



## Problem of the Week

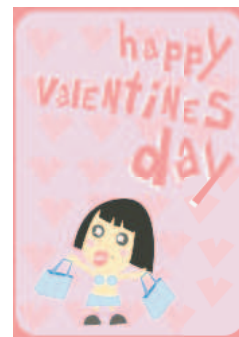
### Grade 11 and 12

#### Love is in the Air

#### Solution

#### Problem

In Mr. Vee's Physics class, each student gave every other student a valentine. Mr. Vee did not give or receive any valentines. The girls received a total of 540 valentines and the boys received a total of 390 valentines. How many students are in Mr. Vee's class? How many girls are in the class? How many boys are in the class?



#### Solution

Let  $n$  represent the number of students in Mr. Vee's class. Each student sends  $n - 1$  valentines and the total number of valentines sent is  $540 + 390$  or 930 valentines. So the number of students,  $n$ , times the number of valentines sent,  $n - 1$ , equals the total number of valentines.

$$n(n - 1) = 930$$

$$n^2 - n - 930 = 0$$

$$(n - 31)(n + 30) = 0$$

$$n = 31 \text{ or } n = -30 \text{ but } n > 0, \therefore n = 31$$

Therefore, there are 31 students in the class and each student sent 30 valentines and received 30 valentines.

Since the girls received a total of 540 valentines and each student received 30 valentines, there are  $540 \div 30$  or 18 girls in the class.

Since the boys received a total of 390 valentines and each student received 30 valentines, there are  $390 \div 30$  or 13 boys in the class.

Mr. Vee's class has 31 students, 18 girls and 13 boys.

