost/Ice

76: Electric/Fighting, Flying/Ghost, Psychic/Steel

77: Fairy/Fighting, Flying/Normal, Ground/Ice

78: Fairy/Fighting, Ground/Ice, Psychic/Rock

79: Fairy/Ice, Fighting/Poison, Flying/Normal

80: Fairy/Ice, Flying/Ground, Ghost/Rock

81: Fairy/Ice, Flying/Ground, Normal/Rock

82: Fairy/Ice, Flying/Ground, Psychic/Rock

83: Fairy/Rock, Fighting/Ghost, Ground/Ice

84: Fairy/Rock, Fighting/Psychic, Ground/Ice

85: Fairy/Rock, Flying/Ground, Ghost/Ice

86: Fairy/Rock, Flying/Ground, Ice/Psychic

87: Fighting/Ghost, Flying/Rock, Ground/Ice

88: Fighting/Psychic, Flying/Normal, Ground/Ice

89: Fighting/Psychic, Flying/Normal, Ice/Poison

90: Fighting/Psychic, Flying/Rock, Ground/Ice

91: Flying/Ground, Ghost/Rock, Ice/Psychic

92: Flying/Ground, Ice/Psychic, Normal/Rock

Not Very Effective - Neutral**Mixed Immunities****Self Not Very Effective:**

1: Electric, Steel, Dragon/Psychic

2: Electric, Steel, Dragon/Poison

No Self Relation

1: Dragon, Electric, Steel

2: Electric, Steel, Bug/Dragon

3: Electric, Steel, Dragon/Normal

Source Code

Code also available at: https://github.com/Chalavy/starter_types/blob/main/starter_types.py

```
# This program is designed to find new options for starter pokemon types. Excludes water,fire,grass from options.
# Pokemon are categorized based on their number of immunities and their self relation.
# Trios of pokemon that obey two sets of triangular relationships are put into a specific list
# Pokemon are then displayed based on trio relationship -> number of immunities -> self relation
```

```
from termcolor import cprint # colorize text
```

```
class Pokemon:
```

```
    # Pokemon are hypothetical combinations of types or individual types
```

```
    def __init__(self, *typing):
```

```
        # Pokemon have one or two types
```

```
        self.typing = typing
```

```
    def __repr__(self):
```

```
        # Pokemon are represented by their typing
```

```
        return "".join(str(typ) for typ in self.typing)
```

```
    # Pokemon may attack other pokemon. Attack considers all types of the attacker and defender
```

```
    # and gives a list of damage multipliers from each attacking type against both defending types
```

```
    def attack(self, pokemon):
```

```
        # Pokemon may attack other pokemon. Attack considers all types of the attacker and defender
```

```
        # and gives a list of damage multipliers from each attacking type against both defending types
```

```
        offense_set = []
```

```
        for attack_type in self.typing: # one attacking type considered at a time
```

```
            offense_set.append(attack_type.attack(pokemon))
```

```
        return offense_set
```

```
class Type:
```

```
    # Types are the different pokemon elemental types.
```

```
    def __init__(self, name, se_list, nve_list, noeffect_list):
```

```
        # Types have a name, list of types they are super effective, not very effective, or
```

```
        # have no effect against
```

```
        self.name = name
```

```
        self.se_list = se_list
```

```
        self.nve_list = nve_list
```

```
        self.noeffect_list = noeffect_list
```

```
    def __repr__(self):
```

```
        # Types are represented by their name
```

```
        return str(self.name)
```

```
    def attack(self, pokemon):
```

```
        # All attacks are a single type; type-effectiveness of an attack is
```

```
        # the product of its effectiveness against both defending types
```

```

    damage_multiplier = 1
    for defend_type in pokemon.typing:
        if defend_type in self.se_list: # If attack is SE, multiply by 2
            damage_multiplier *= 2
        elif defend_type in self.nve_list: # If attack is NVE, divide by 2
            damage_multiplier /= 2
        elif defend_type in self.noeffect_list: # If defender is immune, change to zero
            damage_multiplier *= 0
    return damage_multiplier

# All types in alphabetical order. Lists are empty and filled later because they reference each other
Bug = Type("Bug", [], [], [])
Dark = Type("Dark", [], [], [])
Dragon = Type("Dragon", [], [], [])
Electric = Type("Electric", [], [], [])
Fairy = Type("Fairy", [], [], [])
Fighting = Type("Fighting", [], [], [])
Fire = Type("Fire", [], [], [])
Flying = Type("Flying", [], [], [])
Ghost = Type("Ghost", [], [], [])
Grass = Type("Grass", [], [], [])
Ground = Type("Ground", [], [], [])
Ice = Type("Ice", [], [], [])
Normal = Type("Normal", [], [], [])
Poison = Type("Poison", [], [], [])
Psychic = Type("Psychic", [], [], [])
Rock = Type("Rock", [], [], [])
Steel = Type("Steel", [], [], [])
Water = Type("Water", [], [], [])

# Each type's lists are filled with relevant data
Bug.se_list.extend([Dark, Grass, Psychic])
Bug.nve_list.extend([Fairy, Fighting, Fire, Flying, Ghost, Poison, Steel])

Dark.se_list.extend([Ghost, Psychic])
Dark.nve_list.extend([Dark, Fairy, Fighting])

Dragon.se_list.extend([Dragon])
Dragon.nve_list.extend([Steel])
Dragon.noeffect_list.extend([Fairy])

Electric.se_list.extend([Flying, Water])
Electric.nve_list.extend([Dragon, Electric, Grass])
Electric.noeffect_list.extend([Ground])

Fairy.se_list.extend([Dark, Dragon, Fighting])
Fairy.nve_list.extend([Fire, Poison, Steel])

Fighting.se_list.extend([Dark, Ice, Normal, Rock, Steel])
Fighting.nve_list.extend([Bug, Fairy, Flying, Poison, Psychic])
Fighting.noeffect_list.extend([Ghost])

