



## Monday cup #16

**Posted on:** July, 15, 2019

**Due on:** July, 21, 2019



### **Problem**

**Question:** You have 12 "moneta" that look and feel identical. However, one of the "moneta" is either slightly lighter or slightly heavier than the rest. You cannot tell which "moneta" is the odd one out by handling them, and you do not know if that "moneta" is lighter or heavier.

You have a set of old-fashioned balance scales. The scale with more weight in it will tip down, and the scale with less weight in it will tip up.

How do you figure out which "moneta" is the odd one out, and whether it is lighter or heavier, in just three weighings?

**There were correct solutions from Jean Justaféré (France).**

**The prize was split between Justaféré**

### Rules

1. Anyone is eligible to participate. Each solution is to be the work of one individual without any input from faculty or others. An answer must be accompanied by appropriate justifications to be considered correct.
2. The solution is to be submitted with the solver's name, email, year in school (if applicable), local phone number, and local address. If you are submitting this for possible credit in a class, include your class number and instructors name.
3. The solution is to be typed or legibly written. Solutions must be submitted to the by 2 p.m. on the due date.
4. Entries will be graded on clarity of exposition and elegance of solution. An award of **GEL10** will be given for the best correct solution. In the case of a two-way tie, the award will be split. If there are more than two best solutions, a drawing will be held to determine two award winners.
5. Graduate students, faculty, and members of the general public are encouraged to submit solutions, but they will not be considered.

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**Solution for this problem can be submitted proveweek@gmail.com**