UW Math Circle
October 3rd, 2019

Warmups

Wordline

A *wordline* is an ordered sequence of words that progress in some measurable value, such as **drizzle shower downpour**, or **morsel snack meal feast**. Words that can not be compared with the others are not allowed: for example, **drizzle shower rain downpour** is not a wordline because *rain* is a general term that does not indicate quantity, and **drizzle shower sleet downpour** is not a wordline because *sleet* indicates a snowish quality that deviates from the rainish progression of the others.

What's the longest wordline you can come up with in English? (We'll disallow **one two three . . . .**)

Alphabetical Integers

Suppose the integers from 1 to 10 billion are written as English words, and alphebetized as if in the dictionary. What is the first *odd* number to appear?

For example, 9 would be written *nine* and 132 as *one hundred thirty two*. 4,623,012,701 is written as *four billion six hundred twenty three million twelve thousand seven hundred one* and appears later in the dicitonary than *eight* but before *seven*. 14 appears after 400 and before 42.

Duck and Dog

Duck is in the middle of a large circular pond, playing a game with her friend Dog. Dog can run around the shoreline 4 times as fast as Duck can swim, but can not enter the water. Duck wins if she can reach any point on the shore without Dog being there. If by the end of playtime Duck has not done this, Dog wins. Assuming both are clever, who will win, Duck or Dog?

Triangles Everywhere

Argue that for any closed curve in the plane, one can select three points on the curve that form an equilateral triangle.