```

```

Fire.se_list.extend([Grass, Steel, Bug, Ice])
Fire.nve_list.extend([Fire, Water, Rock, Dragon])

Flying.se_list.extend([Bug, Fighting, Grass])
Flying.nve_list.extend([Electric, Rock, Steel])

Ghost.se_list.extend([Ghost, Psychic])
Ghost.nve_list.extend([Dark])
Ghost.noeffect_list.extend([Normal])

Grass.se_list.extend([Water, Rock, Ground])
Grass.nve_list.extend([Fire, Grass, Steel, Bug, Dragon, Flying, Poison, Steel])

Ground.se_list.extend([Electric, Fire, Poison, Rock, Steel])
Ground.nve_list.extend([Bug, Grass])
Ground.noeffect_list.extend([Flying])

Ice.se_list.extend([Dragon, Flying, Grass, Ground])
Ice.nve_list.extend([Ice, Water, Fire, Steel])

Normal.nve_list.extend([Steel, Rock])
Normal.noeffect_list.extend([Ghost])

Psychic.se_list.extend([Fighting, Poison])
Psychic.nve_list.extend([Psychic, Steel])
Psychic.noeffect_list.extend([Dark])

Poison.se_list.extend([Fairy, Grass])
Poison.nve_list.extend([Poison, Ground, Rock, Ghost])
Poison.noeffect_list.extend([Steel])

Rock.se_list.extend([Bug, Fire, Flying, Ice])
Rock.nve_list.extend([Fighting, Ground, Steel])

Steel.se_list.extend([Ice, Rock, Fairy])
Steel.nve_list.extend([Steel, Water, Fire, Electric])

Water.se_list.extend([Fire, Rock, Ground])
Water.nve_list.extend([Grass, Water, Dragon])

# List containing all non-traditional starter types
# type_list_trad = [Water, Fire, Grass] # add these types to consider all 18 types
type_list = [
    Bug, Dark, Dragon, Electric, Fairy, Fighting, Flying,
    Ghost, Ground, Ice, Normal, Psychic, Poison, Rock, Steel
]

# List containing all possible pokemon type combinations (not permutations). Total of 120 pokemon
pokemon_list = [Pokemon(x) for x in type_list] # 15 pokemon
pokemon_list.extend([Pokemon(x, y) for x in type_list for y in type_list[type_list.index(
    x)+1:] if x != y]) # 105 pokemon; remove this line to only consider mono type pokemon

