# Elvira's Equation
A Solidifying Understanding Task

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. X represents the number classes that go to lunch each day and S represents the number of students that buy lunch each day.
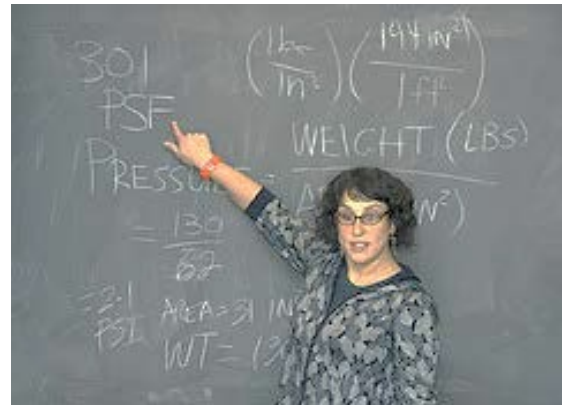
$$A = \frac{S}{X}$$

1. What does A represent in terms of the school and the cafeteria?

2. Suppose there are 1200 students that buy lunch each day and there are 40 classes that go to lunch. What is the average number of students in each class that buy lunch?

3. Now suppose there are 50 classes that go to lunch and the average number of students in each class that buy lunch is 20. How many total students buy lunch each day?

4. Using what you know about manipulating equations, solve this equation for S. Your solution will be of the form $S = an\ expression\ written\ in\ terms\ of\ variables\ A\ and\ X$.

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

6. Now solve the equation from number 4 for X and explain why the solution makes sense in terms of the variables.