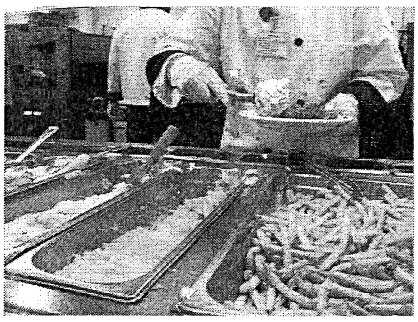
1.3 Serving Up Symbols

A Develop Understanding Task



As you look around your school cafeteria, you may see many things that could be counted or measured. To increase the efficiency of the cafeteria, the cafeteria manager, Elvira, decided to take a close look at the management of the cafeteria and think about all the components that affect the way the cafeteria runs. To make it easy, she assigned symbols for each count or measurement that she wanted to consider, and made the following table:

Symbol	**Meaning** (description of what the symbol means in context)	**Units** (what is counted or measured)
S	Number of students that buy lunch in the cafeteria each day	*students* or $\frac{students}{day}$
S_M	Number of students who have passed through a line in M minutes	
C	Number of classes per lunch period	
P	Number of lunch periods per day	
B	Number of boys that buy lunch each day	*boys* or *students* or $\frac{boys}{day}$
G	Number of girls that buy lunch each day	
F	Number of food servers in the cafeteria	
T	Total number of food items in one lunch (Each entrée, side dish, or beverage counts as 1 item.)	
M	Number of minutes passed since the beginning of the lunch period	
N_e	Number of entrees in each lunch	
N_s	Number of side dishes in each lunch	
N_b	Number of beverages in each lunch	
C_e	Cost of each entrée	
C_s	Cost of each side dish	
C_b	Cost of each beverage	
L	Number of lines in the cafeteria	
W	The number of food servers per line	
i	Average number of food items that a server can serve each minute (Each entrée, side dish, or beverage counts as 1 item.)	
H	Number of hours each food server works each day	
P_L	Price per lunch	

Using the given symbols, it is possible to write many different algebraic expressions.

1. Using these symbols, what would the expression $\frac{G+B}{C \times P}$ mean?

2. Using these symbols, what would the expression $S + F + L$ mean?

Elvira hopes to use the symbols in the chart to come up with some meaningful expressions that will allow her to analyze her cafeteria. Your job is to help her by writing as many expressions as you can and describe what they mean. Put each of your expressions in the following chart, adding lines if you need to:

Expression	Description

Write an expression for the average number of lunches served in a line each day.

Write an expression for the total price of the items served in a line.