```

```

## Dictionary containing all pokemon matchups
## For example: {Pokemon1: {Type1: Damage, Type2: Damage, ...}, Pokemon2: {Type1: Damage, Type2: Damage, ...}}
# effectiveness_dict = {}
# for defender in pokemon_list:
#     pokemon_damages = {} # Dictionary for effectiveness against a single pokemon
#     for attacker in pokemon_list:
#         pokemon_damages[attacker] = attacker.attack(defender) # Pair attacking type with its effectiveness
#         effectiveness_dict[defender] = pokemon_damages # Pair defending type with dictionary of attacking effectiveness

# Lists of pokemon with given number of immunities
no_immunity_list = [] # 36 pokemon
one_immunity_list = [] # 54 pokemon
two_immunity_list = [] # 24 pokemon
three_immunity_list = [] # 6 pokemon

# Fills immunity lists
for pokemon in pokemon_list:
    counter_immunity = 0
    for attacker in type_list:
        damage = attacker.attack(pokemon)
        if damage == 0:
            counter_immunity += 1
    if counter_immunity == 0:
        no_immunity_list.append(pokemon)
    elif counter_immunity == 1:
        one_immunity_list.append(pokemon)
    elif counter_immunity == 2:
        two_immunity_list.append(pokemon)
    else:
        three_immunity_list.append(pokemon)

multiple_immunity_list = two_immunity_list+three_immunity_list
immunity_lists = [no_immunity_list, one_immunity_list, multiple_immunity_list]

# Lists of pokemon trios with given effectiveness relationships.
all_se = [] # 42 options
all_nve = [] # 0 options
all_neu = [] # 725 options
se_nve = [] # 74 options
se_neu = [] # 126 options
nve_neu = [] # 5 options
# doesn't include all_nve since it is empty
effectiveness_lists = [all_se, all_neu, se_nve, se_neu, nve_neu]

# Fills effectiveness relationship lists
for pokemon1 in pokemon_list:
    for pokemon2 in pokemon_list[pokemon_list.index(pokemon1)+1:]:
        for pokemon3 in pokemon_list[pokemon_list.index(pokemon2)+1:]:

            # ensure no type is in 2 pokemon
            set1 = set(list(pokemon1.typing))
            set2 = set(list(pokemon2.typing))
            set3 = set(list(pokemon3.typing))

