

# Problems of the Month

## November 2016



### General Problem:

In Pokémon Go, a Pidgey gives 3 candy when caught, 1 candy when evolved, and 1 candy when transferred (before or after evolution). It costs 12 candy to evolve. If you start with 0 candy and catch 20 Pidgey, how many can you evolve?

### Calculus Problem:

A swimmer is swept out to sea by an ocean current. The current is moving at 5 mph at an angle of 60 degrees from the shoreline. A lifeguard at a station 1.5 miles away (in the direction of the current) is keeping watch on the swimmer to direct the rescue crew by radio. After 10 minutes, how quickly is the tracking angle for the lifeguard changing? That is, from the point of view of the lifeguard, how quickly is the angle between the shoreline and the swimmer changing?



### Challenge Problem:

Two children eat nachos in turns, taking the next number in the Fibonacci sequence: 1, 1, 2, 3, 5, 8, 13, 21, ..., restarting from the beginning if the next number is greater than the remaining nachos.

What is the smallest number of nachos less than 500 that requires the most restarts?

