Problem of the Week
Problem A and Solution
Delivery Dilemma

Problem

Soraya and Aydin both work as delivery drivers for a local business. Today they have 64 packages to deliver in total. Soraya was given three times as many packages as Aydin to deliver.

They decide it would be better for each person to deliver the same number of packages. How many packages should Soraya give Aydin so that they have the same number of packages?

Solution

Solution 1

One way to solve the problem is to guess and check to figure out how many packages were given to each driver. We can organize our guesses in a table where we keep track of how many packages Aydin has, how many packages Soraya has, and how many packages they have in total. Let's start by guessing that Aydin has 10 packages until we find a combination that results in a total of 64 packages.

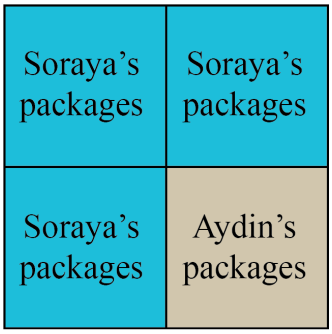
Aydin's Packages	Soraya's Packages	Total Packages
10	$3 \times 10 = 30$	$10 + 30 = 40$
11	$3 \times 11 = 33$	$11 + 33 = 44$
12	$3 \times 12 = 36$	$12 + 36 = 48$
13	$3 \times 12 = 39$	$13 + 39 = 52$
14	$3 \times 14 = 42$	$14 + 42 = 56$
15	$3 \times 15 = 45$	$15 + 45 = 60$
16	$3 \times 16 = 48$	$16 + 48 = 64$

Thus, we see that Aydin started with 16 packages and Soraya started with 48 packages. If they want to deliver the same number of packages, each should take half of the total number of packages. Half of 64 is 32 packages.

So if Soraya gives Aydin $48 - 32 = 16$ packages, then Aydin will have $16 + 16 = 32$ packages and each of them will have the same number to deliver.

Solution 2

Another way to solve this problem is to use fractions. If Soraya was given three times as many packages as Aydin to deliver, then adding Soraya and Aydin's packages together should give us four times as many packages as Aydin has. This means that Aydin has $\frac{1}{4}$ of the total number of packages and Soraya has $\frac{3}{4}$ of the total number of packages. This is shown in the following diagram. The large square represents the total number of packages. The large square is divided into quarters, with three of the quarters representing Soraya's packages and one of the quarters representing Aydin's packages.



In order for Aydin and Soraya to each have the same number of packages, Soraya must give Aydin $\frac{1}{4}$ of the total number of packages, so that they each have $\frac{1}{2}$. Since there are 64 packages in total, $\frac{1}{4}$ of 64 is equal to $64 \div 4 = 16$. Thus, Soraya should give Aydin 16 packages.