```

```

if not (set1 & set2) and not (set1 & set3) and not (set2 & set3):

    p1p2 = pokemon1.attack(pokemon2)
    p1p3 = pokemon1.attack(pokemon3)
    p2p1 = pokemon2.attack(pokemon1)
    p2p3 = pokemon2.attack(pokemon3)
    p3p1 = pokemon3.attack(pokemon1)
    p3p2 = pokemon3.attack(pokemon2)
    all_attacks = [p1p2, p1p3, p2p1, p2p3, p3p1, p3p2]
    cycle1 = [p1p2, p2p3, p3p1]
    cycle2 = [p1p3, p3p2, p2p1]
    if all(map(lambda x: any(y > 1 for y in x), all_attacks)): # All can deal SE to other 2
        all_se.append([pokemon1, pokemon2, pokemon3])

    # All only deal NVE or 0 to other 2
    if all(map(lambda x: all(y < 1 for y in x), all_attacks)):
        all_nve.append([pokemon1, pokemon2, pokemon3])

    # All only deal neutral to other 2
    if all(map(lambda x: all(y == 1 for y in x), all_attacks)):
        all_neu.append([pokemon1, pokemon2, pokemon3])

    # Check if trio deals SE one way
    if any((all(map(lambda x: 2 in x or 4 in x, cycle1)), all(map(lambda x: 2 in x or 4 in x, cycle2)))):
        # Check if trio deals neutral the other way
        if any((all(map(lambda x: [1, 1] == x or [1] == x, cycle1)), all(map(lambda x: [1, 1] == x or [1] == x, cycle2)))):
            se_neu.append([pokemon1, pokemon2, pokemon3])
        # Check if trio deals nve or 0 the other way
        if any((all(map(lambda x: all(y < 1 for y in x), cycle1)), all(map(lambda x: all(y < 1 for y in x), cycle2)))):
            se_nve.append([pokemon1, pokemon2, pokemon3])

    # Check if trio deals nve or 0 one way
    if any((all(map(lambda x: all(y < 1 for y in x), cycle1)), all(map(lambda x: all(y < 1 for y in x), cycle2)))):
        # Check if trio deals neutral the other way
        if any((all(map(lambda x: [1, 1] == x or [1] == x, cycle1)), all(map(lambda x: [1, 1] == x or [1] == x, cycle2)))):
            nve_neu.append([pokemon1, pokemon2, pokemon3])

# Lists of pokemon with the given self-relationship. Some pokemon fall into multiple categories
self_se = [] # Can deal SE to self; 44 pokemon
self_nve = [] # Resists at least one of own types; 80 pokemon
self_neu = [] # Only deals neutral to self; 18 pokemon
self_imm = [] # Immune to one of own types; 7 pokemon
self_relationships_lists = [self_se, self_nve, self_neu, self_imm]

# Fill self-relationship lists
for pokemon in pokemon_list:
    self_attack = pokemon.attack(pokemon)
    if 0.5 in self_attack or 0.25 in self_attack: # Pokemon may doubly resist attack
        self_nve.append(pokemon)
    if 2 in self_attack or 4 in self_attack: # Pokemon may be doubly weak to attack
        self_se.append(pokemon)
    if self_attack == [1, 1] or self_attack == [1]:
        self_neu.append(pokemon)

```



```

if 0 in self_attack:
    self_imm.append(pokemon)

# Displays information on which relationship we are looking at
# (nve-nve with 0 options is not displayed here)
# Layers: Trio relationship > Number of immunities > Self-relationship
for trio_list in effectiveness_lists:
    if trio_list is all_se:
        cprint("Super Effective - Super Effective", "blue", None, [])
    elif trio_list is all_neu:
        cprint("Neutral - Neutral", "blue", None, [])
    elif trio_list is se_neu:
        cprint("Super Effective - Neutral", "blue", None, [])
    elif trio_list is se_nve:
        cprint("Super Effective - Not Very Effective", "blue", None, [])
    elif trio_list is nve_neu:
        cprint("Not Very Effective - Neutral", "blue", None, [])

# will contain TRIOS (not individual pokemon) of given trio effectiveness with mixed number of immunities
mixed_immunity = []

# identify which immunity list we're looking at
for imm in immunity_lists:

    # printed variable ensures layer is displayed only once for all relevant trios
    printed = False

    # will contain TRIOS (not individual pokemon) of given immunity value with no uniform self relation
    no_self_relation = []

    # identify which self relation list we're looking at
    for self_relation in self_relationships_lists+[no_self_relation]:

        # All pokemon in given trio from trio_list moved to:
        # current list if it obeys immunity and self relations
        # placed in no_self_relation if it obeys immunity but aren't all in same self_relation, including non-current ones
        # placed in mixed_immunity if it doesn't obey immunity
        if self_relation is not no_self_relation:
            # contains trios of pokemon with current trio relationship, immunity, self relation
            current_list = []

            for trio in trio_list:
                if all(pokemon in imm for pokemon in trio): # obeys immunity requirement
                    # obeys self relation requirement
                    if all(pokemon in self_relation for pokemon in trio):
                        current_list.append(trio)
                    elif not any(all(pokemon in self_relationships_lists[i] for pokemon in trio) for i in range(4)):
                        # obeys immunity, but not any self-relation
                        if trio not in no_self_relation:
                            no_self_relation.append(trio)
                elif not any(all(pokemon in immunity_lists[i] for pokemon in trio) for i in range(len(immunity_lists))):
                    # does not obey immunity requirement
                    if trio not in mixed_immunity:

