

Mixing Candies

A candy shop sells a box of chocolates for \$30. It has \$29 worth of chocolates plus \$1 for the box. The box includes two kinds of candy: caramels and truffles. Lita knows how much the different types of candies cost per pound and how many pounds are in a box. She said,

If x is the number of pounds of caramels included in the box and y is the number of pounds of truffles in the box, then I can write the following equations based on what I know about one of these boxes:

- $x + y = 3$
- $8x + 12y + 1 = 30$

Assuming Lita used the information given and her other knowledge of the candies, use her equations to answer the following:

- a. How many pounds of candy are in the box?
- b. What is the price per pound of the caramels?
- c. What does the term $12y$ in the second equation represent?
- d. What does $8x + 12y + 1$ in the second equation represent?



Commentary

This task assumes students are familiar with mixing problems. This approach brings out different issues than simply asking students to solve a mixing problem, which they can often set up using patterns rather than thinking about the meaning of each part of the equations. Students have a difficult time distinguishing between the coefficients (dollars per pound) and the terms (total dollar value of a given amount of particular kind of candy) in the second equation.

Solution: Solutions

- The box contains 3 pounds of chocolates, since the total number of pounds of the caramels and truffles, represented by $x + y$, equals 3.
- It appears that the second equation is based on the cost of a box, since everything equals 30. If that is true, then the caramels cost \$8 per pound; you can tell because 8 is multiplied by the number of pounds of caramels in the equation that relates the number of pounds of each kind of candy to the cost of a box.
- $12y$ represents the value of the truffles. Since $12y$ is in the equation that relates the number of pounds of each kind of candy to the total value of the box, the truffles must cost \$12 per pound, and that multiplied by y , the number of pounds of truffles, will give their dollar value.
- This represents the total value of the box of chocolates: the value of the caramels added to the value of the truffles added to the fixed cost of \$1.

