Volunteering at the Food Bank [Problem #1513]

My family volunteered at the regional food bank warehouse this weekend. The food bank accepts donated and extra food from food drives, grocery stores, farmers, and manufacturers, and then distributes it to families, soup kitchens, senior and day care centers, food pantries, and other feeding centers in the Washington, DC, area to help fight hunger. The experts think that, without the food bank and other programs, one in three children in our area would go to bed hungry every night.

If the food bank did not have help from volunteers, it would have to raise a lot of money to hire workers to do the sorting and packing, and the food bank would lose its chance to teach people about the hunger problem while it trains volunteers.

We were at the warehouse from 9:00 A.M. until noon as part of a team of fifty volunteers. We spent the first hour learning our jobs and getting ourselves organized. The rest of the time we sorted through donations - putting opened boxes and old food aside for a hog farmer, sorting food into categories (such as staples, canned vegetables, and baby food), and packing the good food into big cardboard boxes. We prepared about 20,000 pounds of food for distribution.

The food bank distributes about two million pounds of food a year, all of which has to be sorted and packed. If all the volunteers work at the same rate we did, about how many hours of volunteer time does it take to sort and pack that two million pounds?

In figuring out your answer, you should exclude the time it takes the volunteers to get to the food bank, learn their jobs, and set up.

**Bonus:** What if there were no volunteers? If a full-time employee worked 40 hours a week and had two weeks off for vacation and holidays each year, how many employees would have to be hired to do the sorting and packing work that the volunteers currently handle? Assume that the paid employees would work at about the same speed as our volunteer team.