```

```

        mixed_immunity.append(trio)
else:
    current_list = no_self_relation # OPTIONAL 1/2: NO SELF-RELATION: PT 1/2

# Display relationships which satisfy requirements by checking if the current_list is non-empty
# "printed" variable ensures layer is displayed only once for all relevant trios
color = "green"
if current_list:
    if imm is no_immunity_list and not printed:
        cprint("  No Immunities", "magenta",
              None, [])
        printed = True
    elif imm is one_immunity_list and not printed:
        cprint("  One Immunity", "magenta",
              None, [])
        printed = True
    elif imm is multiple_immunity_list and not printed:
        cprint("  Multiple Immunities", "magenta",
              None, [])
        printed = True

# print self relation name and trios obeying all 3 requirements
if self_relation is self_se:
    cprint("  Self Super Effective:", "red",
          None, ["underline"])
if self_relation is self_nve:
    cprint("  Self Not Very Effective:", "red",
          None, ["underline"])
if self_relation is self_neu:
    cprint("  Self Neutral:", "red",
          None, ["underline"])
if self_relation is self_imm:
    cprint("  Self Immune:", "red",
          None, ["underline"])
if self_relation is no_self_relation: # OPTIONAL 1/2: NO SELF RELATION: PT 2/2
    color = "cyan"
    cprint("  No Self Relation", "red",
          None, ["underline"])

# check number of immunities given for each pokemon in trio
for trio in current_list:
    text_options = []
    highlight = None
    p1immune = sum(len(trio[0].typing[y].noeffect_list)
                  for y in range(len(trio[0].typing)))
    p2immune = sum(len(trio[1].typing[y].noeffect_list)
                  for y in range(len(trio[1].typing)))
    p3immune = sum(len(trio[2].typing[y].noeffect_list)
                  for y in range(len(trio[2].typing)))

# if all 3 pokemon have the same number of types that are immune to them, bold the text
if (p1immune == p2immune and p2immune == p3immune):
    text_options.append("bold")

```

```

## otherwise if they all have similar number of types immune to them (within one of each other), underline the text
# elif (p1immune > 0 and p2immune > 0 and p3immune > 0) or (p1immune < 2 and p2immune < 2 and p3immune < 2):
#     text_options.append("underline")

# if any pokemon is immune to another pokemon within the trio, darken (soften) the text
# but if each pokemon is immune to another pokemon in trio, blacklight the text instead
imm_in_trio1 = [0 in trio[x].attack(
    trio[(x+1) % 3]) for x in range(3)]
imm_in_trio2 = [
    0 in trio[(x+1) % 3].attack(trio[(x)]) for x in range(3)]
if all(imm_in_trio1) or all(imm_in_trio2):
    highlight = "on_grey"
elif any(imm_in_trio1) or any(imm_in_trio2):
    text_options.append("dark")

# display the trio
cprint(f"{current_list.index(trio) + 1}: {str(trio)[1:-1]}",
    color, highlight, text_options)

# OPTIONAL 2/2: MIXED IMMUNITY
# after running through all same-value immunity trios, deal with trios that didn't share the exact same number of immunities
# We only look at trios placed in the mixed_immunity list

# printed variable ensures layer is displayed only once for all relevant trios
printed = False

# contains TRIOS (not individual pokemon) of given immunity (mixed) that don't share the same self-relation
no_self_relation = []

# identify what the each pokemon in the trio relationship to itself is
for self_relation in self_relationships_lists+[no_self_relation]:

    # All pokemon in given trio eff moved to:
    # current list if it obeys self relations
    # placed in no_self_relation if it obeys immunity but aren't all in same self_relation, including non-current ones
    if self_relation is not no_self_relation:
        # contains trios of pokemon with current trio relationship, immunity, self relation
        current_list = []

        for trio in mixed_immunity:
            # obeys self relation requirement
            if all(pokemon in self_relation for pokemon in trio):
                current_list.append(trio)
            elif not any(all(pokemon in self_relationships_lists[i] for pokemon in trio) for i in range(4)):
                # does not obey self relation requirements
                if trio not in no_self_relation:
                    no_self_relation.append(trio)
        else:
            current_list = self_relation # OPTIONAL 2A: NO SELF RELATION: PT 1/2

# Display which immunity type we're looking at only if it has any pokemon in it
if current_list:
    if not printed:
        cprint(" Mixed Immunities", "magenta",

