

1. A plane traveled 580 miles to Alaska and back. The trip there was with the wind. It took 5 hours. The trip back was into the wind. The trip back took 10 hours. Find the speed of the plane in still air and the speed of the wind.

plane: 87 mph, wind: 29 mph

2. John wants to buy something for himself. He has a budget of \$105 to spend on \$25 T-shirts, \$10 CDs, \$5 books. He wants to buy 10 items and wants to buy as many books as T-shirts and CDs combined.

How many of each item should he buy? Write a system of equations to help you solve this problem.

Let t represent T-shirts, c represents CDs, z represents books.

System of equations:

$$1. t + c + b = 10$$

$$2. b = t + c$$

$$3. 25t + 10c + 5b = 105$$

Substitute for b in equation 1:

$$(t + c) + t + c = 10$$

$$2t + 2c = 10$$

$$t + c = 5$$

$$4. t = 5 - c$$

Substitute for t in equation 3:

$$25(5 - c) + 10c + 5[(5 - c) + c] = 105$$

$$125 - 25c + 10c + 25 = 105$$

$$150 - 15c = 105$$

$$15c = 45$$

$$c = 3$$

Substitute c in equation 4: (new equation created above)

$$t = 5 - 3$$

$$t = 2$$

Substitute c & t in equation 2:

$$b = 2 + 3$$

$$b = 5$$

2 T-shirts, 3 CDs, 5 books