There are four numbers that, via addition or subtraction of (not necessarily all of) those numbers, the first 40 integers (i.e. the integers 1 through 40) can be formed. What are the four numbers?

In the spirit of UPSC, you should not use the internet or look up the solution in a book. Please include your name, student ID number, and email address on your solution. Grading will proceed more quickly if your final answer is written clearly at the beginning of the first page of your solution, followed by your reasoning.