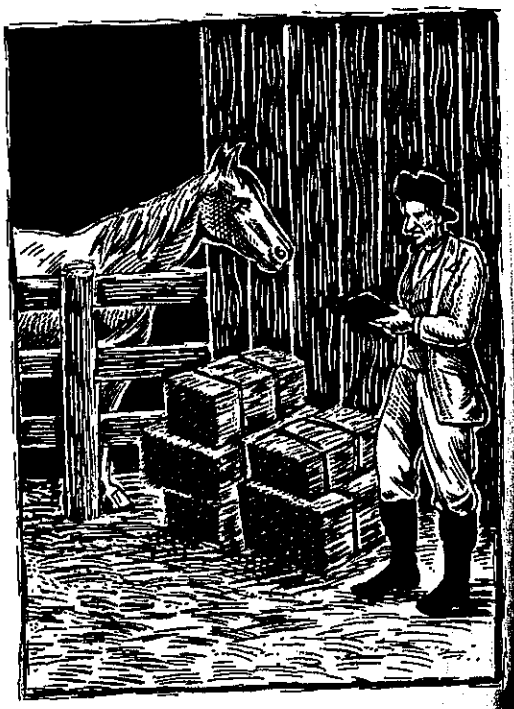
The Haybaler Problem

PROBLEM OF THE WEEK 6

Imagine you have five bales of hay. For some reason, instead of being weighed individually, they were weighed in all possible combinations of two: bales 1 and 2, bales 1 and 3, bales 1 and 4, bales 1 and 5, bales 2 and 3, bales 2 and 4, and so on.

The weight of each combination was written down *without keeping track of which weight matched which pair of bales.* The weights in kilograms were 80, 82, 83, 84, 85, 86, 87, 88, 90, and 91.



○ Your Task

Your initial task is to find out how much each bale weighs. Is your answer the only possible set of weights? Explain how you know.

Once you are done looking for solutions, look back over the problem to see if you can find some easier or more efficient way to find the weights.

○ Write-up

1. *Problem Statement*
2. *Process:* The process is especially important in this problem. Include a description of any materials you used. Be sure to discuss all the ways you tried to attack the problem, even though they all didn't lead to the correct answer.

   Also discuss any insights you had about other ways you might have solved it.
3. *Solution:* Show both how you know your weights work and how you know that you have not missed some other possibilities.
4. *Extensions*
5. *Self-assessment*