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Quarterly Problem

- Math Edition -

Spring peas

Tom and Ana decided to plant sweet peas in their backyard field. They have already bought a kilogram of seeds, but neither is sure if it will be enough. Neither of the two young gardeners is eager to count all the seeds, so they discuss the easiest and the most precise method to know the exact number of peas.

Ana suggested using the biological "capture-mark-recapture" way of estimating the number of individuals in the population:
Grab a cupful of seeds, mark them with a marker, pour back and mix well with all the remaining seeds. Take a new cup full of peas, count each of them, and find the fraction of marked seeds in this cup. This fraction should be equal to the fraction of the counted number of seeds in this cup to the total number of peas.

Tom suggested using the "average mass" approach:
Weigh a number (ten, twenty or a cupful) of peas, divide the total mass by the counted number of weighted seeds to find the average mass of pea seed. Then divide the total mass of the bought seeds by this number to obtain the number of peas.

Surely there are other ways to count the seeds with more precision and/or convenience! Suggest one!

Brainstorm-Box
Discuss which method would be the best to count a very large number (e.g., a metric ton) of seeds? Which other objects in your everyday life or around you could be counted easier using either of the mentioned methods? Could either of the methods be automatized (e.g., in a packing factory), and what should be the algorithm (program)?

VU // Paulius L. Tamosiunas

Whose method is the most accurate?
Be sure to present your thoughts and findings in an accurate and clear way.
Should you need to count every seed in the pack manually, how would you do this (would you do some grouping, splitting)?