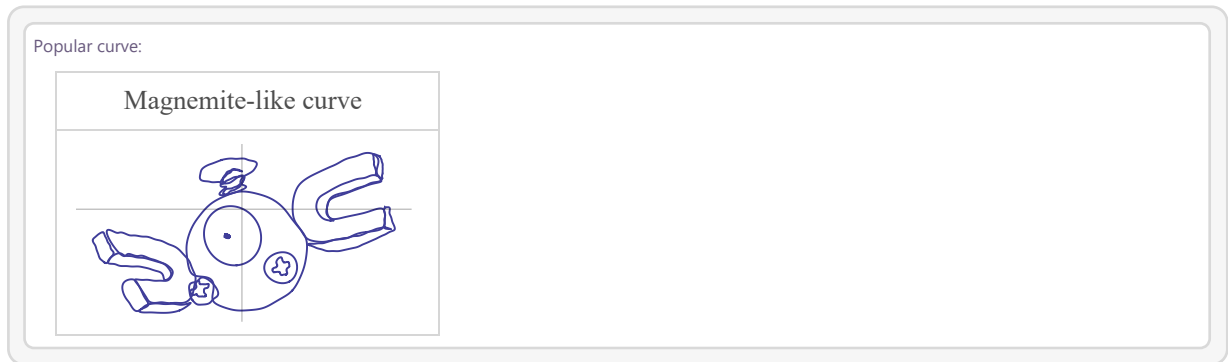


Pokémath : Homework 2



Pokémon® Problems

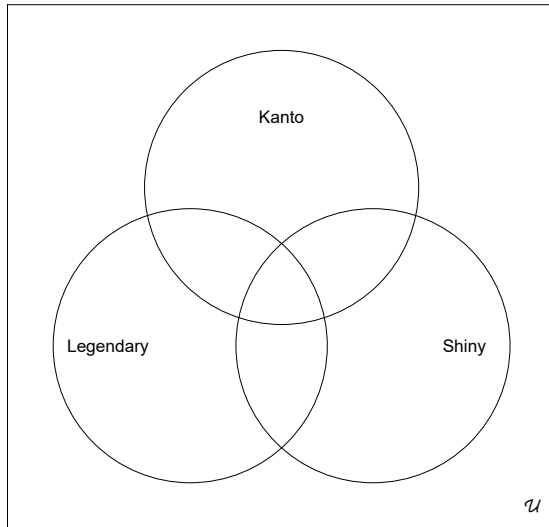
1) The Pokémon® Professor has a huge collection of Pokemon. Her bag contains 1528 Pokemon. There are 518 from the Kanto region, 181 that are legendary, 343 that are shiny, 37 that are legendary from Kanto, 150 are shiny from Kanto, 9 are legendary and shiny, and 2 are shiny, legendary, and from Kanto.

a) How many are not from Kanto?

b) How many of the ones from Kanto are legendary?

c) How many are shiny but not legendary?

d) Using the Venn Diagram below (or drawing your own) write the number of Pokémon® in each set and intersection. Remember the double counting error: You **cannot** write 518 inside the Kanto bubble because that count of 518 Kanto Pokemon INCLUDES the 37 that are legendary from Kanto, 150 that are shiny from Kanto, and 2 that are all three categories. The count inside the Kanto bubble should count Pokemon that are ONLY from Kanto and do not fall inside any of the 4 intersection regions.



2) Suppose A is a subset of a universal set \mathcal{U} .

a) Explain in 1-2 sentences why it is always true that $A \subseteq A$.

b) Explain in 1-2 sentences why it is always true that $\emptyset \subseteq A$.

3) Eevee is the best.

a) Suppose $A = \{\text{Espeon}, \text{Umbreon}\}$ (or any other set with $n(A)=2$). How many subsets of A exist? Hint: don't forget your insights from question 2.

b) Suppose $B = \{\text{Vaporeon}, \text{Jolteon}, \text{Flareon}\}$ (or any other set with $n(B)=3$). How many subsets of B exist? Hint: don't forget your insights from question 2.

c) Suppose $C = \{\text{Leafeon}, \text{Glaceon}, \text{Sylveon}, \text{Eevee}\}$ (or any other set with $n(C)=4$). How many subsets of C exist? Hint: don't forget your insights from question 2.

d) Describe the pattern in words or with an equation.