



Problem of the Week

Problem A and Solution

Comparing Communications

Problem

Several students compared how many emails they had sent during the previous week.

Number of Emails Sent	Number of Students
0	12
1	19
2	11
3	8
4	14
5	2
6	15

- (a) How many students sent fewer than 2 emails?
- (b) How many students sent more than 4 emails?
- (c) Separate the students into two groups so that all the students in one group sent more emails than all the students in the other group, and the number of students in each group are as close as possible.

Solution

We can use the table information to determine the answers.

- (a) The numbers 0 and 1 are less than 2. So the total number of students who sent fewer than 2 emails is $12 + 19 = 31$.
- (b) The numbers 5 and 6 are more than 4. So the total number of students who sent more than 4 emails is $2 + 15 = 17$.
- (c) The total number of students is $12 + 19 + 11 + 8 + 14 + 2 + 15 = 81$. If the number of students in each group are as close as possible, then one group would have 40 students and the other would have 41. This is our target.

We notice that the number of students who sent fewer than 3 emails is $12 + 19 + 11 = 42$. This is quite close to 41. In fact, it is as close as we can get to 41 because the number of students who sent 3 emails is 8 and the number of students who sent 2 emails is 11, so adding 8 or subtracting 11 from 42 would take us further away from 41. Thus, one group contains the 42 students who sent fewer than 3 emails and the other group contains the $81 - 42 = 39$ students who sent 3 or more emails.