

## 1.6 Elvira's Equations

### *A Solidify Understanding Task*

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(Note: This task refers to the same set of variables as used in *Serving Up Symbols*)



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Elvira, the cafeteria manager, has written the following equation to describe a cafeteria relationship that seems meaningful to her. She has introduced a new variable  $A$  to describe this relationship.

$$A = \frac{S}{CP}$$

1. What does  $A$  represent in terms of the school and the cafeteria?
2. Using what you know about manipulating equations, solve this equation for  $S$ . Your solution will be of the form  $S = \text{an expression written in terms of the variables } A, C \text{ and } P$ .
3. Does your expression for  $S$  make sense in terms of the meanings of the other variables? Explain why or why not.
4. Now solve the above equation for  $C$  and explain why the solution makes sense in terms of the variables.



Here is another one of Elvira's equations.

$$T_s = \frac{S(N_e + N_s + N_b)}{i}$$

5. What does  $T_s$  represent in terms of the school and the cafeteria?

(Hint: Elvira was really clever here. She recognized that the expression  $N_e + N_s + N_b$  counted the number of *items/lunch*. She also noticed that since  $S$  represented the number of students that eat lunch each day,  $S$  also counted the number of *lunches* served. Using these new units, what would the product  $S(N_e + N_s + N_b)$  mean? What would the quotient named  $T_s$  mean?)

6. Using what you know about manipulating equations, solve this equation for  $S$ .

7. Does your expression for  $S$  make sense in terms of the meanings of the other variables? Explain why or why not.

8. Now solve the above equation for  $N_e$  and explain why the solution makes sense in terms of the variables.