```

```

        None, [])
    printed = True

# print self relation
if self_relation is self_se:
    cprint("    Self Super Effective:",
           "red", None, ["underline"])
if self_relation is self_nve:
    cprint("    Self Not Very Effective:",
           "red", None, ["underline"])
if self_relation is self_neu:
    cprint("    Self Neutral:",
           "red", None, ["underline"])
if self_relation is self_imm:
    cprint("    Self Immune:",
           "red", None, ["underline"])
if self_relation is no_self_relation: # OPTIONAL 2A: NO SELF RELATION: PT 2/2
    cprint("    No Self Relation",
           "red", None, ["underline"])

# check number of immunities each pokemon gives
for trio in current_list:
    text_options = []
    highlight = None
    color = "cyan"
    p1immune = sum(len(trio[0].typing[y].noeffect_list)
                   for y in range(len(trio[0].typing)))
    p2immune = sum(len(trio[1].typing[y].noeffect_list)
                   for y in range(len(trio[1].typing)))
    p3immune = sum(len(trio[2].typing[y].noeffect_list)
                   for y in range(len(trio[2].typing)))

    ## if all 3 pokemon have the same number of types that are immune to them, bold the text
    # if (p1immune == p2immune and p2immune == p3immune):
    #     text_options.append("bold")

    ## otherwise if they all have similar number of types immune to them (within one of each other), underline the text
    # elif (p1immune > 0 and p2immune > 0 and p3immune > 0) or (p1immune < 2 and p2immune < 2 and p3immune < 2):
    #     text_options.append("underline")

    # if any pokemon is immune to another pokemon within the trio, darken (soften) the text
    # but if each pokemon is immune to another pokemon in trio, blacklight the text instead
    imm_in_triangle1 = [0 in trio[x].attack(
        trio[(x+1) % 3]) for x in range(3)]
    imm_in_triangle2 = [
        0 in trio[(x+1) % 3].attack(trio[(x)]) for x in range(3)]
    if all(imm_in_triangle1) or all(imm_in_triangle2):
        highlight = "on_grey"
    elif any(imm_in_triangle1) or any(imm_in_triangle2):
        text_options.append("dark")

    ## if all pokemon have a similar number of immunities (within one of each other), change text color
    # if all(pokemon in one_immunity_list or pokemon in multiple_immunity_list for pokemon in trio) or all(
    #     pokemon in one_immunity_list or pokemon in no_immunity_list for pokemon in trio) :
```

```

# if self_relation is not no_self_relation:
#     color = "yellow"

# if each pokemon has/gives an equal number of immunities
imm_difference = []
for pokemon in trio:
    counter_immunity = 0 # number of immunities possessed
    for attacker in type_list:
        damage = attacker.attack(pokemon)
        if damage == 0:
            counter_immunity += 1
    # find the difference between immunities given/had for each pokemon.
    imm_difference.append(sum(len(pokemon.typing[y].noeffect_list) for y in range(
        len(pokemon.typing))) - (counter_immunity))

# if each pokemon has same value for immunity difference, turn text yellow (semi-obey immunity requirement)
if len(set(imm_difference)) == 1:
    text_options.append("bold")
    if self_relation is not no_self_relation:
        color = "yellow"

# display trio
cprint(f"{current_list.index(trio) + 1}: {str(trio)[1:-1]}",
      color, highlight, text_options)

```