1. If we count by 3s starting with 1, the following sequence is obtained:

1, 4, 7, 10, 13, ...  

What is the 100th number in this sequence?

2. (a) A set of marbles can be divided equally amongst 8 children. But if you divide it equally amongst 9 children, there is one marble left over. What is the smallest possible size for the set of marbles? What is the next smallest possible size?

(b) A set of marbles can be divided equally amongst 99 children. But if you divide it evenly amongst 100 children, there are 5 marbles left over. What is the smallest possible size for the set of marbles?

3. There are three pirates and a monkey on a desert island who have gathered a pile of coconuts to be divided the next day. During the night one pirate arises, divides the pile into 3 equal parts and finds one coconut left over, which he gives to the monkey. He then hides his share away from the pile. Later during the same night, each of the other two pirates, in turn, arise and repeat the performance of the first pirate. In the morning all 3 pirates arise, divide the pile into 3 equal shares and find one left over which is given to the monkey. How many coconuts were in the original pile? (The answer is not unique, so find at least two different solutions).