**Problem 1:** For each pseudo-code below, tell what is the number of words printed if the input is \( n \). Give a recurrence and then its solution (expressed using the Big-Theta notation.)

<table>
<thead>
<tr>
<th>Pseudo-code</th>
<th>Recurrence and solution</th>
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</table>
| **procedure** Hola\((n)\)  
  if \( n > 1 \) then  
    for \( j \leftarrow 1 \) to \( n \)  
    do print(”hola”)  
  Hola\((n/2)\)  
  Hola\((n/2)\)  
  Hola\((n/2)\) | |
| **procedure** Ahoy\((n)\)  
  if \( n > 1 \) then  
    for \( j \leftarrow 1 \) to \( n \)  
    do print(”ahoy”)  
  Ahoy\((n/3)\)  
  Ahoy\((n/3)\) | |
| **procedure** Yo\((n)\)  
  if \( n > 1 \) then  
    for \( j \leftarrow 1 \) to \( n \)  
    do print(”yo”)  
  Yo\((n/2)\)  
  Yo\((n/2)\) | |
| **procedure** Cheers\((n)\)  
  if \( n > 1 \) then  
    print(”cheers”)  
  Cheers\((n/2)\) | |
Problem 2: A group of 58 climbers set out to climb three peaks: Lhotse, Makalu, and Annapurna. Each of them managed to climb at least one peak. Among them:

- 40 people climbed Annapurna
- 25 people climbed Makalu
- 29 people climbed Lhotse
- 15 people climbed Lhotse and Annapurna
- 16 people climbed Lhotse and Makalu
- 18 people climbed Makalu and Annapurna

How many people climbed all three peaks? Show your work. (And, by the way, where are those mountains?)
Problem 3: Find a particular solution of the recurrence $V_n = 3V_{n-1} - 4V_{n-2} + 3 \cdot 4^n$. 