Writing Assignment 2 - Math 381 A - Dr. Matthew Conroy

Suppose you have the following unique objects, each with a weight, a volume and a value, as shown.

object	weight	volume	value
1	10	5	72
2	11	6	80
3	7	10	66
4	12	4	75
5	3	9	68
6	4	8	47
7	9	12	85
8	2	10	55
9	8	8	82

Which objects should you put in a knapsack with weight capacity 40 and volume capacity 45 such that the total value is maximized?

Define an IP for this problem. Describe it mathematically. Then solve it with lpsolve. Include all lpsolve input and output, and comment on the solution (i.e., don't just give the output of lpsolve). Are the constraints binding or not?

Now, solve the problem again, this time assuming that the list above gives a list of *types* of objects, and there is an unlimited number of each object type available. What should go in your knapsack now?