

2_2: Solving Systems by Combining Equations

Pablo and Jasmine each took their brothers out for lunch. They stopped at a taco truck where the prices were not posted.



Pablo and his brother got 6 tacos and 2 drinks for \$9.

- Can you use this information to find the price of one taco? Of one drink? Explain.

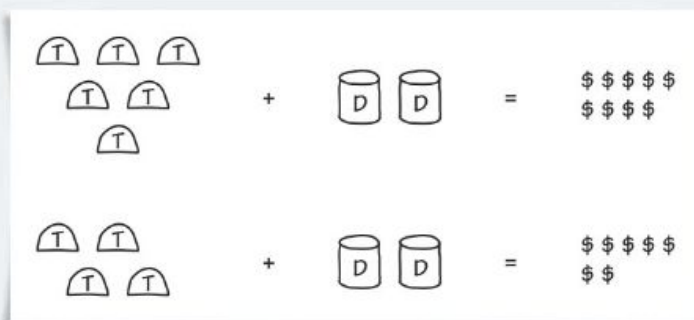
Jasmine and her brother got 4 tacos and 2 drinks for \$7.

- Does the additional information help you find the price of one taco? Of one drink? Explain.

? What is the price of one taco and the price of one drink? Explain your reasoning.

A Pablo's younger brother Pedro used the orders and total prices to find the price of each taco and each drink.

When asked how he figured out the prices, Pedro said, "It's kind of like what we did in school with coins and pouches." Then he made the following sketch.



1. How does the sketch help you find the price of one taco and the price of one drink?

B Pablo and Jasmine had just started studying systems of linear equations in algebra. They looked at Pedro's drawing and said, "We could write that as a system of equations."

1. Write an equation that represents the cost of Pablo's order and one that represents the cost of Jasmine's order. Use t for the price of each taco and d for the price of each drink.

C In algebra class the next day, Pablo and Jasmine tried to solve the system of linear equations. $\begin{cases} x + 4y = 11 \\ x + y = 5 \end{cases}$

1. How could they represent the system with a sketch similar to the one Pedro drew of the taco truck orders?

2. How could the sketch and reasoning about the equations lead them to a solution of the system?

D Use diagrams or reasoning about equations to solve each system.

1. $\begin{cases} 3x + y = 4 \\ x + y = 5 \end{cases}$

2. $\begin{cases} 3x + 2y = 4 \\ x + 2y = 6 \end{cases}$