Problem of the Week
Grade 7 and 8

Chocolates or Cards?
Solution

Problem

For Valentine's Day, in a class of 30 students, 12 students brought chocolates for the teacher, 17 brought the teacher a card, and 5 students did both. How many students did not bring the teacher chocolates or a card?

Solution

Since 5 students did both and these students are included in the 12 who brought chocolates, then $12 - 5$ or 7 students brought chocolates only. They did not bring a card for the teacher as well.

Again, since 5 students did both and these students are included in the 17 who brought the teacher a card, then $17 - 5$ or 12 students brought a card only. They did not bring chocolates for the teacher as well.

Students will be in one of four possible groups: they brought both chocolates and a card, they brought chocolates only, they brought a card only, or they did not bring a card or chocolates. The number of students in each group added together will sum to the number of students in the class. Or we could subtract the sizes of the known groups from the class size to get the number of students who did neither.

So, the number of students who did neither is the number of students in the class minus the number of students who brought both chocolates and a card minus the number of students who brought chocolates only minus the number of students who brought a card only. Therefore the number of students who did neither is equal to $30 - 7 - 12 - 5$ or 6.

Six students did not bring their teacher chocolates or a card. These students will have to find some other way to show their fondness for their teacher.