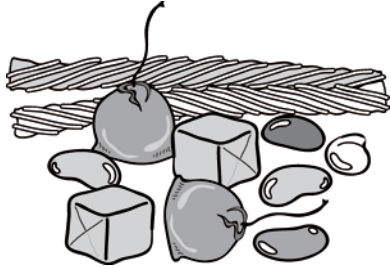


Answer Key – The Candy Problem

Read the following problem. Write down your thoughts for Questions 1 to 4, and discuss them with a partner. Then, solve the problem.



Daniel bought 1 pound of jelly beans and 2 pounds of chocolates for \$2.00. A week later, he bought 4 pounds of caramels and 1 pound of jelly beans, paying \$3.00. The next week, he bought 3 pounds of licorice, 1 pound of jelly beans, and 1 pound of caramels for \$1.50. How much would he have to pay on his next trip to the candy store if he bought 1 pound of each of the 4 kinds of candy?

1. What are the unknowns in the problem? How many are there? Assign a variable to represent each unknown.

j = jelly beans

c = chocolates

k = caramels

l = licorice

There are 4 unknowns in this problem.

2. Write equations based on the given information using the variables you chose. How many equations did you write?

$$1j + 2c + \quad + \quad = \$2.00$$

$$1j + \quad + 4k + \quad = \$3.00$$

$$1j + \quad + 1k + 3l = \$1.50$$

There are 3 equations for the given information.

3. What is the question asking you to find? Express this both in a sentence and in a mathematical equation.

The total cost of purchasing 1 pound of each kind of candy. The question does not ask for the cost of 1 pound for each of the candies individually.

$$1j + 1c + 1k + 1l = y$$

where y = the cost of fourth purchase

4. What approach could you take to solving this problem? What are some of the obstacles you anticipate?

Approaches will vary, but should involve algebraic manipulations of the equations. The obstacle is having 4 unknowns with only 3 equations. This problem **does not** ask for the solution to the system of equations. It is impossible to solve for each of the unknowns, and therefore impossible to find the solution to the system.

5. Solve the problem. Be prepared to share your solution and articulate the mathematics you used. There are multiple approaches to this problem but only one correct solution.

Multiply each equation by a factor, so that all equations will have the same total price:

$$3(1j + 2c + \quad + \quad = \$2.00)$$

$$2(1j + \quad + 4k + \quad = \$3.00)$$

$$4(1j + \quad + 1k + 3l = \$1.50)$$

$$3j + 6c + \quad + \quad = \$6.00$$

$$2j + \quad + 8k + \quad = \$6.00$$

$$4j + \quad + 4k + 12l = \$6.00$$

Add the 3 equations:

$$9j + 6c + 12k + 12l = \$18.00$$

Factor out 3, the greatest common factor:

$$3j + 2c + 4k + 4l = \$6.00$$

Add the equation for the first purchase, so all variables have the same coefficient:

$$3j + 2c + 4k + 4l = \$6.00$$

$$1j + 2c + \quad + \quad = \$2.00$$

Add the equations and factor out the common factor of 4:

$$4j + 4c + 4k + 4l = \$8.00$$

$$j + c + k + l = \$2.00$$

The solution to the question: It will cost \$2.00 to purchase a pound of each candy.

Note: The solution provided is only one possibility. The equations can be manipulated in several ways to reach a solution to the question being asked.